Hitachi Command Suite
Tuning Manager

8.7

Hardware Reports Reference

This document describes how to use the Hitachi Tuning Manager.

Contents

Acronyms and Abbreviations

Preface

This document describes how to use the Hitachi Tuning Manager.

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Intended audience

This document is intended for system/account administrators who have a basic knowledge of both Storage Area Networks (SANs) and Network Attached Storage (NAS) and who are responsible for:

- Store database management
- Backup and disk management
- Cluster system set up and maintenance.
- Data collection (system configuration detail records, log information, and workgroup information)

Product version

This document revision applies to Tuning Manager v8.7 or later.

Release notes

Read the release notes before installing and using this product. They may contain requirements or restrictions that are not fully described in this document or updates or corrections to this document. Release notes are available on Hitachi Vantara Support Connect: https:// knowledge.hitachivantara.com/Documents.

Document organization

The following table provides an overview of the contents and organization of this document. Click the chapter title in the left column to go to that chapter.The first page of each chapter provides links to the sections in that chapter.

Chapter/Appendix	Description
Chapter 1, Working with the Solution Set on page 1-1	Describes alarms and reports that the Agent provides as part of a solution set.
Chapter 2, Working with Records on page 2-1	Describes the contents of the records collected by Agents.
Acronyms and Abbreviations on page Acronyms-1	Defines the acronyms and abbreviations used in this document.

Related documents

The following Hitachi referenced documents are also available for download from the Hitachi Vantara Support Connect: https:// knowledge.hitachivantara.com/Documents.

- *Hitachi Command Suite Tuning Manager Agent Administration Guide*, MK-92HC013
- *Hitachi Command Suite Tuning Manager Server Administration Guide*, MK-92HC021
- *Hitachi Command Suite Tuning Manager User Guide*, MK-92HC022
- *Hitachi Command Suite Tuning Manager API Reference Guide*, MK-92HC218
- *Hitachi Command Suite Tuning Manager Operating System Reports Reference*, MK-95HC112
- *Hitachi Command Suite Tuning Manager Messages*, MK-95HC114
- *Hitachi Command Suite Tuning Manager CLI Reference Guide*, MK-96HC119
- *Hitachi Command Suite Tuning Manager Installation Guide*, MK-96HC141

Document conventions

This document uses the following typographic conventions:

Convention	Description
Bold	• Indicates text in a window, including window titles, menus, menu options, buttons, fields, and labels. Example: Click **OK**. • Indicates a emphasized words in list items.
Italic	• Indicates a document title or emphasized words in text. • Indicates a variable, which is a placeholder for actual text provided by the user or for output by the system. Example: `pairdisplay -g group` (For exceptions to this convention for variables, see the entry for angle brackets.)
`Monospace`	Indicates text that is displayed on screen or entered by the user. Example: `pairdisplay -g oradb`
< > angled brackets	Indicates a variable in the following scenarios: • Variables are not clearly separated from the surrounding text or from other variables. Example: `Status-<report-name><file-version>.csv` • Variables in headings.
[ ] square brackets	Indicates optional values. Example: [a | b] indicates that you can choose a, b, or nothing.
{ } braces	Indicates required or expected values. Example: { a | b } indicates that you must choose either a or b.
| vertical bar	Indicates that you have a choice between two or more options or arguments. Examples: [a | b] indicates that you can choose a, b, or nothing.

Convention	Description
	{ a | b } indicates that you must choose either a or b.

This document uses the following icons to draw attention to information:

Icon	Label	Description
	Note	Calls attention to important or additional information.
	Tip	Provides helpful information, guidelines, or suggestions for performing tasks more effectively.
	Caution	Warns the user of adverse conditions and/or consequences (for example, disruptive operations, data loss, or a system crash).
	WARNING	Warns the user of a hazardous situation which, if not avoided, could result in death or serious injury.

Conventions for storage capacity values

Physical storage capacity values (for example, disk drive capacity) are calculated based on the following values:

Physical capacity unit	Value
1 kilobyte (KB)	1,000 (10^3) bytes
1 megabyte (MB)	1,000 KB or $1,000^2$ bytes
1 gigabyte (GB)	1,000 MB or $1,000^3$ bytes
1 terabyte (TB)	1,000 GB or $1,000^4$ bytes
1 petabyte (PB)	1,000 TB or $1,000^5$ bytes
1 exabyte (EB)	1,000 PB or $1,000^6$ bytes

Logical capacity values (for example, logical device capacity, cache memory capacity) are calculated based on the following values:

Logical capacity unit	Value
1 block	512 bytes
1 cylinder	Mainframe: 870 KB Open-systems: • OPEN-V: 960 KB • Others: 720 KB
1 KB	1,024 (2^{10}) bytes

Logical capacity unit	Value
1 MB	1,024 KB or $1,024^2$ bytes
1 GB	1,024 MB or $1,024^3$ bytes
1 TB	1,024 GB or $1,024^4$ bytes
1 PB	1,024 TB or $1,024^5$ bytes
1 EB	1,024 PB or $1,024^6$ bytes

Accessing product documentation

Product documentation is available on Hitachi Vantara Support Connect: https://knowledge.hitachivantara.com/Documents. Check this site for the most current documentation, including important updates that may have been made after the release of the product.

Getting help

Hitachi Vantara Support Connect is the destination for technical support of products and solutions sold by Hitachi Vantara. To contact technical support, log on to Hitachi Vantara Support Connect for contact information: https://support.hitachivantara.com/en_us/contact-us.html.

Hitachi Vantara Community is a global online community for Hitachi Vantara customers, partners, independent software vendors, employees, and prospects. It is the destination to get answers, discover insights, and make connections. **Join the conversation today!** Go to community.hitachivantara.com, register, and complete your profile.

Comments

Please send us your comments on this document: doc.comments@hitachivantara.com. Include the document title and number, including the revision level (for example, -07), and refer to specific sections and paragraphs whenever possible. All comments become the property of Hitachi Vantara Corporation.

Thank you!

Preface

1

Working with the Solution Set

This chapter describes alarms and reports that each Agent provides as part of a solution set. A solution set makes it easy for the user to set alarms and reports.

☐ Overview of the Solution Set

☐ Format of Alarm Explanations

☐ Agent for RAID Alarms

☐ Agent for SAN Switch Alarms

☐ Agent for NAS Alarms

☐ Report Types

☐ Format of Report Explanations

☐ Organization of Report Folders

☐ Notes on Using the Solution Set

☐ Abbreviations Used for Storage Systems

☐ Agent for RAID Reports (other than the Storage Resources folder)

☐ Agent for RAID Reports (Storage Resources folder)

☐ Agent for SAN Switch Reports

☐ Agent for NAS Reports (for Hitachi Data Ingestor)

☐

Working with the Solution Set

Overview of the Solution Set

The Tuning Manager series programs enable you to define alarms and reports by the following methods:

- Use the default alarms and reports provided by the Agent.
- Customize the default alarms and reports provided by the Agent.
- Define new alarms and reports.

The alarms and reports provided by the Agents constitute a *solution set*. Because all required information is already defined for alarms and reports in the solution set, you can use them as they are or customize them as appropriate for your environment. Therefore, this enables you to complete the preparations for monitoring the operating status of a desired program without having to define new alarms and reports.

For details about how to use reports, see the *Tuning Manager User Guide*. For details about how to use alarms, see the *Tuning Manager Agent Administration Guide*.

Format of Alarm Explanations

This section describes the format that is used to explain alarms. This manual lists the alarms in alphabetical order.

Overview

Provides an overview of what can be monitored by the alarm.

Main Settings

Provides a table that lists and describes the main settings for the alarm. The alarm settings in the table correspond to the settings in the Properties window that appears when you click an alarm icon in the Alarms window of Performance Reporter, and then click the **Properties** method. For details about each alarm setting, see the Properties window for the particular alarm in Performance Reporter.

If the same value is set as the conditional expression for both the abnormal and warning conditions, only abnormal error alarms are issued.

Related Reports

Indicates the reports in the solution set that are associated with this alarm. You can view reports by clicking the report icons in the **Display Alarm Statuses** method, which is accessible by clicking the Agents icon in the Agents window of Performance Reporter.

Agent for RAID Alarms

An *alarm table* is one or more alarms collected into a table. Alarms defined in the solution set of Agent for RAID are stored in the form of alarm tables in the **RAID** folder that can be viewed in the Alarms window of Performance Reporter.

The names of the alarm tables are as follows:

- PFM RAID Solution Alarms 8.10

- PFM RAID Solution Alarms [HUS100/AMS] 8.60[#1]

- PFM RAID Solution Alarms [USP V/USP] 8.60[#2]

- PFM RAID Solution Alarms [VSP G1000/VSP/HUS VM] 8.60[#3, #4]

- PFM RAID Solution Alarms [HUS100/AMS] 8.80

- PFM RAID Solution Alarms [USP V/USP] 8.80

- PFM RAID Solution Alarms [VSP G1000/VSP/VSP Gx00/HUS VM] 8.80[#4, #5, #6]

- PFM RAID Solution Alarms [RAID Performance CLI] 9.00

- PFM RAID Solution Alarms [VSP G1000/VSP/VSP Gx00 Fx00] 9.40[#4, #6]

#1

This alarm table remains when a version upgrade installation is performed from any of the following versions:

Versions from v8.0 to earlier than v8.1.3

This alarm table stores the same alarms as those of PFM RAID Solution Alarms [HUS100/AMS] 8.80. For details on the stored alarms, see the explanation for the PFM RAID Solution Alarms [HUS100/AMS] 8.80.

#2

This alarm table remains when a version upgrade installation is performed from any of the following versions:

Versions from v8.0 to earlier than v8.1.3

This alarm table stores the same alarms as those of PFM RAID Solution Alarms [USP V/USP] 8.80. For details on the stored alarms, see the explanation for the PFM RAID Solution Alarms [USP V/USP] 8.80.

#3

This alarm table remains when a version upgrade installation is performed from any of the following versions:

Versions from v8.0 to earlier than v8.1.3

This alarm table stores the same alarms as those of PFM RAID Solution Alarms [VSP G1000/VSP/VSP Gx00 Fx00] 9.40. For details on the stored alarms, see the explanation for the PFM RAID Solution Alarms [VSP G1000/VSP/VSP Gx00 Fx00] 9.40.

#4

If you want to monitor VSP 5000 series, VSP G1500, or VSP F1500, select this alarm table. This alarm table includes VSP 5000 series, VSP G1500, and VSP F1500 in its monitoring targets.

#5

This alarm table remains when a version upgrade installation is performed from any of the following versions:

Versions from v8.1.3 to earlier than v8.4

This alarm table stores the same alarms as those of PFM RAID Solution Alarms [VSP G1000/VSP/VSP Gx00 Fx00] 9.40. For details on the stored alarms, see the explanation for the PFM RAID Solution Alarms [VSP G1000/VSP/VSP Gx00 Fx00] 9.40.

#6

If you want to monitor VSP Nx00, select this alarm table. This alarm table includes VSP Nx00 in its monitoring targets.

The text enclosed in square brackets ([ ])

Indicates the type of monitoring storage system that corresponds to the alarm table.

The number at the end of the alarm table name

Indicates the version of the alarm table.

The following table lists the alarms defined in the solution set.

Table 1-1 Agent for RAID Alarms

Alarm Table	Name of Alarm	What Is Monitored
PFM RAID Solution Alarms 8.10	Pool Usage %	Usage rate of the Dynamic Provisioning pool capacity
	Read Cache Hit Rate	Cache hit rate for read processing on each logical device
	Write Cache Hit Rate	Cache hit rate for write processing on each logical device
PFM RAID Solution Alarms [HUS100/ AMS] 8.80	Cache Write Pending	Of the cache memory allocated to either the CLPR instance of a controller or to a controller itself, the percentage occupied by write-pending data
	Drive Busy Rate	Drive utilization rate
	PG Write Hit Rate	Cache-hit rate of parity-group write processing
	Processor Busy Rate	Processor utilization rate
PFM RAID Solution Alarms [USP V/ USP] 8.80	Cache Side File Rate	Of the cache memory allocated to the CLPR, the percentage occupied by the Side File
	Cache Write Pending	Of the cache memory allocated to the CLPR, the percentage occupied by write-pending data
	CHP Busy Rate	Channel Processor utilization rate
	DKP Busy Rate	Disk Processor utilization rate

Alarm Table	Name of Alarm	What Is Monitored
	PG Busy Rate	Parity-group utilization rate
	PG Read Hit Rate	Cache-hit rate of parity-group read processing
PFM RAID Solution Alarms [RAID Performance CLI] 9.00	Write Response Rate	Average processing time for each LDEV write operation request
PFM RAID Solution Alarms [VSP G1000/VSP/VSP Gx00 Fx00] 9.40	Cache Write Pending	Of the cache memory allocated to the CLPR, the percentage occupied by write-pending data
	MP Blade Busy Rate	MP Blade utilization rate
	PG Busy Rate	Parity-group utilization rate
	PG Read Hit Rate	Cache-hit rate of parity-group read processing

Pool Usage %

Overview

The Pool Usage % alarm monitors the usage rate of the Dynamic Provisioning pool capacity.

Note:

If an FMC volume is contained in the pool, customize the Pool Usage % alarm so that it also monitors the `Physical Capacity Usage %` field of the Pool Configuration (`PD_PLC`) record. If the pool is set up to automatically add pool volumes, customize the alarm so that it monitors only the `Physical Capacity Usage %` field and does not monitor the `Usage %` field.

Main Settings

Table 1-2 Main Settings for the Pool Usage % Alarm

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
Main	Report alarm when the following damping condition is reached	Selected
	Interval(s)	1
	Occurrence(s) during	1
Actions	SNMP	**Abnormal**, **Warning**, **Normal**

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
Conditional Expressions	Record	**Pool Configuration (PD_PLC)**
	Field	**Usage %**
	Abnormal condition	**Usage % >= 80**
	Warning condition	**Usage % >= 70**

Alarm Table

PFM RAID Solution Alarms 8.10

Related Reports

Reports/RAID/Monthly Trend/Pool Usage Trend(9.4)

Read Cache Hit Rate

Overview

The Read Cache Hit Rate alarm monitors the cache hit rate for read processing on logical devices. The value monitored by this alarm is the ratio of successful reads from the cache compared with all read processing that occurs during a monitored interval. This value is the latest monitored value, not the average value.

Main Settings

Table 1-3 Main Settings for the Read Cache Hit Rate Alarm

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
Main	Report alarm when the following damping condition is reached	Selected
	Interval(s)	6
	Occurrence(s) during	3
Actions	SNMP	**Abnormal, Warning, Normal**
Conditional Expressions	Record	**Logical Device Summary (PI_LDS)**
	Field	**Read Hit %**
	Abnormal condition	**Read Hit % < 90 & Read I/O Count > 0**

Alarm Properties in Performance Reporter		Setting
Item	Detailed Item	
	Warning condition	**Read Hit % < 95 & Read I/O Count > 0**

Alarm Table

PFM RAID Solution Alarms 8.10

Related Reports

Reports/RAID/Troubleshooting/Recent Past/Logical Device
Performance Details

Write Cache Hit Rate

Overview

The Write Cache Hit Rate alarm monitors the cache hit rate for write
processing on logical devices. The value monitored by this alarm is the ratio
of successful writes from the cache compared with all write processing that
occurs during a monitored interval. This value is the latest monitored value,
not the average value.

The Write Cache Hit Rate alarm cannot be used if the monitored storage
system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM,
VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform
series, and Universal Storage Platform V/VM series storage systems.

Main Settings

Table 1-4 Main Settings for the Write Cache Hit Rate Alarm

Alarm Properties in Performance Reporter		Setting
Item	Detailed Item	
Main	Report alarm when the following damping condition is reached	Selected
	Interval(s)	6
	Occurrence(s) during	3
Actions	SNMP	**Abnormal**, **Warning**, **Normal**
Conditional Expressions	Record	**Logical Device Summary (PI_LDS)**
	Field	**Write Hit %**

Alarm Properties in Performance Reporter		Setting
Item	Detailed Item	
	Abnormal condition	**Write Hit % < 90 & Write I/O Count > 0**
	Warning condition	**Write Hit % < 95 & Write I/O Count > 0**

Alarm Table

```
PFM RAID Solution Alarms 8.10
```

Related Reports

```
Reports/RAID/Troubleshooting/Recent Past/Logical Device
Performance Details
```

Cache Write Pending (PFM RAID Solution Alarms [HUS100/AMS] 8.80)

Overview

For the cache memory that is allocated to each controller or to the CLPR instance of each controller, the Cache Write Pending alarm monitors the portion (of that cache memory) that is being used by data waiting to be written.

Main Settings

Table 1-5 Main Settings for the Cache Write Pending Alarm

Alarm Properties in Performance Reporter		Setting
Item	Detailed Item	
Main	Report alarm when the following damping condition is reached	Selected
	Interval(s)	1
	Occurrence(s) during	1
Actions	SNMP	**Abnormal, Warning, Normal**
Conditional Expressions	Record	**CLPR Per Controller Summary (PI_CLCS)**
	Field	**Cache Write Pending Usage %**
	Abnormal condition	**Controller = "*"** **& (CLPR Number = "*"**

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
		& Cache Write Pending Usage % > 50)
	Warning condition	**Controller = "*"**
		& (CLPR Number = "*"
		& Cache Write Pending Usage % > 25)

Alarm Table

PFM RAID Solution Alarms [HUS100/AMS] 8.80

Related Reports

Reports/RAID/Troubleshooting/Recent Past/CLPR Usage Per
Controller Details(7.2)

Drive Busy Rate

Overview

The Drive Busy Rate alarm monitors drive utilization rate.

Main Settings

Table 1-6 Main Settings for the Drive Busy Rate Alarm

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
Main	Report alarm when the following damping condition is reached	Selected
	Interval(s)	1
	Occurrence(s) during	1
Actions	SNMP	**Abnormal, Warning, Normal**
Conditional Expressions	Record	**Physical Device Operation Status (PI_PDOS)**
	Field	**Busy %**
	Abnormal condition	**Controller = "*"** **& (Unit Number = "*"** **& (HDU Number = "*"** **& Busy % >= 70))**

Working with the Solution Set

Hitachi Tuning Manager Hardware Reports Reference

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
	Warning condition	**Controller = "*"** **& (Unit Number = "*"** **& (HDU Number = "*"** **& Busy % >= 70))**

Alarm Table

PFM RAID Solution Alarms [HUS100/AMS] 8.80

Related Reports

Reports/RAID/Troubleshooting/Recent Past/Physical Device Busy
Rate Details(7.5)

PG Write Hit Rate

Overview

The PG Write Hit Rate alarm monitors cache-hit rate of parity-group write
processing.

Main Settings

Table 1-7 Main Settings for the PG Write Hit Rate Alarm

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
Main	Report alarm when the following damping condition is reached	Selected
	Interval(s)	1
	Occurrence(s) during	1
Actions	SNMP	**Abnormal**, **Warning**, **Normal**
Conditional Expressions	Record	**RAID Group Summary (PI_RGS)**
	Field	**Write Hit %**
	Abnormal condition	**RAID Group Number = "*"** **& (Write Hit % < 100** **& Write I/O Count > 0)**
	Warning condition	**RAID Group Number = "*"** **& (Write Hit % < 100**

Alarm Properties in Performance Reporter		Setting
Item	Detailed Item	
		& Write I/O Count > 0)

Alarm Table

PFM RAID Solution Alarms [HUS100/AMS] 8.80

Related Reports

Reports/RAID/Troubleshooting/Recent Past/Array Group Performance Details(8.6)

Processor Busy Rate

Overview

The Processor Busy Rate alarm monitors processor utilization rate.

Main Settings

Table 1-8 Main Settings for the Processor Busy Rate Alarm

Alarm Properties in Performance Reporter		Setting
Item	Detailed Item	
Main	Report alarm when the following damping condition is reached	Selected
	Interval(s)	1
	Occurrence(s) during	1
Actions	SNMP	**Abnormal, Warning, Normal**
Conditional Expressions	Record	**Processor Summary (PI_PRCS)**
	Field	**Processor Busy %**
	Abnormal condition	**Processor ID = "*"** **& Processor Busy % >= 90**
	Warning condition	**Processor ID = "*"** **& Processor Busy % >= 80**

Alarm Table

PFM RAID Solution Alarms [HUS100/AMS] 8.80

Related Reports

```
Reports/RAID/Troubleshooting/Recent Past/ Processor Busy Rate
Details(8.6)
```

Cache Side File Rate

Overview

For the cache memory allocated to CLPR, the Cache Side File Rate alarm monitors the portion (of that cache memory) that is being used by the Side File.

Main Settings

Table 1-9 Main Settings for the Cache Side File Rate Alarm

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
Main	Report alarm when the following damping condition is reached	Selected
	Interval(s)	1
	Occurrence(s) during	1
Actions	SNMP	**Abnormal**, **Warning**, **Normal**
Conditional Expressions	Record	**CLPR Summary (PI_CLPS)**
	Field	**Cache Side File Usage %**
	Abnormal condition	**CLPR Number = "*"** **& Cache Side File Usage % >= 20**
	Warning condition	**CLPR Number = "*"** **& Cache Side File Usage % >= 10**

Alarm Table

```
PFM RAID Solution Alarms [USP V/USP] 8.80
```

Related Reports

```
Reports/RAID/Troubleshooting/Recent Past/CLPR Usage Details(7.2)
```

Cache Write Pending (PFM RAID Solution Alarms [USP V/USP] 8.80, PFM RAID Solution Alarms [VSP G1000/VSP/VSP Gx00 Fx00] 9.40)

Overview

For the cache memory assigned to CLPR, the Cache Write Pending alarm monitors the portion (of that cache memory) that is being used by data waiting to be written.

Main Settings

Table 1-10 Main Settings for the Cache Write Pending Alarm

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
Main	Report alarm when the following damping condition is reached	Selected
	Interval(s)	1
	Occurrence(s) during	1
Actions	SNMP	**Abnormal, Warning, Normal**
Conditional Expressions	Record	**CLPR Summary (PI_CLPS)**
	Field	**Cache Write Pending Usage %**
	Abnormal condition	**CLPR Number = "*"** **& Cache Write Pending Usage % > 60**
	Warning condition	**CLPR Number = "*"** **& Cache Write Pending Usage % > 30**

Alarm Table

- PFM RAID Solution Alarms [USP V/USP] 8.80
- PFM RAID Solution Alarms [VSP G1000/VSP/VSP Gx00 Fx00] 9.40

Related Reports

Reports/RAID/Troubleshooting/Recent Past/CLPR Usage Details(7.2)

CHP Busy Rate

Overview

The CHP Busy Rate alarm monitors Channel Processor utilization rate.

Main Settings

Table 1-11 Main Settings for the CHP Busy Rate Alarm

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
Main	Report alarm when the following damping condition is reached	Selected
	Interval(s)	1
	Occurrence(s) during	1
Actions	SNMP	**Abnormal, Warning, Normal**
Conditional Expressions	Record	**Processor Summary (PI_PRCS)**
	Field	**Processor Busy %**
	Abnormal condition	**Adaptor ID = "*"** **& (Processor ID = "*"** **& (Processor Type = "CHP"** **& Processor Busy % >= 80))**
	Warning condition	**Adaptor ID = "*"** **& (Processor ID = "*"** **& (Processor Type = "CHP"** **& Processor Busy % >= 45))**

Alarm Table

PFM RAID Solution Alarms [USP V/USP] 8.80

Related Reports

Reports/RAID/Troubleshooting/Recent Past/Processor Busy Rate Details(8.6)

DKP Busy Rate

Overview

The DKP Busy Rate alarm monitors Disk Processor utilization rate.

Main Settings

Table 1-12 Main Settings for the DKP Busy Rate Alarm

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
Main	Report alarm when the following damping condition is reached	Selected
	Interval(s)	1
	Occurrence(s) during	1
Actions	SNMP	**Abnormal, Warning, Normal**
Conditional Expressions	Record	**Processor Summary (PI_PRCS)**
	Field	**Processor Busy %**
	Abnormal condition	**Adaptor ID = "*"** **& (Processor ID = "*"** **& (Processor Type = "DKP"** **& Processor Busy % >= 80))**
	Warning condition	**Adaptor ID = "*"** **& (Processor ID = "*"** **& (Processor Type = "DKP"** **& Processor Busy % >= 40))**

Alarm Table

PFM RAID Solution Alarms [USP V/USP] 8.80

Related Reports

Reports/RAID/Troubleshooting/Recent Past/Processor Busy Rate Details(8.6)

PG Busy Rate

Overview

The PG Busy Rate alarm monitors parity-group utilization rate.

Working with the Solution Set

Main Settings

Table 1-13 Main Settings for the PG Busy Rate Alarm

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
Main	Report alarm when the following damping condition is reached	Selected
	Interval(s)	1
	Occurrence(s) during	1
Actions	SNMP	**Abnormal, Warning, Normal**
Conditional Expressions	Record	**RAID Group Summary (PI_RGS)**
	Field	**Busy %**
	Abnormal condition	**RAID Group Number = "*" & Busy %> = 50**
	Warning condition	**RAID Group Number = "*" & Busy %> = 50**

Alarm Table

- `PFM RAID Solution Alarms [USP V/USP] 8.80`
- `PFM RAID Solution Alarms [VSP G1000/VSP/VSP Gx00 Fx00] 9.40`

Related Reports

`Reports/RAID/Troubleshooting/Recent Past/Array Group Performance Details(8.6)`

PG Read Hit Rate

Overview

The PG Read Hit Rate alarm monitors cache-hit rate of parity-group read processing.

Main Settings

Table 1-14 Main Settings for the PG Read Hit Rate Alarm

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
Main	Report alarm when the following damping condition is reached	Selected
	Interval(s)	1
	Occurrence(s) during	1
Actions	SNMP	**Abnormal**, **Warning**, **Normal**
Conditional Expressions	Record	**RAID Group Summary (PI_RGS)**
	Field	**Read Hit %**
	Abnormal condition	**RAID Group Number = "*"** **& (Read Hit % <= 25** **& Read I/O Count> 0)**
	Warning condition	**RAID Group Number = "*"** **& (Read Hit % <= 25** **& Read I/O Count > 0)**

Alarm Table

- PFM RAID Solution Alarms [USP V/USP] 8.80
- PFM RAID Solution Alarms [VSP G1000/VSP/VSP Gx00 Fx00] 9.40

Related Reports

Reports/RAID/Troubleshooting/Recent Past/Array Group Performance Details(8.6)

MP Blade Busy Rate

Overview

The MP Blade Busy Rate alarm monitors MP Blade utilization rate.

Working with the Solution Set

Main Settings

Table 1-15 Main Settings for the MP Blade Busy Rate Alarm

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
Main	Report alarm when the following damping condition is reached	Selected
	Interval(s)	1
	Occurrence(s) during	1
Actions	SNMP	**Abnormal, Warning, Normal**
Conditional Expressions	Record	**Processor Summary (PI_PRCS)**
	Field	**Processor Busy %**
	Abnormal condition	**Adaptor ID = "*"** **& (Processor Type = "MPB"** **& Processor Busy % >= 80)**
	Warning condition	**Adaptor ID = "*"** **& (Processor Type = "MPB"** **& Processor Busy % >= 40)**

Alarm Table

PFM RAID Solution Alarms [VSP G1000/VSP/VSP Gx00 Fx00] 9.40

Related Reports

Reports/RAID/Troubleshooting/Recent Past/Processor Busy Rate
Details(8.6)

Write Response Rate

Overview

The Write Response Rate alarm monitors the average processing time for each LDEV write operation request.

Note that this alarm is not supported if the monitored storage system is an HUS100 series, or a Hitachi AMS2000/AMS/WMS/SMS series storage system.

Main Settings

Table 1-16 Main Settings for the Write Response Rate Alarm

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
Main	Always report alarm	Selected
	Evaluate all data	Not selected
	Report alarm when the following damping condition is reached	Selected
	Interval(s)	`1`
	Occurrence(s) during	`1`
Actions	SNMP	**-**
Conditional Expressions	Record	**Logical Device Summary (PI_LDS)**
	Field	**Write Response Rate**
	Abnormal condition	**LDEV Number = "*"** **& Write Response Rate > 500**
	Warning condition	**LDEV Number = "*"** **& Write Response Rate > 500**

Legend:

-: The setting is always disabled.

Command usage example

If you set the `jpctdraidperf` command as an action, this alarm can acquire performance information (in seconds) of the monitored storage system after the alarm occurs. To set the `jpctdraidperf` command, copy the PFM RAID Solution Alarms [RAID Performance CLI] 9.00 alarm table, and then add the alarm definition shown in the table below.

For details on the `jpctdraidperf` command, see the *Tuning Manager CLI Reference Guide*. For details on how to set the alarm definition, see the section that describes the settings of actions of an alarm in the *Tuning Manager User Guide*.

Table 1-17 Alarm Definition to Be Added to Execute the jpctdraidperf Command

Actions	Setting Item	Setting
Defining a command	Command name	• In Windows: `installation-folder\tools \jpctdraidperf.bat` • In Linux:

Actions	Setting Item	Setting
		`/opt/jp1pc/tools/jpctdraidperf`
	Action Handler	LOCAL
	Command arguments	`-agentname` **%ANS** `-ldev` **%CVS1**

Alarm Table

`PFM RAID Solution Alarms [RAID Performance CLI] 9.00`

Agent for SAN Switch Alarms

Alarms defined in the Agent for SAN Switch solution set are compiled in the alarm table **PFM SAN Switch Solution Alarms 7.00**. 7.00 indicates the version of the alarm table. This alarm table is stored in the **SAN Switch** folder that is displayed in the Alarms window of Performance Reporter. lists and describes the alarms defined in this solution set.

Table 1-18 Agent for SAN Switch Alarms

Name of Alarm	What is Monitored
CRC Error Count	Ports on which the number of CRC errors significantly exceeds the error rate stipulated by the Fibre Channel transport standards
Encoding Error	Ports on which the number of encoding errors or disparity errors significantly exceeds the error rate stipulated by the Fibre Channel transport standards
Port Ops Status	Ports whose operating state is either alert or error
Switch Ops Status	Switches whose operating state is either alert or error

CRC Error Count

Overview

The CRC Error Count alarm monitors for ports on which the number of CRC errors significantly exceeds the error rate stipulated by the Fibre Channel transport standards.

Main Settings

Table 1-19 Main Settings for the CRC Error Count Alarm

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
Main	Report alarm when the following damping condition is reached	Selected
	Interval(s)	3
	Occurrence(s) during	2
Actions	SNMP	**Abnormal, Warning, Normal**
Conditional Expressions	Record	**Port Error Summary (PI_PTES)**
	Field	**CRC Error Count**
	Abnormal condition	**CRC Error Count > 102000**
	Warning condition	**CRC Error Count > 102**

Related Reports

```
Reports/SAN Switch/Troubleshooting/Real-Time/CRC Error Count -
Top 10 Port
```

Encoding Error

Overview

The Encoding Error alarm monitors for ports on which the number of encoding errors or disparity errors significantly exceeds the error rate stipulated by the Fibre Channel transport standards.

Main Settings

Table 1-20 Main Settings for the Encoding Error Alarm

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
Main	Report alarm when the following damping condition is reached	Selected
	Interval(s)	3
	Occurrence(s) during	2
Actions	SNMP	**Abnormal, Warning, Normal**
Conditional Expressions	Record	**Port Error Summary (PI_PTES)**

Working with the Solution Set

Alarm Properties in Performance Reporter		Setting
Item	Detailed Item	
	Field	**Encoding Disparity Count**
	Abnormal condition	**Encoding Disparity Count > 127500**
	Warning condition	**Encoding Disparity Count > 128**

Related Reports

```
Reports/SAN Switch/Troubleshooting/Real-Time/Encoding Disparity
Count - Top 10 Port
```

Port Ops Status

Overview

The Ports Ops Status alarm monitors for ports whose operating state is either *alert* or *error*.

Main Settings

Table 1-21 Main Settings for the Port Ops Status Alarm

Alarm Properties in Performance Reporter		Setting
Item	Detailed Item	
Main	Report alarm when the following damping condition is reached	Selected
	Interval(s)	3
	Occurrence(s) during	2
Actions	SNMP	**Abnormal**, **Warning**, **Normal**
Conditional Expressions	Record	**Port Error Summary (PI_PTES)**
	Field	**Port Ops Status**
	Abnormal condition	**Port Ops Status = Faulty**
	Warning condition	**Port Ops Status = Warning**

Related Reports

```
Reports/SAN Switch/Troubleshooting/Recent Past/Port Operation
Status
```

Switch Ops Status

Overview

The Switch Ops Status alarm monitors for switches whose operating state is either *alert* or *error*.

Main Settings

Table 1-22 Main Settings for the Switch Ops Status Alarm

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
Main	Report alarm when the following damping condition is reached	Selected
	Interval(s)	3
	Occurrence(s) during	2
Actions	SNMP	**Abnormal**, **Warning**, **Normal**
Conditional Expressions	Record	**Switch Error Summary (PI_SWES)**
	Field	**Switch Ops Status**
	Abnormal condition	**Switch Ops Status = Faulty**
	Warning condition	**Switch Ops Status = Warning**

Related Reports

```
Reports/SAN Switch/Troubleshooting/Recent Past/Switch Operation
Status
```

Agent for NAS Alarms

An *alarm table* is one or more alarms collected into a table. Alarms defined in the solution set of Agent for NAS are stored in the form of alarm tables in the **NAS** folder that can be viewed in the Alarms window of Performance Reporter.

The names of the alarm table are as follows:

- PFM NAS Template Alarms [HDI] 8.00[1]
- PFM NAS Template Alarms [HNAS] 8.00[2]
- PFM NAS Template Alarms [HDI] 8.13
- PFM NAS Template Alarms [HNAS] 8.13

#1

This alarm table remains when a version upgrade installation is performed from any of the following versions:

Versions from v8.0 to earlier than v8.1.3

This alarm table stores the same alarms as those of PFM NAS Template Alarms [HDI] 8.13. For details on the stored alarms, see the explanation for the PFM NAS Template Alarms [HDI] 8.13.

#2

This alarm table remains when a version upgrade installation is performed from any of the following versions:

Versions from v8.0 to earlier than v8.1.3

This alarm table stores the same alarms as those of PFM NAS Template Alarms [HNAS] 8.13. For details on the stored alarms, see the explanation for the PFM NAS Template Alarms [HNAS] 8.13.

The text enclosed by square brackets ([ ])

Indicates the type of monitoring storage system that corresponds to the alarm table.

The number at the end of the alarm table name

Indicates the version of the alarm table.

The following table lists the alarms defined in the solution set.

Table 1-23 Agent for NAS Alarms

Alarm table	Name of Alarm	What Is Monitored
PFM NAS Template Alarms [HDI] 8.13	Kernel CPU	Percentage of time that the processor of Hitachi Data Ingestor[#] is running in kernel mode
	Run Queue	Number of processes waiting in the execution queue or disk I/O queue
	User CPU	Percentage of time that the processor of Hitachi Data Ingestor[#] is running in user mode
PFM NAS Template Alarms [HNAS] 8.13	File System Free %	Percentage of free space in a NAS Platform file system
	Storage Pool Free %	Percentage of free space in a NAS Platform storage pool

#

The following file servers are collectively called *Hitachi Data Ingestor*.

- Hitachi Data Ingestor
- Hitachi NAS Platform F1000 Series
- Hitachi Capacity Optimization
- Hitachi Essential NAS Platform

Kernel CPU

Overview

The Kernel CPU alarm monitors the percentage of time that the processor of Hitachi Data Ingestor# is running in kernel mode.

#
  The following file servers are collectively called *Hitachi Data Ingestor*.

  - Hitachi Data Ingestor
  - Hitachi NAS Platform F1000 Series
  - Hitachi Capacity Optimization
  - Hitachi Essential NAS Platform

Main Settings

Table 1-24 Main Settings for the Kernel CPU Alarm

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
Main	Report alarm when the following damping condition is reached	Selected
	Interval(s)	3
	Occurrence(s) during	2
Actions	SNMP	**Abnormal**, **Warning**, **Normal**
Conditional Expressions	Record	**System Summary Overview (PI)**
	Field	**Kernel CPU %**
	Abnormal condition	**Kernel CPU % > 75**
	Warning condition	**Kernel CPU % > 50**

Related Reports

```
Reports/NAS/Troubleshooting/Real-Time/System Overview
```

Run Queue

Overview

The Run Queue alarm monitors the number of processes waiting in the execution queue or disk I/O queue.

Main Settings

Table 1-25 Main Settings for the Run Queue Alarm

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
Main	Report alarm when the following damping condition is reached	Not selected
	Interval(s)	0
	Occurrence(s) during	0
Actions	SNMP	**Abnormal, Warning, Normal**
Conditional Expressions	Record	**System Summary Overview (PI)**
	Field	**5-Minute Run Queue Avg**
	Abnormal condition	**5-Minute Run Queue Avg > 8**
	Warning condition	**5-Minute Run Queue Avg > 4**

Related Reports

```
Reports/NAS/Troubleshooting/Real-Time/CPU Usage - Top 10
Processes
```

User CPU

Overview

The User CPU alarm monitors the percentage of time that the processor of Hitachi Data Ingestor[#] is running in user mode.

[#]

The following file servers are collectively called *Hitachi Data Ingestor*.

- Hitachi Data Ingestor
- Hitachi NAS Platform F1000 Series
- Hitachi Capacity Optimization
- Hitachi Essential NAS Platform

Main Settings

Table 1-26 Main Settings for the User CPU Alarm

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
Main	Report alarm when the following damping condition is reached	Selected
	Interval(s)	3
	Occurrence(s) during	2
Actions	SNMP	**Abnormal, Warning, Normal**
Conditional Expressions	Record	**System Summary Overview (PI)**
	Field	**User CPU %**
	Abnormal condition	**User CPU % > 85**
	Warning condition	**User CPU % > 65**

Related Reports

`Reports/NAS/Troubleshooting/Real-Time/System Overview`

File System Free %

Overview

The File System Free % alarm monitors the percentage of free space in a NAS Platform file system.

Main Settings

Table 1-27 Main Settings for the File System Free % Alarm

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
Basic information	Report alarm when the following damping condition is reached	Selected
	Interval(s)	1
	Occurrence(s) during	1
Actions	SNMP	**Abnormal, Warning, Normal**
Conditional Expressions	Record	**HNAS File System Configuration (PD_HFSC)**

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
	Field	**Node/Cluster Name** **File System Name** **Free %**
	Abnormal condition	**Node/Cluster Name = "*"** **& (File System Name = "*"** **& Free % < 20)**
	Warning condition	**Node/Cluster Name = "*"** **& (File System Name = "*"** **& Free % < 45)**

Related Reports

Reports/NAS/HNAS/File System/File System Capacity (6.4)

Storage Pool Free %

Overview

The Storage Pool Free % alarm monitors the percentage of free space in a NAS Platform storage pool.

Main Settings

Table 1-28 Main Settings for the Storage Pool Free % Alarm

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
Basic information	Report alarm when the following damping condition is reached	Selected
	Interval(s)	1
	Occurrence(s) during	1
Actions	SNMP	**Abnormal, Warning, Normal**
Conditional Expressions	Record	**HNAS Storage Pool Configuration (PD_HPLC)**
	Field	**Node/Cluster Name** **Storage Pool Name** **Free %**
	Abnormal condition	**Node/Cluster Name = "*"** **& (Storage Pool Name = "*"**

Alarm Properties in Performance Reporter		Setting
Item	**Detailed Item**	
		& Free % < 20)
	Warning condition	**Node/Cluster Name = "*"** **& (Storage Pool Name = "*"** **& Free % < 30)**

Related Reports

Reports/NAS/HNAS/StoragePool/Storage Pool Capacity (6.4)

Report Types

Reports exist for each Agent. Note that, for the following Agents, report explanations are separated depending on the folder configuration.

- Agent for RAID

    ○ Reports stored in the `Storage Resources` folder

    For details about the reports, see Agent for RAID Reports (Storage Resources folder) on page 1-319.

    ○ Reports stored in folders other than the `Storage Resources` folder

    For details about the reports, see Agent for RAID Reports (other than the Storage Resources folder) on page 1-50.

- Agent for NAS

    ○ Reports stored in the `HNAS` folder

    The folder stores reports for NAS Platform.

    For details about the reports, see Reports associated with Agent for NAS (for NAS Platform) on page 1-645.

    ○ Reports stored in folders other than the `HNAS` folder

    These folders store reports for Hitachi Data Ingestor.

    Note that the following file servers are collectively called *Hitachi Data Ingestor*:

    - Hitachi Data Ingestor

    - Hitachi Capacity Optimization

    - Hitachi NAS Platform F1000 Series

    - Hitachi Essential NAS Platform

    For details about the reports, see Agent for NAS Reports (for Hitachi Data Ingestor) on page 1-617.

Format of Report Explanations

This section describes the format that is used to explain reports. The manual lists the reports in alphabetical order.

> **Note:** The report explanations use abbreviations and generic names to represent the storage systems supported by Agent for RAID. For details about the abbreviations used for the storage systems, see Abbreviations Used for Storage Systems on page 1-46.

Report Name

Indicates the report name of a solution set. If a number (such as (6.0)) is added to the end of a report name, this number indicates the version number of the data model being used by the report. This means that only the Agents whose data model version is equal to or later than this number can use the report. For details about the data model version, see Data Model Version on page 2-2.

Reports with names that include (Multi-Agent) display information about multiple instances.

Reports with names that do not include (Multi-Agent) display information about a single instance.

Overview

Provides an overview of the information that can be displayed in the report.

Storage Location

Indicates the storage location of the report.

Record

Indicates the record that contains the performance data used in the report. To display a historical report, you must specify information in advance in order to collect the record indicated in this column. Before displaying a report, display the Agent properties in the Agents window of Performance Reporter, and make sure that **Log** is set to **Yes** for this record. For a real-time report, you do not need to set it.

> **Note:** The maximum number of records that can be displayed in a report is set in advance. For details about how to change the maximum number of records that can be displayed, see the chapter that describes how to create user-defined reports in the *Tuning Manager User Guide*.

Fields

Describes the fields used in the report.

Note on using Agent for RAID: Depending on the microcode version of the storage system, some field values might not be acquired.

Drilldown Reports (Report Level)

Lists other reports in the solution set that are related to this report. For details about how to display a drilldown report, see the chapter that describes how to create user-defined reports in the *Tuning Manager User Guide*. *Note:* Some reports and Agents do not have any drilldown reports.

Drilldown Reports (Field Level)

Describes reports in the solution set that are associated with fields used in this report. For details about how to display a drilldown report, see the chapter that describes how to create user-defined reports in the *Tuning Manager User Guide*. *Note:* Some reports and Agents do not have any drilldown reports.

Filtering

Describes the format of filtering conditions that can be specified and how to use them for reports. You can narrow down the range of the content to be displayed by specifying filtering conditions for the report you want to display.

The following example shows the filtering conditions and how to use them.

Table 1-29 Filtering examples

Item	Explanation	How to use
Field	Indicates the field of the records to which the filtering condition is applied. Example: Avg I/O /sec, Pool ID, Tier Type	-
Condition format	Indicates the filtering condition format.	The following shows an example of how to use the filtering condition format.
	Example:	Example:
	(Pool ID = "*" OR Pool ID = "*x*" OR Pool ID = "*x*" OR Pool ID = "*x*")	Displays records that are equal to the values specified by the pool IDs. A maximum of 4 pool IDs can be specified.[#1] When specifying pool IDs, always use the condition format from the top.
	AND Pool ID >= "*. Enter first pool ID here.*" AND Pool ID <= "*z Enter last pool ID here.*"	Displays records within the value range specified by the pool IDs.[#2]
	AND Tier Type <> "_Total"	Cannot be specified. Displays records whose Tier Type is not `_Total`.

Item	Explanation	How to use
	AND Avg I/O /sec > *-1.000*	Displays records greater than the value specified by Avg I/O /sec.

Note:

- If the pool ID specification (#1) and the specified range of pool IDs (#2) conflict, 0 items are displayed for the records.
- Parts indicated in italics are values that you can change. If you do not change the values, all records are displayed.

Note that filtering conditions are available for some reports, but not all.

Organization of Report Folders

Listed below is a description of each folder:

- `Monthly Trend` folder

  This folder contains reports that display daily information for the past month. In Agent for SAN Switch, this folder also contains reports that display information for the past month. Use the reports in this folder to check monthly trends in the system.

- `Status Reporting` folder

  This folder contains a report displaying information compiled for each day. Use this folder to check the overall status of the system. In addition, real-time reports as well as historical reports can be displayed.

  - `Daily Trend` folder

    This folder contains reports that display information for the last 24 hours, as well as hourly information for the past 24 hours. Use the reports in this folder to check the daily status of the system.

  - `Real-Time` folder

    This folder contains real-time reports for checking the current status of the system.

- `Troubleshooting` folder

  This folder contains reports showing useful information for resolving problems. In the event of a system problem, use the reports in this folder to check the cause of the problem. In addition, real-time reports as well as historical reports can be displayed.

  - `Real-Time` folder

    This folder contains real-time reports for checking the current status of the monitored system.

  - `Recent Past` folder

    This folder contains historical reports showing the cumulative data for every minute in the last hour. In Agent for SAN Switch, this folder

also contains historical reports that display information for the last 24 hours.

- `Storage Resources` folder

  For Agent for RAID, this folder exists under the `RAID` folder. The `Storage Resources` folder contains subfolders for different types of storage systems, and these subfolders store reports for each resource.

- `HNAS` folder

  For Agent for NAS, this folder contains reports to be used exclusively by NAS Platform.

Excluding the `Storage Resources` folder for Agent for RAID and the `HNAS` folder for Agent for NAS, the above folders contain the subfolders described below. Depending on the particular folder, the actual subfolders that are contained might vary.

- `Advanced` folder

  This folder contains reports that use records for which **Log** is set to **No** by default. To display any of these reports, you must use Performance Reporter to change the record setting so that **Log** is set to **Yes**.

- `Drilldown Only` folder

  This folder contains reports that are displayed as drilldown reports (field level). Use it to display detailed information about the fields contained in the applicable report.

The following are examples of the organization of report folders for each Agent. Folder names are enclosed in angle brackets (<>).

Agent for RAID

```
<RAID>
+-- <Monthly Trend>
|    +-- Pool Relocation Status(8.2)
|    +-- Pool Relocation Status(8.6)
|    +-- Pool Tier Relocation Status(8.2)
|    +-- Pool Tier Relocation Status(8.6)
|    +-- Pool Tier Type Performance Status(7.8)
|    +-- Pool Tier Type Performance Status(8.0)
|    +-- Pool Tier Type Performance Status(8.6)
|    +-- Pool Usage Trend(7.1)
|    +-- Pool Usage Trend(9.0)
|    +-- Pool Usage Trend(9.4)
|    +-- Subsystem Read IO Rate Trend
|    +-- Subsystem Read Transfer Rate Trend
|    +-- Subsystem Write IO Rate Trend
|    +-- Subsystem Write Transfer Rate Trend
|    +-- <Drilldown Only>
|         +-- Pool Relocation Moved Pages Status(8.2)
|         +-- Pool Relocation Moved Pages Status(8.6)
|         +-- Pool Tier Relocation Trend(8.2)
|         +-- Pool Tier Relocation Trend(8.6)
|         +-- Pool Tier Type IO Rate Status(8.0)
|         +-- Pool Tier Type IO Rate Status(8.6)
|         +-- Pool Tier Type Usage Trend(7.8)
```

```
             |              +-- Pool Tier Type Usage Trend(9.4)
             |              +-- Pool Tier Type Utilization Rate Status(7.8)
             |              +-- Virtual Volume Tier Type Usage Trend(7.8)
             |              +-- Virtual Volume Tier Type Used Capacity Trend(8.0)
             |              +-- Virtual Volume Usage Trend(7.1)
             |              +-- Virtual Volume Usage Trend(9.0)
             |
             +-- <Status Reporting>
             |     +-- <Daily Trend>
             |     |     +-- Access Path Usage Status(9.0)
             |     |     +-- Array Group IO Rate Status(5.0)
             |     |     +-- Array Group Response Rate Status
             |     |     +-- Array Group Transfer Rate Status(5.0)
             |     |     +-- CHA Performance Status(8.6)
             |     |     +-- CLPR Usage Status(6.0)
             |     |     +-- Logical Device IO Rate Status
             |     |     +-- Logical Device IO Rate Status(8.6)
             |     |     +-- Logical Device Transfer Rate Status
             |     |     +-- Logical Device Transfer Rate Status(8.6)
             |     |     +-- Pool Frequency Distribution Status(8.6)
             |     |     +-- Pool Performance Status(7.8)
             |     |     +-- Pool Performance Status(8.0)
             |     |     +-- Pool Performance Status(8.4)
             |     |     +-- Pool Tier IO Rate Status(8.2)
             |     |     +-- Port IO Rate Status
             |     |     +-- Port Performance Status(8.6)
             |     |     +-- Port Performance Status(8.8)
             |     |     +-- Port Transfer Rate Status
             |     |     +-- Processor Busy Rate Status(6.0)
             |     |     +-- Processor Busy Rate Status(8.6)
             |     |     +-- Processor Resource Utilization Status(8.6)
             |     |     +-- Subsystem Cache Memory Usage Status
             |     |     +-- Subsystem IO Rate Status
             |     |     +-- Subsystem Transfer Rate Status
             |     |     +-- <Drilldown Only>
             |     |          +-- Array Group Read IO Rate Status(5.0)
             |     |          +-- Array Group Read Transfer Rate Status(5.0)
             |     |          +-- Array Group Write IO Rate Status(5.0)
             |     |          +-- Array Group Write Transfer Rate Status(5.0)
             |     |          +-- CHA Avg IO Rate Status(8.6)
             |     |          +-- CHA Avg Transfer Rate Status(8.6)
             |     |          +-- Logical Device 1 Read Response Rate Status(7.1)
             |     |          +-- Logical Device 1 Read Response Rate Status(8.6)
             |     |          +-- Logical Device 2 Read Response Rate Status(7.1)
             |     |          +-- Logical Device 2 Read Response Rate Status(8.6)
             |     |          +-- Logical Device 3 Read Response Rate Status(7.1)
             |     |          +-- Logical Device 3 Read Response Rate Status(8.6)
             |     |          +-- Logical Device Read IO Rate Status
             |     |          +-- Logical Device Read IO Rate Status(8.6)
             |     |          +-- Logical Device Read Response Rate Status(7.1)
             |     |          +-- Logical Device Read Response Rate Status(8.6)
             |     |          +-- Logical Device Read Transfer Rate Status
             |     |          +-- Logical Device Read Transfer Rate Status(8.6)
             |     |          +-- Logical Device Write IO Rate Status
             |     |          +-- Logical Device Write IO Rate Status(8.6)
             |     |          +-- Logical Device Write Transfer Rate Status
             |     |          +-- Logical Device Write Transfer Rate Status(8.6)
             |     |          +-- Pool Read IO Rate Status(8.0)
             |     |          +-- Pool Read Response Rate Status(7.8)
             |     |          +-- Pool Read Transfer Rate Status(8.4)
```

```
|       |               +-- Pool Tier IO Rate Trend(8.2)
|       |               +-- Pool Write IO Rate Status(8.0)
|       |               +-- Pool Write Transfer Rate Status(8.4)
|       |               +-- Port Avg IO Rate Status
|       |               +-- Port Avg IO Rate Status(8.6)
|       |               +-- Port Avg Transfer Rate Status
|       |               +-- Port Avg Transfer Rate Status(8.6)
|       |               +-- Port Initiator Avg IO Rate Status(8.8)
|       |               +-- Port Initiator Avg Transfer Rate Status(8.8)
|       |               +-- Virtual Volume Tier Type IO Rate Trend(8.2)
|       |
|       +-- <Real-Time>
|           +-- Access Path Usage Status(9.0)
|           +-- Array Group Configuration(5.0)
|           +-- Array Group Configuration(7.5)
|           +-- Array Group IO Rate Status(5.0)
|           +-- Array Group Response Rate Status
|           +-- Array Group Transfer Rate Status(5.0)
|           +-- CHA Performance Status(8.6)
|           +-- CLPR Configuration(6.0)
|           +-- CLPR Usage Per Controller Status(7.2)
|           +-- CLPR Usage Status(6.0)
|           +-- CLPR Usage Status(7.2)
|           +-- External LDEV Configuration(5.0)
|           +-- Logical Device Configuration
|           +-- Logical Device Configuration(5.0)
|           +-- Logical Device Configuration(7.1)
|           +-- Logical Device Configuration(7.8)
|           +-- Logical Device Configuration(8.6)
|           +-- Logical Device IO Rate Status
|           +-- Logical Device IO Rate Status(8.6)
|           +-- Logical Device Transfer Rate Status
|           +-- Logical Device Transfer Rate Status(8.6)
|           +-- LUSE Configuration(5.0)
|           +-- LUSE Configuration(7.1)
|           +-- Physical Device Busy Rate Status(7.2)
|           +-- Physical Device Busy Rate Status(7.5)
|           +-- Pool Configuration(7.1)
|           +-- Pool Configuration(9.0)
|           +-- Pool Configuration(9.4)
|           +-- Pool Tier Type Configuration(7.8)
|           +-- Pool Tier Type Configuration(8.0)
|           +-- Pool Tier Type Configuration(8.2)
|           +-- Pool Tier Type Configuration(9.4)
|           +-- Port Configuration
|           +-- Port Configuration(5.0)
|           +-- Port Configuration(7.0)
|           +-- Port Configuration(8.6)
|           +-- Port IO Rate Status
|           +-- Port Performance Status(8.6)
|           +-- Port Performance Status(8.8)
|           +-- Port Transfer Rate Status
|           +-- Processor Busy Rate Status(6.0)
|           +-- Processor Busy Rate Status(8.6)
|           +-- Processor Resource Utilization Status(8.6)
|           +-- Subsystem Cache Memory Usage Status
|           +-- Subsystem Cache Memory Usage Status(7.2)
|           +-- Subsystem Configuration
|           +-- Subsystem IO Rate Status
|           +-- Subsystem Transfer Rate Status
```

```
        |              +-- Virtual Volume Configuration(7.1)
        |              +-- Virtual Volume Configuration(9.0)
        |              +-- Virtual Volume Tier Type Configuration(7.8)
        |
        +-- <Storage Resources>
        |     +-- <HUS100/AMS2000>
        |     |     +-- <1. Cache>
        |     |     |     +-- Cache Read Hit %
        |     |     |     +-- Cache Usage %
        |     |     |     +-- Max Write Pending Usage %
        |     |     |     +-- Write Pending Usage %
        |     |     +-- <2. Front End Port>
        |     |     |     +-- Port Avg IOPS
        |     |     |     +-- Port Avg Transfer
        |     |     |     +-- Port Configuration (Tabular)
        |     |     |     +-- Port Max IOPS
        |     |     |     +-- Port Max Transfer
        |     |     +-- <3. Controller>
        |     |     |     +-- Controller Busy
        |     |     +-- <4. Parity Group>
        |     |     |     +-- PG Random Read IOPS
        |     |     |     +-- PG Random Read Transfer
        |     |     |     +-- PG Random Write IOPS
        |     |     |     +-- PG Random Write Transfer
        |     |     |     +-- PG Read Hit %
        |     |     |     +-- PG Sequential Read IOPS
        |     |     |     +-- PG Sequential Read Transfer
        |     |     |     +-- PG Sequential Write IOPS
        |     |     |     +-- PG Sequential Write Transfer
        |     |     |     +-- Parity Group Configuration (Tabular)
        |     |     |     +-- Physical Device Busy %
        |     |     +-- <5. LDEV>
        |     |     |     +-- Daily IOPS for LDEV
        |     |     |     +-- Daily Transfer for LDEV
        |     |     |     +-- LDEV Configuration (Tabular)
        |     |     |     +-- LDEV Performance Summary Report
        |     |     |     +-- LDEV Random IOPS
        |     |     |     +-- LDEV Random Transfer
        |     |     |     +-- LDEV Read Hit %
        |     |     |     +-- LDEV Read IOPS
        |     |     |     +-- LDEV Read Response Time
        |     |     |     +-- LDEV Read Transfer
        |     |     |     +-- LDEV Sequential IOPS
        |     |     |     +-- LDEV Sequential Transfer
        |     |     |     +-- LDEV Total Response Time
        |     |     |     +-- LDEV Write IOPS
        |     |     |     +-- LDEV Write Response Time
        |     |     |     +-- LDEV Write Transfer
        |     |     |     +-- Up to 20 LDEV Bars for Yesterday's IOPS
        |     |     |     +-- Up to 20 LDEV Bars for Yesterday's Transfer
        |     |     +-- <6. Subsystem>
        |     |     |     +-- Total Read/Write IOPS (Line)
        |     |     |     +-- Total Read/Write IOPS (Stacked)
        |     |     |     +-- Total Read/Write Transfer (Line)
        |     |     |     +-- Total Read/Write Transfer (Stacked)
        |     |     +-- <7. HDP>
        |     |           +-- Pool Read IOPS
        |     |           +-- Pool Read Response Times
        |     |           +-- Pool Space Usage %
        |     |           +-- Pool Write IOPS
```

```
        |     |                +-- Pool Write Response Times
        |     |                +-- Tier IOPS Usage % from Monitor
        |     |                +-- Tier Pages Demoted
        |     |                +-- Tier Pages Promoted
        |     |                +-- Tier Pages Relocation Status
        |     |                +-- Tier Space Usage %
        |     |                +-- Tier Space Usage % by DP-VOL
        |     |
        |     +-- <VSP G1000/VSP/HUS VM> (See Note)
        |     |     | Note: This folder remains when you perform a version
        |     |     |       upgrade installation where the version before
        |     |     |       the upgrade is v8.0.1 or later and earlier
        |     |     |       than v8.1.3.
        |     |     |       The reports for this folder are the same as
        |     |     |       those for the VSP G1000/VSP/VSP Gx00 Fx00 folder.
        |     |     +-- <1. Cache>
        |     |     |     +-- Cache Read Hit %
        |     |     |     +-- Cache Usage %
        |     :     :
        |     :     :
        |     |     +-- <8. TC/HUR>
        |     |           +-- TC/HUR Initiator Port List
        |     |           +-- TC/HUR RCU Target Port List
        |     |
        |     +-- <VSP G1000/VSP/VSP Gx00> (See Note)
        |     |     | Note: This folder remains when you perform a version
        |     |     |       upgrade installation where the version before
        |     |     |       the upgrade is v8.1.3 or later and earlier
        |     |     |       than v8.4
        |     |     |       The reports for this folder are the same as
        |     |     |       those for the VSP G1000/VSP/VSP Gx00 Fx00 folder.
        |     |     +-- <1. Cache>
        |     |     |     +-- Cache Read Hit %
        |     |     |     +-- Cache Usage %
        |     :     :
        |     :     :
        |     |     +-- <8. TC/HUR>
        |     |           +-- TC/HUR Initiator Port List
        |     |           +-- TC/HUR RCU Target Port List
        |     |
        |     +-- <VSP G1000/VSP/VSP Gx00 Fx00>
        |           +-- <1. Cache>
        |           |     +-- Cache Read Hit %
        |           |     +-- Cache Usage %
        |           |     +-- Max Write Pending Usage %
        |           |     +-- Write Pending Usage %
        |           +-- <2. Front End Port>
        |           |     +-- Port Avg IOPS
        |           |     +-- Port Avg Transfer
        |           |     +-- Port Configuration (Tabular)
        |           |     +-- Port Max IOPS
        |           |     +-- Port Max Transfer
        |           +-- <3. Processor>
        |           |     +-- USP(V) BE Processor Busy %
        |           |     +-- USP(V) FE Processor Busy %
        |           |     +-- VSD Busy % by MPB
        |           |     +-- VSD Busy % by Processor ID
        |           +-- <4. Parity Group>
        |           |     +-- PG Busy %
        |           |     +-- PG Random Read IOPS
```

```
|              |      +-- PG Random Read Transfer
|              |      +-- PG Random Write IOPS
|              |      +-- PG Random Write Transfer
|              |      +-- PG Read Hit %
|              |      +-- PG Sequential Read IOPS
|              |      +-- PG Sequential Read Transfer
|              |      +-- PG Sequential Write IOPS
|              |      +-- PG Sequential Write Transfer
|              |      +-- Parity Group Configuration (Tabular)
|         +-- <5. LDEV>
|         |    +-- <CU 40-7F>
|         |    |    +-- CU 40-7F Daily IOPS for LDEV
|         |    |    +-- CU 40-7F Daily Transfer for LDEV
|         |    |    +-- CU 40-7F LDEV Configuration (Tabular)
|         |    |    +-- CU 40-7F LDEV Performance Summary Report
|         |    |    +-- CU 40-7F LDEV Random IOPS
|         |    |    +-- CU 40-7F LDEV Random Transfer
|         |    |    +-- CU 40-7F LDEV Read Hit %
|         |    |    +-- CU 40-7F LDEV Read IOPS
|         |    |    +-- CU 40-7F LDEV Read Response Time
|         |    |    +-- CU 40-7F LDEV Read Transfer
|         |    |    +-- CU 40-7F LDEV Sequential IOPS
|         |    |    +-- CU 40-7F LDEV Sequential Transfer
|         |    |    +-- CU 40-7F LDEV Total Response Time
|         |    |    +-- CU 40-7F LDEV Write IOPS
|         |    |    +-- CU 40-7F LDEV Write Response Time
|         |    |    +-- CU 40-7F LDEV Write Transfer
|         |    |    +-- CU 40-7F Up to 20 LDEV Bars
|         |    |                        for Yesterday's IOPS
|         |    |    +-- CU 40-7F Up to 20 LDEV Bars
|         |    |                        for Yesterday's Transfer
|         |    +-- <CU 80-BF>
|         |    |    +-- CU 80-BF Daily IOPS for LDEV
|         |    |    +-- CU 80-BF Daily Transfer for LDEV
|         |    |    +-- CU 80-BF LDEV Configuration (Tabular)
|         |    |    +-- CU 80-BF LDEV Performance Summary Report
|         |    |    +-- CU 80-BF LDEV Random IOPS
|         |    |    +-- CU 80-BF LDEV Random Transfer
|         |    |    +-- CU 80-BF LDEV Read Hit %
|         |    |    +-- CU 80-BF LDEV Read IOPS
|         |    |    +-- CU 80-BF LDEV Read Response Time
|         |    |    +-- CU 80-BF LDEV Read Transfer
|         |    |    +-- CU 80-BF LDEV Sequential IOPS
|         |    |    +-- CU 80-BF LDEV Sequential Transfer
|         |    |    +-- CU 80-BF LDEV Total Response Time
|         |    |    +-- CU 80-BF LDEV Write IOPS
|         |    |    +-- CU 80-BF LDEV Write Response Time
|         |    |    +-- CU 80-BF LDEV Write Transfer
|         |    |    +-- CU 80-BF Up to 20 LDEV Bars
|         |    |                        for Yesterday's IOPS
|         |    |    +-- CU 80-BF Up to 20 LDEV Bars
|         |    |                        for Yesterday's Transfer
|         |    +-- <CU C0-FF>
|         |    |    +-- CU C0-FF Daily IOPS for LDEV
|         |    |    +-- CU C0-FF Daily Transfer for LDEV
|         |    |    +-- CU C0-FF LDEV Configuration (Tabular)
|         |    |    +-- CU C0-FF LDEV Performance Summary Report
|         |    |    +-- CU C0-FF LDEV Random IOPS
|         |    |    +-- CU C0-FF LDEV Random Transfer
|         |    |    +-- CU C0-FF LDEV Read Hit %
```

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```
|              |       |           +-- CU C0-FF LDEV Read IOPS
|              |       |           +-- CU C0-FF LDEV Read Response Time
|              |       |           +-- CU C0-FF LDEV Read Transfer
|              |       |           +-- CU C0-FF LDEV Sequential IOPS
|              |       |           +-- CU C0-FF LDEV Sequential Transfer
|              |       |           +-- CU C0-FF LDEV Total Response Time
|              |       |           +-- CU C0-FF LDEV Write IOPS
|              |       |           +-- CU C0-FF LDEV Write Response Time
|              |       |           +-- CU C0-FF LDEV Write Transfer
|              |       |           +-- CU C0-FF Up to 20 LDEV Bars
|              |       |                             for Yesterday's IOPS
|              |       |           +-- CU C0-FF Up to 20 LDEV Bars
|              |       |                             for Yesterday's Transfer
|              |     +-- CU 00-3F Daily IOPS for LDEV
|              |     +-- CU 00-3F Daily Transfer for LDEV
|              |     +-- CU 00-3F LDEV Configuration (Tabular)
|              |     +-- CU 00-3F LDEV Performance Summary Report
|              |     +-- CU 00-3F LDEV Random IOPS
|              |     +-- CU 00-3F LDEV Random Transfer
|              |     +-- CU 00-3F LDEV Read Hit %
|              |     +-- CU 00-3F LDEV Read IOPS
|              |     +-- CU 00-3F LDEV Read Response Time
|              |     +-- CU 00-3F LDEV Read Transfer
|              |     +-- CU 00-3F LDEV Sequential IOPS
|              |     +-- CU 00-3F LDEV Sequential Transfer
|              |     +-- CU 00-3F LDEV Total Response Time
|              |     +-- CU 00-3F LDEV Write IOPS
|              |     +-- CU 00-3F LDEV Write Response Time
|              |     +-- CU 00-3F LDEV Write Transfer
|              |     +-- CU 00-3F Up to 20 LDEV Bars
|              |                         for Yesterday's IOPS
|              |     +-- CU 00-3F Up to 20 LDEV Bars
|              |                         for Yesterday's Transfer
|           +-- <6. Subsystem>
|           |     +-- Total Read/Write IOPS (Line)
|           |     +-- Total Read/Write IOPS (Stacked)
|           |     +-- Total Read/Write Transfer (Line)
|           |     +-- Total Read/Write Transfer (Stacked)
|           +-- <7. HDP/HDT>
|           |     +-- Pool Read IOPS
|           |     +-- Pool Read Response Times
|           |     +-- Pool Space Usage %
|           |     +-- Pool Write IOPS
|           |     +-- Pool Write Response Times
|           |     +-- Tier IOPS
|           |     +-- Tier IOPS Usage % from Monitor
|           |     +-- Tier IOPS by DP-VOL
|           |     +-- Tier Pages Demoted
|           |     +-- Tier Pages Promoted
|           |     +-- Tier Pages Relocation Status
|           |     +-- Tier Space Usage %
|           |     +-- Tier Space Usage % by DP-VOL
|           +-- <8. TC/HUR>
|                 +-- TC/HUR Initiator Port List
|                 +-- TC/HUR RCU Target Port List
|
+-- <Troubleshooting>
     +-- <Real-Time>
     |     +-- Array Group Busy Rate - Top 10(6.0)
     |     +-- Array Group Busy Rate - Top 10(7.0)
```

```
|   +-- Array Group Busy Rate - Top 10(7.3)
|   +-- Array Group Read Cache Hit Rate - Worst 10(5.0)
|   +-- Array Group Read IO Rate - Top 10(5.0)
|   +-- Array Group Read Response Rate - Top 10
|   +-- Array Group Read Transfer Rate - Top 10(5.0)
|   +-- Array Group Total Response Rate - Top 10
|   +-- Array Group Write Cache Hit Rate - Worst 10(5.0)
|   +-- Array Group Write IO Rate - Top 10(5.0)
|   +-- Array Group Write Response Rate - Top 10
|   +-- Array Group Write Transfer Rate - Top 10(5.0)
|   +-- Logical Device Read Cache Hit Rate - Worst 10
|   +-- Logical Device Read Cache Hit Rate - Worst 10(8.6)
|   +-- Logical Device Read IO Rate - Top 10
|   +-- Logical Device Read IO Rate - Top 10(8.6)
|   +-- Logical Device Read Response Rate - Top 10(6.0)
|   +-- Logical Device Read Response Rate - Top 10(8.6)
|   +-- Logical Device Read Transfer Rate - Top 10
|   +-- Logical Device Read Transfer Rate - Top 10(8.6)
|   +-- Logical Device Write Cache Hit Rate - Worst 10
|   +-- Logical Device Write Cache Hit Rate - Worst 10(8.6)
|   +-- Logical Device Write IO Rate - Top 10
|   +-- Logical Device Write IO Rate - Top 10(8.6)
|   +-- Logical Device Write Response Rate - Top 10(6.0)
|   +-- Logical Device Write Response Rate - Top 10(8.6)
|   +-- Logical Device Write Transfer Rate - Top 10
|   +-- Logical Device Write Transfer Rate - Top 10(8.6)
|   +-- Physical Device Busy Rate - Top 10(7.2)
|   +-- Physical Device Busy Rate - Top 10(7.5)
|   +-- Port IO Rate - Top 10
|   +-- Port Transfer Rate - Top 10
|   +-- Processor Busy Rate - Top 10(6.0)
|   +-- Processor Busy Rate - Top 10(8.6)
|   +-- Processor Busy Rate 2 - Top 10(6.0)
|   +-- Processor Busy Rate 2 - Top 10(8.6)
|
+-- <Recent Past>
    +-- Access Path Usage Details(9.0)
    +-- Array Group Performance Details(5.0)
    +-- Array Group Performance Details(7.0)
    +-- Array Group Performance Details(7.3)
    +-- Array Group Performance Details(7.4)
    +-- Array Group Performance Details(8.6)
    +-- CHA Performance Details(8.6)
    +-- CLPR Usage Details(6.0)
    +-- CLPR Usage Details(7.2)
    +-- CLPR Usage Per Controller Details(7.2)
    +-- Logical Device 1 Performance Details(7.1)
    +-- Logical Device 1 Performance Details(8.6)
    +-- Logical Device 1 Performance Extended(7.4)
    +-- Logical Device 1 Performance Extended(7.6)
    +-- Logical Device 1 Performance Extended(8.6)
    +-- Logical Device 2 Performance Details(7.1)
    +-- Logical Device 2 Performance Details(8.6)
    +-- Logical Device 2 Performance Extended(7.4)
    +-- Logical Device 2 Performance Extended(7.6)
    +-- Logical Device 2 Performance Extended(8.6)
    +-- Logical Device 3 Performance Details(7.1)
    +-- Logical Device 3 Performance Details(8.6)
    +-- Logical Device 3 Performance Extended(7.4)
    +-- Logical Device 3 Performance Extended(7.6)
```

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```
                    +-- Logical Device 3 Performance Extended(8.6)
                    +-- Logical Device Performance Details
                    +-- Logical Device Performance Details(6.0)
                    +-- Logical Device Performance Details(7.0)
                    +-- Logical Device Performance Details(7.1)
                    +-- Logical Device Performance Details(8.6)
                    +-- Logical Device Performance Extended(7.4)
                    +-- Logical Device Performance Extended(7.6)
                    +-- Logical Device Performance Extended(8.6)
                    +-- Physical Device Busy Rate Details(7.2)
                    +-- Physical Device Busy Rate Details(7.5)
                    +-- Port Performance Details
                    +-- Port Performance Details(8.6)
                    +-- Port Performance Details(8.8)
                    +-- Processor Busy Rate Details(6.0)
                    +-- Processor Busy Rate Details(8.6)
                    +-- Processor Resource Utilization Details(8.6)
                    +-- Subsystem Cache Memory Usage Details
                    +-- Subsystem Cache Memory Usage Details(6.0)
                    +-- Subsystem Cache Memory Usage Details(7.2)
                    +-- Subsystem Performance Details
                    +-- Virtual Volume Frequency Distribution Rate Status(8.6)
                    +-- Virtual Volume Tier IO Rate Status(8.2)
```

Agent for SAN Switch

```
        <SAN Switch>
         +-- <Monthly Trend>
         |    +-- Switch Rcvd Bytes Rate Trend
         |    +-- Switch Rcvd Kbytes Trend
         |    +-- Switch Xmitd Bytes Rate Trend
         |    +-- Switch Xmitd Kbytes Trend
         |    +-- <Drilldown Only>
         |         +-- Link Rcvd Bytes Rate
         |         +-- Link Rcvd Kbytes
         |         +-- Link Xmitd Bytes Rate
         |         +-- Link Xmitd Kbytes
         |         +-- Port Rcvd Bytes Rate Trend
         |         +-- Port Rcvd Kbytes Trend
         |         +-- Port Xmitd Bytes Rate Trend
         |         +-- Port Xmitd Kbytes Trend
         +-- <Status Reporting>
         |    +-- <Daily Trend>
         |         +-- Device Detail Status
         |         +-- Port Detail Status
         |         +-- Port Operation Status
         |         +-- Switch Buffer Flow Status
         |         +-- Switch Detail Status
         |         +-- Switch Operation Status
         |         +-- Switch Rcvd Bytes Rate Status
         |         +-- Switch Rcvd Kbytes Status
         |         +-- Switch Xmitd Bytes Rate Status
         |         +-- Switch Xmitd Kbytes Status
         |         +-- <Drilldown Only>
         |              +-- Connected Port Detail Status
         |              +-- Link Buffer Flow
         |              +-- Link Rcvd Bytes Rate
         |              +-- Link Rcvd Kbytes
         |              +-- Link Xmitd Bytes Rate
```

```
|                     +-- Link Xmitd Kbytes
|                     +-- Port Buffer Flow Status
|                     +-- Port Detail Overview
|                     +-- Port Rcvd Bytes Rate Status
|                     +-- Port Rcvd Kbytes Status
|                     +-- Port Xmitd Bytes Rate Status
|                     +-- Port Xmitd Kbytes Status
|                     +-- Switch Detail Overview
|       +-- <Real-Time>
|             +-- Device Detail Status
|             +-- Port Detail Status
|             +-- Port Operation Status
|             +-- Switch Buffer Flow Status
|             +-- Switch Detail Status
|             +-- Switch List Status
|             +-- Switch Operation Status
|             +-- Switch Rcvd Bytes Rate Status
|             +-- Switch Rcvd Kbytes Status
|             +-- Switch Xmitd Bytes Rate Status
|             +-- Switch Xmitd Kbytes Status
|             +-- <Drilldown Only>
|                     +-- Connected Port Detail Status
|                     +-- Link Buffer Flow
|                     +-- Link Rcvd Bytes Rate
|                     +-- Link Rcvd Kbytes
|                     +-- Link Xmitd Bytes Rate
|                     +-- Link Xmitd Kbytes
|                     +-- Port Buffer Flow Status
|                     +-- Port Detail Overview
|                     +-- Port Rcvd Bytes Rate Status
|                     +-- Port Rcvd Kbytes Status
|                     +-- Port Xmitd Bytes Rate Status
|                     +-- Port Xmitd Kbytes Status
|                     +-- Switch Detail Overview
+-- <Troubleshooting>
    +-- <Real-Time>
    |             +-- CRC Error Count - Top 10 Port
    |             +-- CRC Error Count - Top 10 Switch
    |             +-- Encoding Disparity Count - Top 10 Port
    |             +-- Encoding Disparity Count - Top 10 Switch
    |             +-- Loss of Signal Count - Top 10 Port
    |             +-- Loss of Signal Count - Top 10 Switch
    |             +-- Loss of Sync Count - Top 10 Port
    |             +-- Loss of Sync Count - Top 10 Switch
    |             +-- Rcvd Kbytes - Top 10 Port
    |             +-- Rcvd Kbytes - Top 10 Switch
    |             +-- Xmitd Kbytes - Top 10 Port
    |             +-- Xmitd Kbytes - Top 10 Switch
    +-- <Recent Past>
          +-- Port Operation Status
          +-- Switch CRC Error Count
          +-- Switch Operation Status
          +-- Switch Rcvd Kbytes
          +-- Switch Xmitd Kbytes
          +-- <Drilldown Only>
                  +-- Link CRC Error Count
                  +-- Link Rcvd Kbytes
                  +-- Link Xmitd Kbytes
                  +-- Port CRC Error Count
                  +-- Port Detail Overview
```

```
                         +-- Port Rcvd Kbytes
                         +-- Port Xmitd Kbytes
                         +-- Switch Detail Overview
```

Agent for NAS

```
<NAS>
 +-- <Monthly Trend>
 |    +-- CPU Trend
 |    +-- CPU Trend(Multi-Agent)
 |    +-- Process Trend
 +-- <Status Reporting>
 |    +-- <Daily Trend>
 |    |    +-- Channel Node Configuration(Multi-Agent)
 |    |    +-- Channel Node Platform Configuration(Multi-Agent)
 |    |    +-- CPU Status(Multi-Agent)
 |    |    +-- Device Detail Status
 |    |    +-- File System Configuration
 |    |    +-- IP Address Configuration
 |    |    +-- Local File System Status
 |    |    +-- Network Status(Multi-Agent)
 |    |    +-- Workload Status(Multi-Agent)
 |    |    +-- <Advanced>
 |    |         +-- Device Usage Summary (Multi-Agent)
 |    +-- <Real-Time>
 |         +-- Channel Node Configuration
 |         +-- Channel Node Platform Configuration
 |         +-- CPU Status
 |         +-- Device Usage Status
 |         +-- Device Usage Summary
 |         +-- File System Configuration
 |         +-- Free Space Mbytes - Top 10 Local File Systems
 |         +-- IP Address Configuration
 |         +-- Network Status
 |         +-- System Utilization Status
 |         +-- Workload Status
 |         +-- <Drilldown Only>
 |              +-- Device Detail
 |              +-- File System Configuration Detail
 +-- <Troubleshooting>
 |    +-- <Real-Time>
 |    |    +-- CPU Usage - Top 10 Processes
 |    |    +-- Space Usage - Top 10 Local File Systems
 |    |    +-- System Overview
 |    |    +-- <Drilldown Only>
 |    |         +-- Local File System Detail
 |    |         +-- Process Detail
 |    +-- <Recent Past>
 |         +-- CPU Usage Summary
 |         +-- I/O Overview
 |         +-- Network Overview
 |         +-- System Overview
 +-- <HNAS>
      +-- <EVS>
      |    +-- EVS Configuration (6.4)
      +-- <File System>
      |    +-- File System Capacity (6.4)
      |    +-- File System Read Transfer Rate (6.4)
      |    +-- File System Total Ops/sec (6.4)
```

```
|       +-- File System Write Transfer Rate (6.4)
+-- <Node>
|       +-- Node Capacity (6.4)
|       +-- Node CPU Load (6.8)
|       +-- Node CPU Load Summary (6.8)
|       +-- Node CPU SMP Load (6.8)
|       +-- Node Disk Read Latency (6.4)
|       +-- Node Disk Stripe Write Latency (6.4)
|       +-- Node Disk Write Latency (6.4)
|       +-- Node Ethernet Throughput RX (6.4)
|       +-- Node Ethernet Throughput TX (6.4)
|       +-- Node Fibre Channel Throughput RX (6.4)
|       +-- Node Fibre Channel Throughput TX (6.4)
|       +-- Node File System Data Transfer Rate (6.4)
|       +-- Node File System Load (6.4)
|       +-- Node File System Total Ops/sec (6.4)
|       +-- Node FPGA Load (6.4)
|       +-- Node FSI Cache Usage (6.4)
|       +-- Node Heap Cache Usage (6.4)
|       +-- Node HSSI Throughput RX (6.8)
|       +-- Node HSSI Throughput TX (6.8)
|       +-- Node NVRAM Waited Allocs (6.4)
|       +-- Node Ops/sec (6.4)
|       +-- Node Ops/sec (6.6)
|       +-- Node Running Bossock Fibers (6.4)
|       +-- Node Running Pi-Tcp-Socks Rcv Fibers (6.6)
+-- <SMU>
|       +-- SMU Capacity (6.4)
+-- <Storage Pool>
|       +-- Storage Pool Capacity (6.4)
+-- <System Drive>
        +-- System Drive Capacity (6.4)
```

Notes on Using the Solution Set

This section describes notes on using the solution set of Agent for SAN Switch.

When 21 or more ports are assigned to a switch port module:

If all of the port information is displayed when a switch port module has 21 or more ports assigned, the graphs might become too complex. In this case, change the definitions for the solution set reports.

Following is an example of changing the definitions for reports:

To display the data for the port numbers from 0 to 19, as well as for the switch whose WWN is 10000060691216D8 in the `Port Rcvd Kbytes Status` report, use the **Edit > Filter** window of the Report wizard in Performance Reporter to specify the fields to be filtered and the conditional expression, as follows:

Fields to be filtered	Formula
PI_PTS_PORT_NUMBER	Port Number >= "0" AND

Fields to be filtered	Formula
PI_PTS_SWITCH_WWN	Port Number <= "19" AND Switch WWN = "10000060691216D8"

Note: For details about the report definitions, see the chapter that describes how to create user-defined reports in the *Tuning Manager User Guide*.

Abbreviations Used for Storage Systems

This manual uses abbreviations and generic names to represent storage systems that Agent for RAID supports. The following table lists abbreviations and generic names for the storage systems:

Table 1-30 Abbreviations Used for Storage Systems

Full Name	Abbreviation			
Hitachi Adaptable Modular Storage 200	Hitachi AMS200	Hitachi AMS series	Hitachi AMS/WMS series	Hitachi AMS2000/AMS/WMS/SMS series
Hitachi Adaptable Modular Storage 500	Hitachi AMS500			
Hitachi Adaptable Modular Storage 1000	Hitachi AMS1000			
Hitachi Workgroup Modular Storage 100	Hitachi WMS100	Hitachi WMS series		
Hitachi Adaptable Modular Storage 2100	Hitachi AMS2100 (H/W Rev. 0100)	Hitachi AMS2000 series		
	Hitachi AMS2100 (H/W Rev. 0200)			
Hitachi Adaptable Modular Storage 2300	Hitachi AMS2300 (H/W Rev. 0100)			
	Hitachi AMS2300 (H/W Rev. 0200)			
Hitachi Adaptable Modular Storage 2500	Hitachi AMS2500 (H/W Rev. 0100)			
	Hitachi AMS2500 (H/W Rev. 0200)			

Full Name	Abbreviation		
Hitachi Simple Modular Storage 100	Hitachi SMS100	Hitachi SMS series	
Hitachi Unified Storage 150	HUS150	HUS100 series	
Hitachi Unified Storage 130	HUS130		
Hitachi Unified Storage 110	HUS110		
Hitachi Universal Storage Platform V	USP V	Universal Storage Platform V/VM series	
Hitachi Universal Storage Platform VM	USP VM		
Hitachi Virtual Storage Platform	VSP	Virtual Storage Platform series	
Hitachi Virtual Storage Platform F350	VSP F350	VSP Fx00 models	
Hitachi Virtual Storage Platform F370	VSP F370		
Hitachi Virtual Storage Platform F400	VSP F400		
Hitachi Virtual Storage Platform F600	VSP F600		
Hitachi Virtual Storage Platform F700	VSP F700		
Hitachi Virtual Storage Platform F800	VSP F800		
Hitachi Virtual Storage Platform F900	VSP F900		
Hitachi Virtual Storage Platform G130	VSP G130	VSP Gx00 models	
Hitachi Virtual Storage Platform G200	VSP G200		
Hitachi Virtual Storage Platform G350	VSP G350		

Full Name		Abbreviation
Hitachi Virtual Storage Platform G370	VSP G370	
Hitachi Virtual Storage Platform G400	VSP G400	
Hitachi Virtual Storage Platform G600	VSP G600	
Hitachi Virtual Storage Platform G700	VSP G700	
Hitachi Virtual Storage Platform G800	VSP G800	
Hitachi Virtual Storage Platform G900	VSP G900	
Hitachi Virtual Storage Platform N400	VSP N400	VSP Nx00 models
Hitachi Virtual Storage Platform N600	VSP N600	
Hitachi Virtual Storage Platform N800	VSP N800	
Hitachi Virtual Storage Platform 5100	VSP 5100	VSP 5000 series
Hitachi Virtual Storage Platform 5500	VSP 5500	
Hitachi Virtual Storage Platform 5100H	VSP 5100H	
Hitachi Virtual Storage Platform 5500H	VSP 5500H	
Hitachi Virtual Storage Platform G1000	VSP G1000	
Hitachi Virtual Storage Platform G1500	VSP G1500	

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Full Name	Abbreviation
Hitachi Virtual Storage Platform F1500	VSP F1500
Hitachi Unified Storage VM	HUS VM

In addition to the generic names above, this chapter also uses the generic terms "midrange storage systems" and "enterprise storage systems" to classify storage systems. The following shows the storage systems that are classified as midrange storage systems and those that are classified as enterprise storage systems:

- Midrange storage systems
  HUS100 series
  Hitachi SMS series
  Hitachi AMS2000 series
  Hitachi AMS/WMS series

- Enterprise storage systems
  VSP Gx00 models (See **Note 1**)
  VSP Fx00 models (See **Note 1**)
  VSP Nx00 models (See **Note 1** and **Note 3**)
  HUS VM (See **Note 1**)
  VSP 5000 series (See **Note 2**)
  VSP G1000
  VSP G1500 (See **Note 2**)
  VSP F1500 (See **Note 2**)
  Virtual Storage Platform series
  Universal Storage Platform V/VM series

Note: *1:* In this manual, VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, and HUS VM are treated as enterprise storage systems.

Note: *2:* If you want to display a report for VSP 5000 series, VSP G1500, or VSP F1500, select the report for VSP G1000. The report for VSP G1000 also displays information of VSP 5000 series, VSP G1500, and VSP F1500.

Note: *3:* If you want to display a report for VSP Nx00 models, select the report for VSP Gx00. The report for VSP Gx00 also displays information of VSP Nx00 models.

Agent for RAID Reports (other than the Storage Resources folder)

From among the reports defined in the solution set, the table below lists the reports that are stored in a folder other than the `Storage Resources` folder, in alphabetical order.

Table 1-31 Agent for RAID Reports (other than the Storage Resources folder)

Report Name	Displayed Information	Storage Location
`Access Path Usage Details(9.0)`	Access path usage rate of the storage system for the last hour	`Reports/RAID/Troubleshooting/ Recent Past/`
`Access Path Usage Status(9.0)` (Hourly Historical Report)	Access path usage rate of the storage system for the last 24 hours	`Reports/RAID/Status Reporting/Daily Trend/`
`Access Path Usage Status(9.0)` (Real-Time Report)	Access path usage rate of the storage system	`Reports/RAID/Status Reporting/Real-Time/`
`Array Group Busy Rate - Top 10(6.0)`	The ten parity groups with the highest usages	`Reports/RAID/Troubleshooting/ Real-Time/`
`Array Group Busy Rate - Top 10(7.0)`	The following information about the ten parity groups with the highest usages: • Frequency and data transfer rate of random operations • Frequency and data transfer rate of sequential operations	`Reports/RAID/Troubleshooting/ Real-Time/`
`Array Group Busy Rate - Top 10(7.3)`	The following information about the ten parity groups with the highest usages: • Frequency and data transfer rate of random read and write operations • Frequency and data transfer rate of sequential read and write operations • Frequency and data transfer rate of random operations • Frequency and data transfer rate of sequential operations • Usage rate	`Reports/RAID/Troubleshooting/ Real-Time/`

Hitachi Tuning Manager Hardware Reports Reference

Report Name	Displayed Information	Storage Location
`Array Group Configuration(5.0)`	Configuration information about each parity group	`Reports/RAID/Status Reporting/Real-Time/`
`Array Group Configuration(7.5)`	Configuration information about each parity group	`Reports/RAID/Status Reporting/Real-Time/`
`Array Group IO Rate Status(5.0)` (Hourly Historical Report)	Read/write frequency of each parity group for the last 24 hours	`Reports/RAID/Status Reporting/Daily Trend/`
`Array Group IO Rate Status(5.0)` (Real-Time Report)	Read/write frequency of each parity group	`Reports/RAID/Status Reporting/Real-Time/`
`Array Group Performance Details(5.0)`	The following information about each parity group for the last hour: • Frequency and data transfer rate of read and write operations • Cache hit rate of read and write operations • Usage rate	`Reports/RAID/Troubleshooting/ Recent Past/`
`Array Group Performance Details(7.0)`	The following information about each parity group for the last hour: • Frequency and data transfer rate of read and write operations • Cache hit rate of read and write operations • Frequency and data transfer rate of random operations • Frequency and data transfer rate of sequential operations • Usage rate	`Reports/RAID/Troubleshooting/ Recent Past/`
`Array Group Performance Details(7.3)`	The following information about each parity group for the last hour: • Frequency and data transfer rate of read and write operations • Cache hit rate of read and write operations • Frequency and data transfer rate of random operations	`Reports/RAID/Troubleshooting/ Recent Past/`

Report Name	Displayed Information	Storage Location
	• Frequency and data transfer rate of sequential operations • Frequency and data transfer rate of random read and write operations • Frequency and data transfer rate of sequential read and write operations • Usage rate	
Array Group Performance Details(7.4)	The following information about each parity group for the last hour: • Frequency and data transfer rate of read and write operations • Cache hit rate and percentage of read and write operations • Frequency, data transfer rate, and percentage of random operations • Frequency, data transfer rate, and percentage of sequential operations • Frequency, data transfer rate, and percentage of random read and write operations • Frequency, data transfer rate, and percentage of sequential read and write operations • Usage rate	Reports/RAID/Troubleshooting/ Recent Past/
Array Group Performance Details(8.6)	The following information about each parity group for the last hour: • Frequency and data transfer rate of read and write operations • Cache hit rate and percentage of read and write operations • Frequency, data transfer rate, and percentage of random operations • Frequency, data transfer rate, and percentage of sequential operations • Frequency, data transfer rate, and percentage of	Reports/RAID/Troubleshooting/ Recent Past/

Report Name	Displayed Information	Storage Location
	• random read and write operations • Frequency, data transfer rate, and percentage of sequential read and write operations • Usage rate	
`Array Group Read Cache Hit Rate – Worst 10(5.0)`	The ten parity groups with the lowest cache hit rates of read operations	`Reports/RAID/Troubleshooting/Real-Time/`
`Array Group Read IO Rate – Top 10(5.0)`	The ten parity groups with the highest read frequencies	`Reports/RAID/Troubleshooting/Real-Time/`
`Array Group Read IO Rate Status(5.0)`	Read frequency of each parity group for the last 24 hours	`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`
`Array Group Read Response Rate – Top 10`	The ten parity groups with the longest average processing times per read request	`Reports/RAID/Troubleshooting/Real-Time/`
`Array Group Read Transfer Rate – Top 10(5.0)`	The ten parity groups with the fastest data transfer rates of read operations	`Reports/RAID/Troubleshooting/Real-Time/`
`Array Group Read Transfer Rate Status(5.0)`	Read data transfer rate of each parity group for the last 24 hours	`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`
`Array Group Response Rate Status` (Hourly Historical Report)	Average processing time of read and write operations for each parity group for the last 24 hours	`Reports/RAID/Status Reporting/Daily Trend/`
`Array Group Response Rate Status` (Real-Time Report)	Average processing time of read and write operations for each parity group	`Reports/RAID/Status Reporting/Real-Time/`
`Array Group Total Response Rate – Top 10`	The ten parity groups with the longest average processing times per read and write request	`Reports/RAID/Troubleshooting/Real-Time/`
`Array Group Transfer Rate Status(5.0)` (Hourly Historical Report)	Read/write data transfer rate of each parity group for the last 24 hours	`Reports/RAID/Status Reporting/Daily Trend/`
`Array Group Transfer Rate Status(5.0)` (Real-Time Report)	Read/write data transfer rate of each parity group	`Reports/RAID/Status Reporting/Real-Time/`

Report Name	Displayed Information	Storage Location
Array Group Write Cache Hit Rate – Worst 10(5.0)	The ten parity groups with the lowest cache hit rates of write operations	Reports/RAID/Troubleshooting/ Real-Time/
Array Group Write IO Rate – Top 10(5.0)	The ten parity groups with the highest write frequencies	Reports/RAID/Troubleshooting/ Real-Time/
Array Group Write IO Rate Status(5.0)	Write frequency of each parity group for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/
Array Group Write Response Rate – Top 10	The ten parity groups with the longest average processing times per write request	Reports/RAID/Troubleshooting/ Real-Time/
Array Group Write Transfer Rate – Top 10(5.0)	The ten parity groups with the fastest data transfer rates of write operations	Reports/RAID/Troubleshooting/ Real-Time/
Array Group Write Transfer Rate Status(5.0)	Write data transfer rate of each parity group for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/
CHA Avg IO Rate Status(8.6)	Average read and write frequency of each storage system port for the last 24 hours, summarized as a CHA value	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/
CHA Avg Transfer Rate Status(8.6)	Average read and write data transfer rate of each storage system port for the last 24 hours, summarized as a CHA value	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/
CHA Performance Details(8.6)	Frequency and data transfer rate of read and write operations of each storage system port for the last hour, summarized as a CHA value	Reports/RAID/Troubleshooting/ Recent Past/
CHA Performance Status(8.6) (Hourly Historical Report)	Average frequency and data transfer rate of read and write operations of each storage system port for the last 24 hours, summarized as a CHA value	Reports/RAID/Status Reporting/Daily Trend/
CHA Performance Status(8.6) (Real-Time Report)	Average frequency and data transfer rate of read and write operations of each storage system port, summarized as a CHA value	Reports/RAID/Status Reporting/Real-Time/
CLPR Configuration(6.0)	Configuration information about each CLPR	Reports/RAID/Status Reporting/Real-Time/
CLPR Usage Details(6.0)	Cache memory usage status of each CLPR for the last hour	Reports/RAID/Troubleshooting/ Recent Past/

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Report Name	Displayed Information	Storage Location
CLPR Usage Details(7.2)	Cache memory usage status of each CLPR for the last hour	Reports/RAID/Troubleshooting/ Recent Past/
CLPR Usage Per Controller Details(7.2)	Operation status of each cache memory allocated for the CLPR of the controller or controllers for the last hour	Reports/RAID/Troubleshooting/ Recent Past/
CLPR Usage Per Controller Status(7.2)	Operation status of each cache memory allocated for the CLPR of the controller or controllers	Reports/RAID/Status Reporting/Real-Time/
CLPR Usage Status(6.0) (Hourly Historical Report)	Cache memory usage status of each CLPR for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/
CLPR Usage Status(6.0) (Real-Time Report)	Cache memory usage status of each CLPR	Reports/RAID/Status Reporting/Real-Time/
CLPR Usage Status(7.2)	Cache memory usage status of each CLPR	Reports/RAID/Status Reporting/Real-Time/
External LDEV Configuration(5.0)	Configuration information about each externally connected LDEV (each externally connected logical device)	Reports/RAID/Status Reporting/Real-Time/
Logical Device 1 Performance Details(7.1)	The following information, for the last hour, about each logical device whose logical device number is in the range from 00:40:00 to 00:7F:FF: • Frequency and data transfer rate of read and write operations • Cache hit rate of read operations • Average processing time per read and write request • Frequency and data transfer rate of random operations • Frequency and data transfer rate of sequential operations	Reports/RAID/Troubleshooting/ Recent Past/
Logical Device 1 Performance Details(8.6)	The following information, for the last hour, about each logical device whose logical device number is in the range from 00:40:00 to 00:7F:FF:	Reports/RAID/Troubleshooting/ Recent Past/

Report Name	Displayed Information	Storage Location
	• Frequency and data transfer rate of read and write operations • Cache hit rate of read operations • Average processing time per read and write request • Frequency and data transfer rate of random operations • Frequency and data transfer rate of sequential operations	
Logical Device 1 Performance Extended(7.4)	The following information, for the last hour, about each logical device whose logical device number is in the range from 00:40:00 to 00:7F:FF: • Frequency and data transfer rate of random read and write operations • Frequency and data transfer rate of sequential read and write operations	Reports/RAID/Troubleshooting/ Recent Past/
Logical Device 1 Performance Extended(7.6)	The following information, for the last hour, about each logical device whose logical device number is in the range from 00:40:00 to 00:7F:FF: • Frequency and data transfer rate of random read and write operations • Frequency and data transfer rate of sequential read and write operations • Usage rate	Reports/RAID/Troubleshooting/ Recent Past/
Logical Device 1 Performance Extended(8.6)	The following information, for the last hour, about each logical device whose logical device number is in the range from 00:40:00 to 00:7F:FF: • Frequency and data transfer rate of random read and write operations • Frequency and data transfer rate of sequential read and write operations • Usage rate	Reports/RAID/Troubleshooting/ Recent Past/

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Report Name	Displayed Information	Storage Location
`Logical Device 1 Read Response Rate Status(7.1)`	Average processing time per read request, for the last 24 hours, for each logical device whose logical device number is in the range from 00:40:00 to 00:7F:FF	`Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/`
`Logical Device 1 Read Response Rate Status(8.6)`	Average processing time per read request, for the last 24 hours, for each logical device whose logical device number is in the range from 00:40:00 to 00:7F:FF	`Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/`
`Logical Device 2 Performance Details(7.1)`	The following information, for the last hour, about each logical device whose logical device number is in the range from 00:80:00 to 00:BF:FF: • Frequency and data transfer rate of read and write operations • Cache hit rate of read operations • Average processing time per read and write request • Frequency and data transfer rate of random operations • Frequency and data transfer rate of sequential operations	`Reports/RAID/Troubleshooting/ Recent Past/`
`Logical Device 2 Performance Details(8.6)`	The following information, for the last hour, about each logical device whose logical device number is in the range from 00:80:00 to 00:BF:FF: • Frequency and data transfer rate of read and write operations • Cache hit rate of read operations • Average processing time per read and write request • Frequency and data transfer rate of random operations • Frequency and data transfer rate of sequential operations	`Reports/RAID/Troubleshooting/ Recent Past/`

Report Name	Displayed Information	Storage Location
Logical Device 2 Performance Extended(7.4)	The following information, for the last hour, about each logical device whose logical device number is in the range from 00:80:00 to 00:BF:FF: • Frequency and data transfer rate of random read and write operations • Frequency and data transfer rate of sequential read and write operations	Reports/RAID/Troubleshooting/ Recent Past/
Logical Device 2 Performance Extended(7.6)	The following information, for the last hour, about each logical device whose logical device number is in the range from 00:80:00 to 00:BF:FF: • Frequency and data transfer rate of random read and write operations • Frequency and data transfer rate of sequential read and write operations • Usage rate	Reports/RAID/Troubleshooting/ Recent Past/
Logical Device 2 Performance Extended(8.6)	The following information, for the last hour, about each logical device whose logical device number is in the range from 00:80:00 to 00:BF:FF: • Frequency and data transfer rate of random read and write operations • Frequency and data transfer rate of sequential read and write operations • Usage rate	Reports/RAID/Troubleshooting/ Recent Past/
Logical Device 2 Read Response Rate Status(7.1)	Average processing time per read request, for the last 24 hours, for each logical device whose logical device number is in the range from 00:80:00 to 00:BF:FF	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/
Logical Device 2 Read Response Rate Status(8.6)	Average processing time per read request, for the last 24 hours, for each logical device whose logical device number is in the range from 00:80:00 to 00:BF:FF	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/
Logical Device 3 Performance Details(7.1)	The following information, for the last hour, about each logical device whose logical	Reports/RAID/Troubleshooting/ Recent Past/

Report Name	Displayed Information	Storage Location
	device number is in the range from 00:C0:00 to 00:FE:FF: • Frequency and data transfer rate of read and write operations • Cache hit rate of read operations • Average processing time per read and write request • Frequency and data transfer rate of random operations • Frequency and data transfer rate of sequential operations	
Logical Device 3 Performance Details(8.6)	The following information, for the last hour, about each logical device whose logical device number is in the range from 00:C0:00 to 00:FE:FF: • Frequency and data transfer rate of read and write operations • Cache hit rate of read operations • Average processing time per read and write request • Frequency and data transfer rate of random operations • Frequency and data transfer rate of sequential operations	Reports/RAID/Troubleshooting/ Recent Past/
Logical Device 3 Performance Extended(7.4)	The following information, for the last hour, about each logical device whose logical device number is in the range from 00:C0:00 to 00:FE:FF: • Frequency and data transfer rate of random read and write operations • Frequency and data transfer rate of sequential read and write operations	Reports/RAID/Troubleshooting/ Recent Past/
Logical Device 3 Performance Extended(7.6)	The following information, for the last hour, about each logical device whose logical device number is in the range from 00:C0:00 to 00:FE:FF:	Reports/RAID/Troubleshooting/ Recent Past/

Report Name	Displayed Information	Storage Location
	• Frequency and data transfer rate of random read and write operations • Frequency and data transfer rate of sequential read and write operations • Usage rate	
`Logical Device 3 Performance Extended(8.6)`	The following information, for the last hour, about each logical device whose logical device number is in the range from 00:C0:00 to 00:FE:FF: • Frequency and data transfer rate of random read and write operations • Frequency and data transfer rate of sequential read and write operations • Usage rate	`Reports/RAID/Troubleshooting/ Recent Past/`
`Logical Device 3 Read Response Rate Status(7.1)`	Average processing time per read request, for the last 24 hours, for each logical device whose logical device number is in the range from 00:C0:00 to 00:FE:FF	`Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/`
`Logical Device 3 Read Response Rate Status(8.6)`	Average processing time per read request, for the last 24 hours, for each logical device whose logical device number is in the range from 00:C0:00 to 00:FE:FF	`Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/`
`Logical Device Configuration`	Configuration information about each logical device	`Reports/RAID/Status Reporting/Real-Time/`
`Logical Device Configuration(5.0 )`	Configuration information about each logical device	`Reports/RAID/Status Reporting/Real-Time/`
`Logical Device Configuration(7.1 )`	Configuration information about each logical device	`Reports/RAID/Status Reporting/Real-Time/`
`Logical Device Configuration(7.8 )`	Configuration information about each logical device	`Reports/RAID/Status Reporting/Real-Time/`
`Logical Device Configuration(8.6 )`	Configuration information about each logical device	`Reports/RAID/Status Reporting/Real-Time/`
`Logical Device IO Rate Status(8.6)` (Hourly Historical Report)	Read and write frequency of each logical device for the last 24 hours	`Reports/RAID/Status Reporting/Daily Trend/`

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Report Name	Displayed Information	Storage Location
Logical Device IO Rate Status(8.6) (Real-Time Report)	Read/write frequency of each logical device	Reports/RAID/Status Reporting/Real-Time/
Logical Device IO Rate Status (Hourly Historical Report)	Read/write frequency of each logical device for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/
Logical Device IO Rate Status (Real-Time Report)	Read/write frequency of each logical device	Reports/RAID/Status Reporting/Real-Time/
Logical Device Performance Details	The following information about each logical device for the last hour: • Frequency and data transfer rate of read and write operations • Cache hit rate of read and write operations	Reports/RAID/Troubleshooting/ Recent Past/
Logical Device Performance Details(6.0)	The following information about each logical device for the last hour: • Frequency and data transfer rate of read and write operations • Cache hit rate of read and write operations • Average processing time per read and write request	Reports/RAID/Troubleshooting/ Recent Past/
Logical Device Performance Details(7.0)	The following information about each logical device for the last hour: • Frequency and data transfer rate of read and write operations • Cache hit rate of read and write operations • Average processing time per read and write request • Frequency and data transfer rate of random operations • Frequency and data transfer rate of sequential operations	Reports/RAID/Troubleshooting/ Recent Past/
Logical Device Performance Details(7.1)	The following information about each logical device for the last hour:	Reports/RAID/Troubleshooting/ Recent Past/

Report Name	Displayed Information	Storage Location
	• Frequency and data transfer rate of read and write operations • Cache hit rate of read and write operations • Average processing time per read and write request • Frequency and data transfer rate of random operations • Frequency and data transfer rate of sequential operations	
Logical Device Performance Details(8.6)	The following information about each logical device for the last hour: • Frequency and data transfer rate of read and write operations • Cache hit rate of read and write operations • Average processing time per read and write request • Frequency and data transfer rate of random operations • Frequency and data transfer rate of sequential operations	Reports/RAID/Troubleshooting/ Recent Past/
Logical Device Performance Extended(7.4)	The following information about each logical device for the last hour: • Frequency and data transfer rate of random read and write operations • Frequency and data transfer rate of sequential read and write operations	Reports/RAID/Troubleshooting/ Recent Past/
Logical Device Performance Extended(7.6)	The following information about each logical device for the last hour: • Frequency and data transfer rate of random read and write operations • Frequency and data transfer rate of sequential read and write operations • Usage rate	Reports/RAID/Troubleshooting/ Recent Past/

Report Name	Displayed Information	Storage Location
Logical Device Performance Extended(8.6)	The following information about each logical device for the last hour: • Frequency and data transfer rate of random read and write operations • Frequency and data transfer rate of sequential read and write operations • Usage rate	Reports/RAID/Troubleshooting/ Recent Past/
Logical Device Read Cache Hit Rate - Worst 10	The ten logical devices with the lowest cache hit rates for read operations	Reports/RAID/Troubleshooting/ Real-Time/
Logical Device Read Cache Hit Rate - Worst 10(8.6)	The ten logical devices with the lowest cache hit rates for read operations	Reports/RAID/Troubleshooting/ Real-Time/
Logical Device Read IO Rate - Top 10	The ten logical devices with the highest read frequencies	Reports/RAID/Troubleshooting/ Real-Time/
Logical Device Read IO Rate - Top 10(8.6)	The ten logical devices with the highest read frequencies	Reports/RAID/Troubleshooting/ Real-Time/
Logical Device Read IO Rate Status	Read frequency of each logical device for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/
Logical Device Read IO Rate Status(8.6)	Read frequency of each logical device for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/
Logical Device Read Response Rate - Top 10(6.0)	The ten logical devices with the longest average processing times per read request	Reports/RAID/Troubleshooting/ Real-Time/
Logical Device Read Response Rate - Top 10(8.6)	The ten logical devices with the longest average processing times per read request	Reports/RAID/Troubleshooting/ Real-Time/
Logical Device Read Response Rate Status(7.1)	Average processing time per read request for each logical device for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/
Logical Device Read Response Rate Status(8.6)	Average processing time per read request for each logical device for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/
Logical Device Read Transfer Rate - Top 10	The ten logical devices with the fastest data transfer rates for read operations	Reports/RAID/Troubleshooting/ Real-Time/

Report Name	Displayed Information	Storage Location
`Logical Device Read Transfer Rate - Top 10(8.6)`	The ten logical devices with the fastest data transfer rates for read operations	`Reports/RAID/Troubleshooting/ Real-Time/`
`Logical Device Read Transfer Rate Status`	Read data transfer rate of each logical device for the last 24 hours	`Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/`
`Logical Device Read Transfer Rate Status(8.6)`	Read data transfer rate of each logical device for the last 24 hours	`Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/`
`Logical Device Transfer Rate Status(8.6)` (Hourly Historical Report)	Read/write data transfer rate of each logical device for the last 24 hours	`Reports/RAID/Status Reporting/Daily Trend/`
`Logical Device Transfer Rate Status(8.6)` (Real-Time Report)	Read/write data transfer rate of each logical device	`Reports/RAID/Status Reporting/Real-Time/`
`Logical Device Transfer Rate Status` (Hourly Historical Report)	Read/write data transfer rate of each logical device for the last 24 hours	`Reports/RAID/Status Reporting/Daily Trend/`
`Logical Device Transfer Rate Status` (Real-Time Report)	Read/write data transfer rate of each logical device	`Reports/RAID/Status Reporting/Real-Time/`
`Logical Device Write Cache Hit Rate - Worst 10`	The ten logical devices with the lowest cache hit rates for write operations	`Reports/RAID/Troubleshooting/ Real-Time/`
`Logical Device Write Cache Hit Rate - Worst 10(8.6)`	The ten logical devices with the lowest cache hit rates for write operations	`Reports/RAID/Troubleshooting/ Real-Time/`
`Logical Device Write IO Rate - Top 10`	The ten logical devices with the highest write frequencies	`Reports/RAID/Troubleshooting/ Real-Time/`
`Logical Device Write IO Rate - Top 10(8.6)`	The ten logical devices with the highest write frequencies	`Reports/RAID/Troubleshooting/ Real-Time/`
`Logical Device Write IO Rate Status`	Write frequency of each logical device for the last 24 hours	`Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/`
`Logical Device Write IO Rate Status(8.6)`	Write frequency of each logical device for the last 24 hours	`Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/`
`Logical Device Write Response`	The ten logical devices with the longest average	`Reports/RAID/Troubleshooting/ Real-Time/`

Report Name	Displayed Information	Storage Location
`Rate - Top 10(6.0)`	processing times per write request	
`Logical Device Write Response Rate - Top 10(8.6)`	The ten logical devices with the longest average processing times per write request	`Reports/RAID/Troubleshooting/ Real-Time/`
`Logical Device Write Transfer Rate - Top 10`	The ten logical devices with the fastest data transfer rates for write operations	`Reports/RAID/Troubleshooting/ Real-Time/`
`Logical Device Write Transfer Rate - Top 10(8.6)`	The ten logical devices with the fastest data transfer rates for write operations	`Reports/RAID/Troubleshooting/ Real-Time/`
`Logical Device Write Transfer Rate Status`	Write data transfer rate of each logical device for the last 24 hours	`Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/`
`Logical Device Write Transfer Rate Status(8.6)`	Write data transfer rate of each logical device for the last 24 hours	`Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/`
`LUSE Configuration(5.0 )`	Configuration information about each logical device that configures a LUSE	`Reports/RAID/Status Reporting/Real-Time/`
`LUSE Configuration(7.1 )`	Configuration information about each logical device that configures a LUSE	`Reports/RAID/Status Reporting/Real-Time/`
`Physical Device Busy Rate - Top 10(7.2)`	The ten drives in a storage system that have the highest operating rates	`Reports/RAID/Troubleshooting/ Real-Time/`
`Physical Device Busy Rate - Top 10(7.5)`	The ten drives in a storage system that have the highest operating rates	`Reports/RAID/Troubleshooting/ Real-Time/`
`Physical Device Busy Rate Details(7.2)`	Operation status of each drive in a storage system for the last hour	`Reports/RAID/Troubleshooting/ Recent Past/`
`Physical Device Busy Rate Details(7.5)`	Operation status of each drive in a storage system for the last hour	`Reports/RAID/Troubleshooting/ Recent Past/`
`Physical Device Busy Rate Status(7.2)`	Operation status of each drive in a storage system	`Reports/RAID/Status Reporting/Real-Time/`
`Physical Device Busy Rate Status(7.5)`	Operation status of each drive in a storage system	`Reports/RAID/Status Reporting/Real-Time/`
`Pool Configuration(7.1 )`	Capacity and configuration information about each Dynamic Provisioning pool	`Reports/RAID/Status Reporting/Real-Time/`

Report Name	Displayed Information	Storage Location
Pool Configuration(9.0)	Capacity and configuration information about each Dynamic Provisioning pool	Reports/RAID/Status Reporting/Real-Time/
Pool Configuration(9.4)	Capacity and configuration information about each Dynamic Provisioning pool	Reports/RAID/Status Reporting/Real-Time/
Pool Frequency Distribution Status(8.6)	Page IO frequency of each Dynamic Provisioning pool for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/
Pool Performance Status(7.8)	Performance information for each Dynamic Provisioning pool for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/
Pool Performance Status(8.0)	Performance information for each Dynamic Provisioning pool for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/
Pool Performance Status(8.4)	Performance information for each Dynamic Provisioning pool for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/
Pool Read IO Rate Status(8.0)	Frequency of read operations for each Dynamic Provisioning pool for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/
Pool Read Response Rate Status(7.8)	Average processing time per read request for each Dynamic Provisioning pool for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/
Pool Read Transfer Rate Status(8.4)	Read data transfer rate of each Dynamic Provisioning pool for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/
Pool Relocation Moved Pages Status(8.2)	Tier relocation information and the number of pages that have been moved by tier relocation over the past month for Dynamic Provisioning pools that have tier management enabled	Reports/RAID/Monthly Trend/ Drilldown Only/
Pool Relocation Moved Pages Status(8.6)	Tier relocation information and the number of pages that have been moved by tier relocation over the past month for Dynamic Provisioning pools that have tier management enabled	Reports/RAID/Monthly Trend/ Drilldown Only/
Pool Relocation Status(8.2)	Tier relocation information over the past month for Dynamic Provisioning pools that have tier management enabled	Reports/RAID/Monthly Trend/
Pool Relocation Status(8.6)	Tier relocation information over the past month for	Reports/RAID/Monthly Trend/

Working with the Solution Set

Report Name	Displayed Information	Storage Location
	Dynamic Provisioning pools that have tier management enabled	
Pool Tier IO Rate Status(8.2)	Read and write processing rate for each type of tier over the past 24 hours for Dynamic Provisioning pools that have tier management enabled	Reports/RAID/Status Reporting/Daily Trend/
Pool Tier IO Rate Trend(8.2)	Read and write processing rate for each type of tier over the past 24 hours for Dynamic Provisioning pools that have tier management enabled	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/
Pool Tier Relocation Status(8.2)	Tier relocation information over the past month for Dynamic Provisioning pools that have tier management enabled	Reports/RAID/Monthly Trend/
Pool Tier Relocation Status(8.6)	Tier relocation information over the past month for Dynamic Provisioning pools that have tier management enabled	Reports/RAID/Monthly Trend/
Pool Tier Relocation Trend(8.2)	Tier relocation information and the number of pages that have been moved by tier relocation over the past month for Dynamic Provisioning pools that have tier management enabled	Reports/RAID/Monthly Trend/ Drilldown Only/
Pool Tier Relocation Trend(8.6)	Tier relocation information and the number of pages that have been moved by tier relocation over the past month for Dynamic Provisioning pools that have tier management enabled	Reports/RAID/Monthly Trend/ Drilldown Only/
Pool Tier Type Configuration(7.8)	Capacity and configuration information for each tier type of a Dynamic Provisioning pool that has tier management enabled	Reports/RAID/Status Reporting/Real-Time/
Pool Tier Type Configuration(8.0)	Capacity and configuration information for each tier type of a Dynamic Provisioning pool that has tier management enabled	Reports/RAID/Status Reporting/Real-Time/
Pool Tier Type Configuration(8.2)	Capacity information and configuration information for each type of tier for Dynamic	Reports/RAID/Status Reporting/Real-Time/

Report Name	Displayed Information	Storage Location
	Provisioning pools that have tier management enabled	
Pool Tier Type Configuration(9.4)	Capacity information and configuration information for each type of tier for Dynamic Provisioning pools that have tier management enabled	Reports/RAID/Status Reporting/Real-Time/
Pool Tier Type IO Rate Status(8.0)	Frequency of read and write operations for the last month for each tier type of a Dynamic Provisioning pool that has tier management enabled	Reports/RAID/Monthly Trend/ Drilldown Only/
Pool Tier Type IO Rate Status(8.6)	Frequency of read and write operations for the last month for each tier type of a Dynamic Provisioning pool that has tier management enabled	Reports/RAID/Monthly Trend/ Drilldown Only/
Pool Tier Type Performance Status(7.8)	Performance information for the last month for each tier type of a Dynamic Provisioning pool that has tier management enabled	Reports/RAID/Monthly Trend/
Pool Tier Type Performance Status(8.0)	Performance information for the last month for each tier type of a Dynamic Provisioning pool that has tier management enabled	Reports/RAID/Monthly Trend/
Pool Tier Type Performance Status(8.6)	Performance information for the last month for each tier type of a Dynamic Provisioning pool that has tier management enabled	Reports/RAID/Monthly Trend/
Pool Tier Type Usage Trend(7.8)	Usage rate for the last month of each tier type of a Dynamic Provisioning pool that has tier management enabled	Reports/RAID/Monthly Trend/ Drilldown Only/
Pool Tier Type Usage Trend(9.4)	Usage rate for the last month of each tier type of a Dynamic Provisioning pool that has tier management enabled	Reports/RAID/Monthly Trend/ Drilldown Only/
Pool Tier Type Utilization Rate Status(7.8)	Activity rate for the last month for each tier type of a Dynamic Provisioning pool that has tier management enabled	Reports/RAID/Monthly Trend/ Drilldown Only/
Pool Usage Trend(7.1)	Usage rate of each Dynamic Provisioning pool for the last month	Reports/RAID/Monthly Trend/

Working with the Solution Set

Report Name	Displayed Information	Storage Location
Pool Usage Trend(9.0)	Usage rate of each Dynamic Provisioning pool for the last month	Reports/RAID/Monthly Trend/
Pool Usage Trend(9.4)	Usage rate of each Dynamic Provisioning pool for the last month	Reports/RAID/Monthly Trend/
Pool Write IO Rate Status(8.0)	Frequency of write operations for each Dynamic Provisioning pool for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/
Pool Write Transfer Rate Status(8.4)	Write data transfer rate of each Dynamic Provisioning pool for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/
Port Avg IO Rate Status	Average read and write frequency of each storage system port for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/
Port Avg IO Rate Status(8.6)	Average read and write frequency of each storage system port for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/
Port Avg Transfer Rate Status	Average read and write data transfer rate of each storage system port for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/
Port Avg Transfer Rate Status(8.6)	Average read and write data transfer rate of each storage system port for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/
Port Configuration	Configuration information about each storage system port	Reports/RAID/Status Reporting/Real-Time/
Port Configuration(5.0)	Configuration information about each storage system port	Reports/RAID/Status Reporting/Real-Time/
Port Configuration(7.0)	Configuration information about each storage system port	Reports/RAID/Status Reporting/Real-Time/
Port Configuration(8.6)	Configuration information about each storage system port	Reports/RAID/Status Reporting/Real-Time/
Port Initiator Avg IO Rate Status(8.8)	Average read and write frequency of both Initiator and External ports of the storage system, for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/
Port Initiator Avg Transfer Rate Status(8.8)	Average read and write data transfer rate of both Initiator	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/

Report Name	Displayed Information	Storage Location
	and External ports of the storage system, for the last 24 hours	
Port IO Rate – Top 10	The ten storage system ports with the highest read and write frequencies	Reports/RAID/Troubleshooting/Real-Time/
Port IO Rate Status (Hourly Historical Report)	Average read and write frequency of each storage system port for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/
Port IO Rate Status (Real-Time Report)	Average read and write frequency of each storage system port	Reports/RAID/Status Reporting/Real-Time/
Port Performance Details	Read/write frequency and data transfer rate of each storage system port for the last hour	Reports/RAID/Troubleshooting/Recent Past/
Port Performance Details(8.6)	Frequency and data transfer rate of read and write operations of each storage system port for the last hour	Reports/RAID/Troubleshooting/Recent Past/
Port Performance Details(8.8)	Frequency and data transfer rate of read and write operations of each storage system port for the last hour	Reports/RAID/Troubleshooting/Recent Past/
Port Performance Status(8.6) (Hourly Historical Report)	Average frequency and data transfer rate of read and write operations of each storage system port for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/
Port Performance Status(8.6) (Real-Time Report)	Average frequency and data transfer rate of read and write operations of each storage system port	Reports/RAID/Status Reporting/Real-Time/
Port Performance Status(8.8) (Hourly Historical Report)	Average frequency and data transfer rate of read and write operations of each storage system port for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/
Port Performance Status(8.8) (Real-Time Report)	Average frequency and data transfer rate of read and write operations of each storage system port	Reports/RAID/Status Reporting/Real-Time/
Port Transfer Rate – Top 10	The ten storage system ports with the fastest read and write data transfer rates	Reports/RAID/Troubleshooting/Real-Time/
Port Transfer Rate Status	Average read and write data transfer rate of each storage	Reports/RAID/Status Reporting/Daily Trend/

Working with the Solution Set

Report Name	Displayed Information	Storage Location
(Hourly Historical Report)	system port for the last 24 hours	
`Port Transfer Rate Status` (Real-Time Report)	Average read and write data transfer rate of each storage system port	`Reports/RAID/Status Reporting/Real-Time/`
`Processor Busy Rate - Top 10(6.0)`	The ten storage system processors with the highest usages	`Reports/RAID/Troubleshooting/ Real-Time/`
`Processor Busy Rate - Top 10(8.6)`	The ten storage system processors with the highest usages	`Reports/RAID/Troubleshooting/ Real-Time/`
`Processor Busy Rate 2 - Top 10(6.0)`	The ten storage system processors with the highest usages. If the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage system, the ten MP Blades with the highest usages out of the MP Blades in the storage system are displayed.	`Reports/RAID/Troubleshooting/ Real-Time/`
`Processor Busy Rate 2 - Top 10(8.6)`	The ten storage system processors with the highest usages	`Reports/RAID/Troubleshooting/ Real-Time/`
`Processor Busy Rate Details(6.0)`	Storage system processor usage for the last hour	`Reports/RAID/Troubleshooting/ Recent Past/`
`Processor Busy Rate Details(8.6)`	Storage system processor usage for the last hour	`Reports/RAID/Troubleshooting/ Recent Past/`
`Processor Busy Rate Status(6.0)` (Hourly Historical Report)	Storage system processor usage for the last 24 hours	`Reports/RAID/Status Reporting/Daily Trend/`
`Processor Busy Rate Status(6.0)` (Real-Time Report)	Storage system processor usage	`Reports/RAID/Status Reporting/Real-Time/`
`Processor Busy Rate Status(8.6)` (Hourly Historical Report)	Storage system processor usage for the last 24 hours	`Reports/RAID/Status Reporting/Daily Trend/`
`Processor Busy Rate Status(8.6)` (Real-Time Report)	Storage system processor usage	`Reports/RAID/Status Reporting/Real-Time/`
`Processor Resource`	Twenty highest resource usages per processor for the last hour	`Reports/RAID/Troubleshooting/ Recent Past/`

Report Name	Displayed Information	Storage Location
Utilization Details(8.6)		
Processor Resource Utilization Status(8.6) (Hourly Historical Report)	Twenty highest resource usages per processor for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/
Processor Resource Utilization Status(8.6) (Real-Time Report)	Resource usages per processor	Reports/RAID/Status Reporting/Real-Time/
Subsystem Cache Memory Usage Details	Amount of cache memory used by the storage system for the last hour	Reports/RAID/Troubleshooting/ Recent Past/
Subsystem Cache Memory Usage Details(6.0)	Amount of cache memory used by the storage system for the last hour	Reports/RAID/Troubleshooting/ Recent Past/
Subsystem Cache Memory Usage Details(7.2)	Amount of cache memory used by the storage system for the last hour	Reports/RAID/Troubleshooting/ Recent Past/
Subsystem Cache Memory Usage Status (Hourly Historical Report)	Amount of cache memory used by the storage system for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/
Subsystem Cache Memory Usage Status (Real-Time Report)	Amount of cache memory being used by the storage system	Reports/RAID/Status Reporting/Real-Time/
Subsystem Cache Memory Usage Status(7.2)	Amount of cache memory being used by the storage system	Reports/RAID/Status Reporting/Real-Time/
Subsystem Configuration	Storage system configuration information	Reports/RAID/Status Reporting/Real-Time/
Subsystem IO Rate Status (Hourly Historical Report)	Read/write frequency for the entire storage system for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/
Subsystem IO Rate Status (Real-Time Report)	Read/write frequency for the entire storage system	Reports/RAID/Status Reporting/Real-Time/
Subsystem Performance Details	Read/write frequency and data transfer rate for the entire storage system for the last hour	Reports/RAID/Troubleshooting/ Recent Past/
Subsystem Read IO Rate Trend	Read frequency for the entire storage system for the last month	Reports/RAID/Monthly Trend/

Working with the Solution Set

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Report Name	Displayed Information	Storage Location
Subsystem Read Transfer Rate Trend	Read data transfer rate for the entire storage system for the last month	Reports/RAID/Monthly Trend/
Subsystem Transfer Rate Status (Hourly Historical Report)	Read/write data transfer rate for the entire storage system for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/
Subsystem Transfer Rate Status (Real-Time Report)	Read/write data transfer rate for the entire storage system	Reports/RAID/Status Reporting/Real-Time/
Subsystem Write IO Rate Trend	Write frequency for the entire storage system for the last month	Reports/RAID/Monthly Trend/
Subsystem Write Transfer Rate Trend	Write data transfer rate for the entire storage system for the last month	Reports/RAID/Monthly Trend/
Virtual Volume Configuration(7.1)	Capacity and configuration information about each Dynamic Provisioning V-VOL	Reports/RAID/Status Reporting/Real-Time/
Virtual Volume Configuration(9.0)	Capacity and configuration information about each Dynamic Provisioning V-VOL	Reports/RAID/Status Reporting/Real-Time/
Virtual Volume Frequency Distribution Rate Status(8.6)	Page IO frequency for each type of tier for Dynamic Provisioning V-VOLs that have tier management enabled for the last hour	Reports/RAID/Troubleshooting/ Recent Past/
Virtual Volume Tier IO Rate Status(8.2)	Read and write processing rate for each type of tier for Dynamic Provisioning V-VOLs that have tier management enabled for the last hour	Reports/RAID/Troubleshooting/ Recent Past/
Virtual Volume Tier Type Configuration(7.8)	Capacity and configuration information for each tier type of a Dynamic Provisioning V-VOL that has tier management enabled	Reports/RAID/Status Reporting/Real-Time/
Virtual Volume Tier Type IO Rate Trend(8.2)	Read and write processing rate for each type of tier for Dynamic Provisioning V-VOLs that have tier management enabled for the last 24 hours	Reports/RAID/Status Reporting/Daily Trend/ Drilldown Only/
Virtual Volume Tier Type Usage Trend(7.8)	Usage rate for the last month for each tier type of a Dynamic Provisioning V-VOL that has tier management enabled	Reports/RAID/Monthly Trend/ Drilldown Only/

Report Name	Displayed Information	Storage Location
Virtual Volume Tier Type Used Capacity Trend(8.0)	Size of the used capacity and the usage rate for the last month for each tier type of a Dynamic Provisioning V-VOL that has tier management enabled	Reports/RAID/Monthly Trend/ Drilldown Only/
Virtual Volume Usage Trend(7.1)	Usage rate of each Dynamic Provisioning V-VOL for the last month	Reports/RAID/Monthly Trend/ Drilldown Only/
Virtual Volume Usage Trend(9.0)	Usage rate of each Dynamic Provisioning V-VOL for the last month	Reports/RAID/Monthly Trend/ Drilldown Only/

Access Path Usage Details(9.0)

The `Access Path Usage Details(9.0)` report displays the access path usage rate of a storage system for the last hour.

Overview

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, or Universal Storage Platform V/VM series storage systems.

Storage Location

Reports/RAID/Troubleshooting/Recent Past/

Record

Storage Summary (PI)

Fields

Field Name	Description
CHA Cache Path Usage %	Average (%) of the access path usage rate in the device between the channel adapter and cache switch
DKA Cache Path Usage %	Average (%) of the access path usage rate in the device between the disk adapter and cache switch

Access Path Usage Status(9.0) (Hourly Historical Report)

Overview

The `Access Path Usage Status(9.0)` report displays the access path usage rate of a storage system for the last 24 hours.

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, or Universal Storage Platform V/VM series storage systems.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/`

Record

Storage Summary (`PI`)

Fields

Field Name	Description
CHA Cache Path Usage %	Average (%) of the access path usage rate in the device between the channel adapter and cache switch
DKA Cache Path Usage %	Average (%) of the access path usage rate in the device between the disk adapter and cache switch

Access Path Usage Status(9.0) (Real-Time Report)

Overview

The `Access Path Usage Status(9.0)` report displays a table listing the access path usage rate of a storage system in real time.

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, or Universal Storage Platform V/VM series storage systems.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Storage Summary (`PI`)

Fields

Field Name	Description
CHA Cache Path Usage %	Average (%) of the access path usage rate in the device between the channel adapter and cache switch
DKA Cache Path Usage %	Average (%) of the access path usage rate in the device between the disk adapter and cache switch

Array Group Busy Rate - Top 10(6.0)

Overview

The `Array Group Busy Rate - Top 10(6.0)` report displays a table listing the ten parity groups with the highest usages in real time.

Note that this report is not supported if the monitored storage system is an HUS100 series, or a Hitachi AMS2000/AMS/WMS/SMS series storage system.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

RAID Group Summary (`PI_RGS`)

Fields

Field Name	Description
Busy%	Parity group usage
RAID Group Number	Parity group number

Drilldown Report (Field Level)

Report Name	Description
`Array Group Configuration(5.0)`	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the `Array Group Busy Rate - Top 10(6.0)` report: • RAID Group Number

Array Group Busy Rate - Top 10(7.0)

Overview

The `Array Group Busy Rate - Top 10(7.0)` report displays a table listing the following information about the ten parity groups with the highest usages in real time.

- Frequency and data transfer rate of random operations
- Frequency and data transfer rate of sequential operations

Note that this report is not supported if the monitored storage system is an HUS100 series, or a Hitachi AMS2000/AMS/WMS/SMS series storage system.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

RAID Group Summary (`PI_RGS`)

Fields

Field Name	Description
Busy %	Parity group usage
RAID Group Number	Parity group number
Random Total I/O /sec	Frequency of random operations (times per second)
Random Total Xfer /sec	Data transfer rate of random operations (megabytes per second)
Sequential Total I/O /sec	Frequency of sequential operations (times per second)
Sequential Total Xfer /sec	Data transfer rate of sequential operations (megabytes per second)

Drilldown Report (Field Level)

Report Name	Description
`Array Group Configuration(5.0)`	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the `Array Group Busy Rate - Top 10(7.0)` report: - RAID Group Number

Array Group Busy Rate - Top 10(7.3)

Overview

The `Array Group Busy Rate - Top 10(7.3)` report displays a table listing the following information about the ten parity groups with the highest usages in real time.

- Frequency and data transfer rate of random read and write operations
- Frequency and data transfer rate of sequential read and write operations
- Frequency and data transfer rate of random operations
- Frequency and data transfer rate of sequential operations
- Usage rate

Note that this report is not supported if the monitored storage system is an HUS100 series, or a Hitachi AMS2000/AMS/WMS/SMS series storage system.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

RAID Group Summary (`PI_RGS`)

Fields

Field Name	Description
Busy %	Parity group usage
RAID Group Number	Parity group number
Random Read I/O /sec	Frequency of random read operations (times per second)
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)
Random Total I/O /sec	Frequency of random operations (times per second)
Random Total Xfer /sec	Data transfer rate of random operations (megabytes per second)
Random Write I/O /sec	Frequency of random write operations (times per second)
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)

Field Name	Description
Sequential Total I/O /sec	Frequency of sequential operations (times per second)
Sequential Total Xfer /sec	Data transfer rate of sequential operations (megabytes per second)
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)

Drilldown Report (Field Level)

Report Name	Description
Array Group Configuration(5.0)	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the `Array Group Busy Rate - Top 10(7.3)` report: • RAID Group Number

Array Group Configuration(5.0)

Overview

The `Array Group Configuration(5.0)` report displays a table listing configuration information about each parity group in real time.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

RAID Group Configuration (`PD_RGC`)

Fields

Field Name	Description
RAID Group Number	Parity group number
RAID Level	RAID level
RAID Type	RAID level and HDU combination *Example:* RAID5(3D+1P)

Array Group Configuration(7.5)

Overview

The `Array Group Configuration(7.5)` report displays a table listing configuration information about each parity group in real time.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

RAID Group Configuration (`PD_RGC`)

Fields

Field Name	Description
Pool ID	Pool ID of the Dynamic Provisioning pool to which the parity group belongs
RAID Group Number	Parity group number
RAID Group Type	Information indicating whether the parity group belongs to a Dynamic Provisioning pool: • POOL
RAID Level	RAID level
RAID Type	RAID level and HDU combination *Example:* RAID5(3D+1P)

Array Group IO Rate Status(5.0) (Hourly Historical Report)

Overview

The `Array Group IO Rate Status(5.0)` (Hourly Historical Report) displays a table listing the frequency of the read and write operations for the last 24 hours for each parity group.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/`

Record

RAID Group Summary (`PI_RGS`)

Fields

Field Name	Description
RAID Group Number	Parity group number
Read I/O / sec	Read frequency (times per second)
Write I/O / sec	Write frequency (times per second)

Drilldown Report (Report Level)

Report Name	Description
`Array Group Transfer Rate Status(5.0)` (Hourly Historical Report)	Displays a table listing the read and write data transfer rate for each parity group for the last 24 hours.

Drilldown Reports (Field Level)

Report Name	Description
`Array Group Configuration(5.0)`	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the `Array Group IO Rate Status(5.0)` report: • RAID Group Number
`Array Group Read IO Rate Status(5.0)`	Displays a line graph showing read frequency for the last 24 hours for each parity group. To display this report, click the following field in the `Array Group IO Rate Status(5.0)` report: • Read I/O / sec
`Array Group Write IO Rate Status(5.0)`	Displays a line graph showing write frequency for the last 24 hours for each parity group. To display this report, click the following field in the `Array Group IO Rate Status(5.0)` report: • Write I/O / sec

Array Group IO Rate Status(5.0) (Real-Time Report)

Overview

The `Array Group IO Rate Status(5.0)` (Real-Time Report) displays a table listing the frequency of read and write operations for each parity group in real time.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

RAID Group Summary (`PI_RGS`)

Fields

Field Name	Description
RAID Group Number	Parity group number
Read I/O / sec	Read frequency (times per second)
Write I/O / sec	Write frequency (times per second)

Drilldown Report (Report Level)

Report Name	Description
`Array Group Transfer Rate Status(5.0)` (Real-Time Report)	Displays the read and write data transfer rate for the last 24 hours for each parity group in real time.

Drilldown Report (Field Level)

Report Name	Description
`Array Group Configuration(5.0)`	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the `Array Group IO Rate Status(5.0)` report: • RAID Group Number

Array Group Performance Details(5.0)

Overview

The `Array Group Performance Details(5.0)` report displays a table listing the following information about each parity group for the last hour.

- Frequency and data transfer rate of read and write operations
- Cache hit rate of read and write operations
- Usage rate

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

RAID Group Summary (`PI_RGS`)

Fields

Field Name	Description
Busy %	Parity group usage
RAID Group Number	Parity group number
Read Hit %	Cache hit rate for read operations
Read I/O / sec	Read frequency (times per second)
Read Xfer / sec	Data transfer rate for read operations (megabytes per second)
Write Hit %	Cache hit rate for write operations
Write I/O / sec	Write frequency (times per second)
Write Xfer / sec	Data transfer rate for write operations (megabytes per second)

Drilldown Report (Field Level)

Report Name	Description
Array Group Configuration(5.0)	Displays configuration information about each parity group in real time. To display this report, click the following field in the `Array Group Performance Details(5.0)` report: • RAID Group Number

Array Group Performance Details(7.0)

Overview

The `Array Group Performance Details(7.0)` report displays a table listing the following information about each parity group for the last hour.

- Frequency and data transfer rate of read and write operations
- Cache hit rate of read and write operations
- Frequency and data transfer rate of random operations
- Frequency and data transfer rate of sequential operations
- Usage rate

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

RAID Group Summary (`PI_RGS`)

Fields

Field Name	Description
Busy %	Parity group usage
RAID Group Number	Parity group number
Random Total I/O /sec	Frequency of random operations (times per second)
Random Total Xfer /sec	Data transfer rate of random operations (megabytes per second)
Read Hit %	Cache hit rate of read operations
Read I/O /sec	Frequency of read operations (times per second)
Read Xfer /sec	Data transfer rate of read operations (megabytes per second)
Sequential Total I/O /sec	Frequency of sequential operations (times per second)
Sequential Total Xfer /sec	Data transfer rate of sequential operations (megabytes per second)
Write Hit %	Cache hit rate of write operations
Write I/O /sec	Frequency of write operations (times per second)
Write Xfer /sec	Data transfer rate of write operations (megabytes per second)

Drilldown Report (Field Level)

Report Name	Description
`Array Group Configuration(5.0)`	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the `Array Group Performance Details(7.0)` report: • RAID Group Number

Array Group Performance Details(7.3)

Overview

The `Array Group Performance Details(7.3)` report displays a table listing the following information about each parity group for the last hour.

- Frequency and data transfer rate of read and write operations
- Cache hit rate of read and write operations
- Frequency and data transfer rate of random operations

- Frequency and data transfer rate of sequential operations
- Frequency and data transfer rate of random read and write operations
- Frequency and data transfer rate of sequential read and write operations
- Usage rate

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

RAID Group Summary (`PI_RGS`)

Fields

Field Name	Description
Busy %	Parity group usage
RAID Group Number	Parity group number
Random Read I/O /sec	Frequency of random read operations (times per second)
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)
Random Total I/O /sec	Frequency of random operations (times per second)
Random Total Xfer /sec	Data transfer rate of random operations (megabytes per second)
Random Write I/O /sec	Frequency of random write operations (times per second)
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)
Read Hit %	Cache hit rate of read operations
Read I/O /sec	Frequency of read operations (times per second)
Read Xfer /sec	Data transfer rate of read operations (megabytes per second)
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)
Sequential Total I/O /sec	Frequency of sequential operations (times per second)
Sequential Total Xfer /sec	Data transfer rate of sequential operations (megabytes per second)
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)
Write Hit %	Cache hit rate of write operations

Field Name	Description
Write I/O /sec	Frequency of write operations (times per second)
Write Xfer /sec	Data transfer rate of write operations (megabytes per second)

Drilldown Report (Field Level)

Report Name	Description
Array Group Configuration(5.0)	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the Array Group Performance Details(7.3) report: • RAID Group Number

Array Group Performance Details(7.4)

Overview

The Array Group Performance Details(7.4) report displays a table listing the following information about each parity group for the last hour.

- Frequency and data transfer rate of read and write operations
- Cache hit rate and percentage of read and write operations
- Frequency, data transfer rate, and percentage of random operations
- Frequency, data transfer rate, and percentage of sequential operations
- Frequency, data transfer rate, and percentage of random read and write operations
- Frequency, data transfer rate, and percentage of sequential read and write operations
- Usage rate

Storage Location

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Record

RAID Group Summary (PI_RGS)

Fields

Field Name	Description
Busy %	Parity group usage

Field Name	Description
RAID Group Number	Parity group number
Random Read I/O %	Percentage of the total number of read and write operations that are random read operations
Random Read I/O /sec	Frequency of random read operations (times per second)
Random Read Xfer %	Percentage of the total amount of transfers that are random read operations
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)
Random Total I/O /sec	Frequency of random operations (times per second)
Random Total Xfer /sec	Data transfer rate of random operations (megabytes per second)
Random Write I/O %	Percentage of the total number of read and write operations that are random write operations
Random Write I/O /sec	Frequency of random write operations (times per second)
Random Write Xfer %	Percentage of the total amount of transfers that are random write operations
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)
Read Hit %	Cache hit rate of read operations
Read I/O %	Percentage of the total number of read and write operations that are read operations
Read I/O /sec	Frequency of read operations (times per second)
Read Xfer %	Percentage of the total amount of transfers that are read operations
Read Xfer /sec	Data transfer rate of read operations (megabytes per second)
Sequential Read I/O %	Percentage of the total number of read and write operations that are sequential read operations
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)
Sequential Read Xfer %	Percentage of the total amount of transfers that are sequential read operations
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)
Sequential Total I/O /sec	Frequency of sequential operations (times per second)

Field Name	Description
Sequential Total Xfer /sec	Data transfer rate of sequential operations (megabytes per second)
Sequential Write I/O %	Percentage of the total number of read and write operations that are sequential write operations
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)
Sequential Write Xfer %	Percentage of the total amount of transfers that are sequential write operations
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)
Write Hit %	Cache hit rate of write operations
Write I/O %	Percentage of the total number of read and write operations that are write operations
Write I/O /sec	Frequency of write operations (times per second)
Write Xfer %	Percentage of the total amount of transfers that are write operations
Write Xfer /sec	Data transfer rate of write operations (megabytes per second)

Drilldown Report (Field Level)

Report Name	Description
`Array Group Configuration(5.0)`	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the `Array Group Performance Details(7.4)` report: • RAID Group Number

Array Group Performance Details(8.6)

Overview

The `Array Group Performance Details (8.6)` report displays a table listing the following information for each parity group over the past hour:

• Frequency and transfer rate of read and write operations
• Cache hit rate and percentage of read and write operations
• Frequency, transfer rate, and percentage of random operations
• Frequency, transfer rate, and percentage of sequential operations

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Hitachi Tuning Manager Hardware Reports Reference

- Frequency, transfer rate, and percentage of random read and write operations
- Frequency, transfer rate, and percentage of sequential read and write operations
- Usage rate

Storage Location

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Record

RAID Group Summary (`PI_RGS`)

Fields

Field Name	Description
Busy %	Parity group usage
RAID Group Number	Parity group number
Random Read I/O %	Percentage of the total number of read and write operations that are random read operations
Random Read I/O /sec	Frequency of random read operations (operations per second)
Random Read Xfer %	Percentage of transferred data that relates to random read operations
Random Read Xfer /sec	Transfer rate of random read operations (MB per second)
Random Total I/O /sec	Frequency of random operations (operations per second)
Random Total Xfer /sec	Transfer rate of random operations (MB per second)
Random Write I/O %	Percentage of the total number of read and write operations that are random write operations
Random Write I/O /sec	Frequency of random write operations (operations per second)
Random Write Xfer %	Percentage of transferred data that relates to random write operations
Random Write Xfer /sec	Transfer rate of random write operations (MB per second)
Read Hit %	Cache hit rate of read operations
Read I/O %	Percentage of the total number of read and write operations that are read operations
Read I/O /sec	Frequency of read operations (operations per second)
Read Response Rate	Average processing time per read request (microseconds)
Read Xfer %	Percentage of transferred data that relates to read operations
Read Xfer /sec	Transfer rate of read operations (MB per second)

Field Name	Description
Sequential Read I/O %	Percentage of the total number of read and write operations that are sequential read operations
Sequential Read I/O /sec	Frequency of sequential read operations (operations per second)
Sequential Read Xfer %	Percentage of transferred data that relates to sequential read operations
Sequential Read Xfer /sec	Transfer rate of sequential read operations (MB per second)
Sequential Total I/O /sec	Frequency of sequential operations (operations per second)
Sequential Total Xfer /sec	Transfer rate of sequential operations (MB per second)
Sequential Write I/O %	Percentage of the total number of read and write operations that are sequential write operations
Sequential Write I/O /sec	Frequency of sequential write operations (operations per second)
Sequential Write Xfer %	Percentage of transferred data that relates to sequential write operations
Sequential Write Xfer /sec	Transfer rate of sequential write operations (MB per second)
Total Response Rate	Average processing time per read and write request (microseconds)
Write Hit %	Cache hit rate of write operations
Write I/O %	Percentage of the total number of read and write operations that are write operations
Write I/O /sec	Frequency of write operations (operations per second)
Write Response Rate	Average processing time per write request (microseconds)
Write Xfer %	Percentage of transferred data that relates to write operations
Write Xfer /sec	Transfer rate of write operations (MB per second)

Drilldown Reports (Field Level)

Report Name	Description
Array Group Configuration(5.0)	Displays a table that shows parity group configuration information in real time. To display this report, click the following field in the Array Group Performance Details(8.6) report: • RAID Group Number

Array Group Read Cache Hit Rate - Worst 10(5.0)

Overview

The `Array Group Read Cache Hit Rate - Worst 10(5.0)` report displays a table listing the ten parity groups with the lowest cache hit rates of read operations in real time.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

RAID Group Summary (`PI_RGS`)

Fields

Field Name	Description
RAID Group Number	Parity group number
Read Hit %	Cache hit rate for read operations

Drilldown Reports (Report Level)

Report Name	Description
Array Group Read IO Rate - Top 10(5.0)	Displays a table listing the ten parity groups with the highest read frequencies in real time.
Array Group Read Transfer Rate - Top 10(5.0)	Displays a table listing the ten parity groups with the fastest data transfer rates for read operations in real time.
Array Group Write Cache Hit Rate - Worst 10(5.0)	Displays a table listing the ten parity groups with the lowest cache hit rates for write operations in real time.
Array Group Write IO Rate - Top 10(5.0)	Displays a table listing the ten parity groups with the highest write frequencies in real time.
Array Group Write Transfer Rate - Top 10(5.0)	Displays a table listing the ten parity groups with the fastest data transfer rates for write operations in real time.

Drilldown Report (Field Level)

Report Name	Description
Array Group Configuration(5.0)	Displays a table listing parity group configuration information in real time. To

Report Name	Description
	display this report, click the following field in the `Array Group Read Cache Hit Rate - Worst 10(5.0)` report: • RAID Group Number

Array Group Read IO Rate - Top 10(5.0)

Overview

The `Array Group Read IO Rate - Top 10(5.0)` report displays a table listing the ten parity groups with the highest read frequencies in real time.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

RAID Group Summary (`PI_RGS`)

Fields

Field Name	Description
RAID Group Number	Parity group number
Read I/O / sec	Read frequency (times per second)

Drilldown Reports (Report Level)

Report Name	Description
Array Group Read Cache Hit Rate - Worst 10(5.0)	Displays a table listing the ten parity groups with the lowest cache hit rates for read operations in real time.
Array Group Read Transfer Rate - Top 10(5.0)	Displays a table listing the ten parity groups with the fastest data transfer rates for read operations in real time.
Array Group Write Cache Hit Rate - Worst 10(5.0)	Displays a table listing the ten parity groups with the lowest cache hit rates for write operations in real time.
Array Group Write IO Rate - Top 10(5.0)	Displays a table listing the ten parity groups with the highest write frequencies in real time.
Array Group Write Transfer Rate - Top 10(5.0)	Displays a table listing the ten parity groups with the fastest data transfer rates for write operations in real time.

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Hitachi Tuning Manager Hardware Reports Reference

Drilldown Report (Field Level)

Report Name	Description
Array Group Configuration(5.0)	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the Array Group Read IO Rate - Top 10(5.0) report: • RAID Group Number

Array Group Read IO Rate Status(5.0)

Overview

The Array Group Read IO Rate Status(5.0) report displays a line graph showing the read frequency of each parity group for the last 24 hours, and a table listing the read and write frequency and data transfer rate of each parity group for the last 24 hours.

Storage Location

Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/

Record

RAID Group Summary (PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Read I/O / sec	Read frequency (times per second)
Read Xfer / sec	Data transfer rate for read operations (megabytes per second)
Write I/O / sec	Write frequency (times per second)
Write Xfer / sec	Data transfer rate for write operations (megabytes per second)

Drilldown Reports (Field Level)

Report Name	Description
Array Group Configuration(5.0)	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the Array Group Read IO Rate Status(5.0) report:

Report Name	Description
	• RAID Group Number
Array Group Read IO Rate Status(5.0)	Displays a graph showing the read frequency for the last 24 hours for each parity group. To display this report, click the following field in the Array Group Read IO Rate Status(5.0) report: • Read I/O / sec
Array Group Read Transfer Rate Status(5.0)	Displays a graph showing the read data transfer rate for the last 24 hours for each parity group. To display this report, click the following field in the Array Group Read IO Rate Status(5.0) report: • Read Xfer / sec
Array Group Write IO Rate Status(5.0)	Displays a graph showing the write frequency for the last 24 hours for each parity group. To display this report, click the following field in the Array Group Read IO Rate Status(5.0) report: • Write I/O / sec
Array Group Write Transfer Rate Status(5.0)	Displays a graph showing the write data transfer rate for the last 24 hours for each parity group. To display this report, click the following field in the Array Group Read IO Rate Status(5.0) report: • Write Xfer / sec

Array Group Read Response Rate - Top 10

Overview

The Array Group Read Response Rate - Top 10 report displays a table that shows, in real time, the ten parity groups with the longest average processing times for read operation requests.

Storage Location

Reports/RAID/Troubleshooting/Real-Time/

Record

RAID Group Summary (PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number

Field Name	Description
Read Response Rate	Average processing time per read request (microseconds)

Drilldown Reports (Field Level)

Report Name	Description
Array Group Configuration(5.0)	Displays a table that shows parity group configuration information in real time. To display this report, click the following field in the Array Group Read Response Rate - Top 10 report. • RAID Group Number

Array Group Read Transfer Rate - Top 10(5.0)

Overview

The Array Group Read Transfer Rate - Top 10(5.0) report displays a table listing the ten parity groups with the fastest read data transfer rates in real time.

Storage Location

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Record

RAID Group Summary (PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Read Xfer / sec	Data transfer rate for read operations (megabytes per second)

Drilldown Reports (Report Level)

Report Name	Description
Array Group Read Cache Hit Rate - Worst 10(5.0)	Displays a table listing the ten parity groups with the lowest cache hit rates for read operations in real time.
Array Group Read IO Rate - Top 10(5.0)	Displays a table listing the ten parity groups with the highest read frequencies in real time.

Report Name	Description
Array Group Write Cache Hit Rate – Worst 10(5.0)	Displays a table listing the ten parity groups with the lowest cache hit rates for write operations in real time.
Array Group Write IO Rate – Top 10(5.0)	Displays a table listing the ten parity groups with the highest write frequencies in real time.
Array Group Write Transfer Rate – Top 10(5.0)	Displays a table listing the ten parity groups with the fastest data transfer rates for write operations in real time.

Drilldown Report (Field Level)

Report Name	Description
Array Group Configuration(5.0)	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the Array Group Read Transfer Rate – Top 10(5.0) report: • RAID Group Number

Array Group Read Transfer Rate Status(5.0)

Overview

The Array Group Read Transfer Rate Status(5.0) report displays a line graph showing the data transfer rate of read operations for the last 24 hours for each parity group, and a table listing the frequency and data transfer rate of read and write operations for the last 24 hours for each parity group.

Storage Location

Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/

Record

RAID Group Summary (PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Read I/O / sec	Read frequency (times per second)
Read Xfer / sec	Data transfer rate for read operations (megabytes per second)
Write I/O / sec	Write frequency (times per second)

Field Name	Description
Write Xfer / sec	Data transfer rate for write operations (megabytes per second)

Drilldown Reports (Field Level)

Report Name	Description
Array Group Configuration(5.0)	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the Array Group Read Transfer Rate Status(5.0) report: • RAID Group Number
Array Group Read IO Rate Status(5.0)	Displays a graph showing the read frequency for each parity group for the last 24 hours. To display this report, click the following field in the Array Group Read Transfer Rate Status(5.0) report: • Read I/O / sec
Array Group Read Transfer Rate Status(5.0)	Displays a graph showing the read data transfer rate for the last 24 hours for each parity group. To display this report, click the following field in the Array Group Read Transfer Rate Status(5.0) report: • Read Xfer / sec
Array Group Write IO Rate Status(5.0)	Displays a graph showing the write frequency for the last 24 hours for each parity group. To display this report, click the following field in the Array Group Read Transfer Rate Status(5.0) report: • Write I/O / sec
Array Group Write Transfer Rate Status(5.0)	Displays a graph showing the write data transfer rate for the last 24 hours for each parity group. To display this report, click the following field in the Array Group Read Transfer Rate Status(5.0) report: • Write Xfer / sec

Array Group Response Rate Status (Hourly Historical Report)

Overview

The Array Group Response Rate Status report displays the average processing time per read and write request for parity groups over the past 24 hours.

Storage Location

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Record

RAID Group Summary (`PI_RGS`)

Fields

Field Name	Description
RAID Group Number	Parity group number
Read Response Rate	Average processing time per read request (microseconds)
Total Response Rate	Average processing time per read and write request (microseconds)
Write Response Rate	Average processing time per write request (microseconds)

Drilldown Report (Field Level)

Report Name	Description
`Array Group Configuration(5.0)`	Displays a table that shows parity group configuration information in real time. To display this report, click the following field in the `Array Group Response Rate Status` report: • RAID Group Number

Array Group Response Rate Status (Real-Time Report)

Overview

The `Array Group Response Rate Status` report displays the average values of read and write operations of each parity group in real time.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

RAID Group Summary (`PI_RGS`)

Fields

Field Name	Description
RAID Group Number	Parity group number
Read Response Rate	Average processing time per read request (microseconds)
Total Response Rate	Average processing time per read and write request (microseconds)

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Field Name	Description
Write Response Rate	Average processing time per write request (microseconds)

Drilldown Reports (Field Level)

Report Name	Description
Array Group Configuration(5.0)	Displays a table that lists parity group configuration information in real time. To display this report, click the following field in the Array Group Response Rate Status report: • RAID Group Number

Array Group Total Response Rate - Top 10

Overview

The `Array Group Total Response Rate - Top 10` report displays, in real time, the ten parity groups with the longest average processing times for read and write operation requests.

Storage Location

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Record

RAID Group Summary (`PI_RGS`)

Fields

Field Name	Description
RAID Group Number	Parity group number
Total Response Rate	Average processing time per read and write request (microseconds)

Drilldown Reports (Field Level)

Report Name	Description
Array Group Configuration(5.0)	Displays a table that shows parity group configuration information in real time. To display this report, click the following field in the `Array Group Total Response Rate - Top 10` report:

Report Name	Description
	• RAID Group Number

Array Group Transfer Rate Status(5.0) (Hourly Historical Report)

Overview

The `Array Group Transfer Rate Status(5.0)` report displays a table listing the data transfer rate of read and write operations for the last 24 hours for each parity group.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/`

Record

RAID Group Summary (`PI_RGS`)

Fields

Field Name	Description
RAID Group Number	Parity group number
Read Xfer / sec	Data transfer rate for read operations (megabytes per second)
Write Xfer / sec	Data transfer rate for write operations (megabytes per second)

Drilldown Report (Report Level)

Report Name	Description
`Array Group IO Rate Status(5.0)` (Hourly Historical Report)	Displays a table listing the read and write frequency for the last 24 hours for each parity group.

Drilldown Reports (Field Level)

Report Name	Description
`Array Group Configuration(5.0)`	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the `Array Group Transfer Rate Status(5.0)` report: • RAID Group Number

Report Name	Description
Array Group Read Transfer Rate Status(5.0)	Displays a line graph showing the read data transfer rate for the last 24 hours for each parity group. To display this report, click the following field in the Array Group Transfer Rate Status(5.0) report: • Read Xfer / sec
Array Group Write Transfer Rate Status(5.0)	Displays a line graph showing the write data transfer rate for the last 24 hours for each parity group. To display this report, click the following field in the Array Group Transfer Rate Status(5.0) report: • Write Xfer / sec

Array Group Transfer Rate Status(5.0) (Real-Time Report)

Overview

The Array Group Transfer Rate Status(5.0) report displays a table listing the data transfer rate of read and write operations of each parity group in real time.

Storage Location

Reports/RAID/Status Reporting/Real-Time/

Record

RAID Group Summary (PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Read Xfer / sec	Data transfer rate for read operations (megabytes per second)
Write Xfer / sec	Data transfer rate for write operations (megabytes per second)

Drilldown Report (Report Level)

Report Name	Description
Array Group IO Rate Status(5.0) (Real-Time Report)	Displays a table listing the read and write frequency for the last 24 hours for each parity group in real time.

Drilldown Report (Field Level)

Report Name	Description
Array Group Configuration(5.0)	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the `Array Group Transfer Rate Status(5.0)` report: • RAID Group Number

Array Group Write Cache Hit Rate - Worst 10(5.0)

Overview

The `Array Group Write Cache Hit Rate – Worst 10(5.0)` report displays a table listing the ten parity groups with the lowest cache hit rates of write operations in real time.

Storage Location

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Record

RAID Group Summary (`PI_RGS`)

Fields

Field Name	Description
RAID Group Number	Parity group number
Write Hit %	Cache hit rate for write operations

Drilldown Reports (Report Level)

Report Name	Description
Array Group Read Cache Hit Rate – Worst 10(5.0)	Displays a table listing the ten parity groups with the lowest cache hit rates for read operations in real time.
Array Group Read IO Rate – Top 10(5.0)	Displays a table listing the ten parity groups with the highest read frequencies in real time.
Array Group Read Transfer Rate – Top 10(5.0)	Displays a table listing the ten parity groups with the fastest data transfer rates for read operations in real time.
Array Group Write IO Rate – Top 10(5.0)	Displays a table listing the ten parity groups with the highest write frequencies in real time.

Report Name	Description
`Array Group Write Transfer Rate - Top 10(5.0)`	Displays a table listing the ten parity groups with the fastest data transfer rates for write operations in real time.

Drilldown Report (Field Level)

Report Name	Description
`Array Group Configuration(5.0)`	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the `Array Group Write Cache Hit Rate - Worst 10(5.0)` report: • RAID Group Number

Array Group Write IO Rate - Top 10(5.0)

Overview

The `Array Group Write IO Rate - Top 10(5.0)` report displays a table listing the ten parity groups with the highest write frequencies in real time.

Storage Location

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Record

RAID Group Summary (`PI_RGS`)

Fields

Field Name	Description
RAID Group Number	Parity group number
Write I/O / sec	Write frequency (times per second)

Drilldown Reports (Report Level)

Report Name	Description
`Array Group Read Cache Hit Rate - Worst 10(5.0)`	Displays a table listing the ten parity groups with the lowest cache hit rates for read operations in real time.
`Array Group Read IO Rate - Top 10(5.0)`	Displays a table listing the ten parity groups with the highest read frequencies in real time.

Report Name	Description
Array Group Read Transfer Rate - Top 10(5.0)	Displays a table listing the ten parity groups with the fastest data transfer rates for read operations in real time.
Array Group Write Cache Hit Rate - Worst 10(5.0)	Displays a table listing the ten parity groups with the lowest cache hit rates for write operations in real time.
Array Group Write Transfer Rate - Top 10(5.0)	Displays a table listing the ten parity groups with the fastest data transfer rates for write operations in real time.

Drilldown Report (Field Level)

Report Name	Description
Array Group Configuration(5.0)	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the Array Group Write IO Rate - Top 10(5.0) report: • RAID Group Number

Array Group Write IO Rate Status(5.0)

Overview

The Array Group Write IO Rate Status(5.0) report displays a line graph showing the write frequency for the last 24 hours for each parity group, and a table listing the frequency and transfer rate of read and write operations for each parity group.

Storage Location

Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/

Record

RAID Group Summary (PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Read I/O / sec	Read frequency (times per second)
Read Xfer / sec	Data transfer rate for read operations (megabytes per second)

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Field Name	Description
Write I/O / sec	Write frequency (times per second)
Write Xfer / sec	Data transfer rate for write operations (megabytes per second)

Drilldown Reports (Field Level)

Report Name	Description
Array Group Configuration(5.0)	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the `Array Group Write IO Rate Status(5.0)` report: • RAID Group Number
Array Group Read IO Rate Status(5.0)	Displays a graph showing the read frequency for the last 24 hours for each parity group. To display this report, click the following field in the `Array Group Write IO Rate Status(5.0)` report: • Read I/O / sec
Array Group Read Transfer Rate Status(5.0)	Displays a graph showing the read data transfer rate for the last 24 hours for each parity group. To display this report, click the following field in the `Array Group Write IO Rate Status(5.0)` report: • Read Xfer / sec
Array Group Write IO Rate Status(5.0)	Displays a graph showing the write frequency for the last 24 hours for each parity group. To display this report, click the following field in the `Array Group Write IO Rate Status(5.0)` report: • Write I/O / sec
Array Group Write Transfer Rate Status(5.0)	Displays a graph showing the write data transfer rate for the last 24 hours for each parity group. To display this report, click the following field in the `Array Group Write IO Rate Status(5.0)` report: • Write Xfer / sec

Array Group Write Response Rate - Top 10

Overview

The `Array Group Write Response Rate - Top 10` report shows, in real time, the ten parity groups with the longest average processing times for write operation requests.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

RAID Group Summary (`PI_RGS`)

Fields

Field Name	Description
RAID Group Number	Parity group number
Write Response Rate	Average processing time per write request (microseconds)

Drilldown Reports (Field Level)

Report Name	Description
`Array Group Configuration(5.0)`	Displays a table that shows parity group configuration information in real time. To display this report, click the following field in the `Array Group Write Response Rate - Top 10` report: • RAID Group Number

Array Group Write Transfer Rate - Top 10(5.0)

Overview

The `Array Group Write Transfer Rate - Top 10(5.0)` report displays a table listing the ten parity groups with the fastest data transfer rates of write operations in real time.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

RAID Group Summary (`PI_RGS`)

Fields

Field Name	Description
RAID Group Number	Parity group number
Write Xfer / sec	Data transfer rate for write operations (megabytes per second)

Drilldown Reports (Report Level)

Report Name	Description
Array Group Read Cache Hit Rate - Worst 10(5.0)	Displays a table listing the ten parity groups with the lowest cache hit rates for read operations in real time.
Array Group Read IO Rate - Top 10(5.0)	Displays a table listing the ten parity groups with the highest read frequencies in real time.
Array Group Read Transfer Rate - Top 10(5.0)	Displays a table listing the ten parity groups with the fastest data transfer rates for read operations in real time.
Array Group Write Cache Hit Rate - Worst 10(5.0)	Displays a table listing the ten parity groups with the lowest cache hit rates for write operations in real time.
Array Group Write IO Rate - Top 10(5.0)	Displays a table listing the ten parity groups with the highest write frequencies in real time.

Drilldown Report (Field Level)

Report Name	Description
Array Group Configuration(5.0)	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the `Array Group Write Transfer Rate - Top 10(5.0)` report: • RAID Group Number

Array Group Write Transfer Rate Status(5.0)

Overview

The `Array Group Write Transfer Rate Status(5.0)` report displays a line graph showing the data transfer rate of write operations for the last 24 hours for each parity group, and a table listing the frequency and data transfer rate of read and write operations for the last 24 hours for each parity group.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

RAID Group Summary (`PI_RGS`)

Fields

Field Name	Description
RAID Group Number	Parity group number
Read I/O / sec	Read frequency (times per second)
Read Xfer / sec	Data transfer rate for read operations (megabytes per second)
Write I/O / sec	Write frequency (times per second)
Write Xfer / sec	Data transfer rate for write operations (megabytes per second)

Drilldown Reports (Field Level)

Report Name	Description
Array Group Configuration(5.0)	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the `Array Group Write Transfer Rate Status(5.0)` report: • RAID Group Number
Array Group Read IO Rate Status(5.0)	Displays a graph showing the read frequency for the last 24 hours for each parity group. To display this report, click the following field in the `Array Group Write Transfer Rate Status(5.0)` report: • Read I/O / sec
Array Group Read Transfer Rate Status(5.0)	Displays a graph showing the read data transfer rate for the last 24 hours for each parity group. To display this report, click the following field in the `Array Group Write Transfer Rate Status(5.0)` report: • Read Xfer / sec
Array Group Write IO Rate Status(5.0)	Displays a graph showing the write frequency for the last 24 hours for each parity group. To display this report, click the following field in the `Array Group Write Transfer Rate Status(5.0)` report: • Write I/O / sec
Array Group Write Transfer Rate Status(5.0)	Displays a graph showing the write data transfer rate for the last 24 hours for each parity group. To display this report, click the following field in the `Array Group Write Transfer Rate Status(5.0)` report: • Write Xfer / sec

CHA Avg IO Rate Status(8.6)

Overview

The `CHA Avg IO Rate Status(8.6)` report displays the average read and write frequency of each storage system port for the last 24 hours, which is summarized as a CHA value, and the frequency and data transfer rate of read and write operations of each storage system port for the last 24 hours, which is also summarized as a CHA value. The average read and write frequency is shown in a line graph, and the frequency and data transfer rate of read and write operations are shown in a table.

Note that this report is not supported if the monitored storage system is a midrange storage system.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Channel Adaptor Summary Record (`PI_CHS`)

Fields

Field Name	Description
Avg I/O / sec	The average frequency of read and write operations to and from storage system ports (operations per second), summarized by channel adapter (CHA).
Avg Xfer / sec	The average transfer rate of read and write operations to and from storage system ports (MB per second), summarized by channel adapter (CHA).
CHA Name	CHA name of storage system

Drilldown Reports (Field Level)

Report Name	Description
CHA Avg IO Rate Status (8.6)	Displays a line graph showing the average frequency of read and write operations to and from storage system ports over the past 24 hours for each CHA. This report also displays a table that summarizes the frequency and transfer rate of these operations over the past 24 hours for each CHA. To display this report, click the following field in the `CHA Avg IO Rate Status(8.6)` report: • Avg I/O / sec

Report Name	Description
`CHA Avg Transfer Rate Status (8.6)`	Displays a line graph showing the average transfer rate of read and write operations to and from storage system ports over the past 24 hours for each CHA. This report also displays a table that summarizes the frequency and transfer rate of these operations for each CHA. To display this report, click the following field in the `CHA Avg IO Rate Status(8.6)` report: • Avg Xfer / sec
`Port Avg IO Rate Status(8.6)`	Displays a line graph showing the average frequency of read and write operations to and from storage system ports over the past 24 hours, and a table showing the frequency and transfer rate of these operations over the past 24 hours. To display this report, click the following field in the `CHA Avg IO Rate Status(8.6)` report: • CHA Name

CHA Avg Transfer Rate Status(8.6)

Overview

The `CHA Avg Transfer Rate Status(8.6)` report displays a line graph summarizing the average transfer rate of read and write operations to and from storage system ports over the past 24 hours for each CHA. This report also displays a table summarizing the frequency and transfer rates of these operations for individual CHAs.

Note that this report is not supported if the monitored storage system is a midrange storage system.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Channel Adaptor Summary Record (`PI_CHS`)

Fields

Field Name	Description
Avg I/O / sec	Average frequency of read and write operations to and from storage system

Field Name	Description
	ports (operations per second) summarized by CHA
Avg Xfer / sec	Average transfer rate of read and write operations to and from storage system ports (MB per second) summarized by CHA
CHA Name	CHA name of the storage system

Drilldown Reports (Field Level)

Report Name	Description
CHA Avg IO Rate Status (8.6)	Displays a line graph showing the average frequency of read and write operations to and from storage system ports over the past 24 hours, summarized by CHA. This report also shows a table showing the frequency and transfer rate of these operations over the past 24 hours, summarized by CHA. To display this report, click the following field in the CHA Avg Transfer Rate Status(8.6) report: • Avg I/O / sec
CHA Avg Transfer Rate Status (8.6)	Displays a line graph showing the average transfer rate of read and write operations to and from storage system ports over the past 24 hours, summarized by CHA. This report also shows a table listing the frequency and transfer rate of these operations, summarized by CHA. To display this report, click the following field in the CHA Avg Transfer Rate Status(8.6) report: • Avg Xfer / sec
Port Avg Transfer Rate Status(8.6)	Displays a line graph showing the average frequency of read and write requests to and from storage system ports over the past 24 hours, and a table showing the frequency and transfer rate of these operations over the past 24 hours. To display this report, click the following field in the CHA Avg Transfer Rate Status(8.6) report: • CHA Name

CHA Performance Details (8.6)

Overview

The `CHA Performance Details (8.6)` report displays a table listing the frequency and transfer rate of read and write operations to and from storage system ports over the past hour, summarized by CHA.

Note that this report is not supported if the monitored storage system is a midrange storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

Channel Adaptor Summary Record (`PI_CHS`)

Fields

Field Name	Description
Avg I/O / sec	Average frequency of read and write operations to and from storage system ports (operations per second) summarized by CHA
Avg Xfer / sec	Average transfer rate of read and write operations to and from storage system ports (MB per second) summarized by CHA
CHA Name	CHA name of the storage system

Drilldown Reports (Field Level)

Report Name	Description
`Port Performance Details(8.6)`	Displays a table showing the frequency and transfer rate of read and write operations to and from storage system ports over the past hour. To display this report, click the following field in the `CHA Performance Details(8.6)` report: • CHA Name

CHA Performance Status (8.6) (Hourly Historical Report)

Overview

The `CHA Performance Status (8.6)` report displays a table showing the average frequency and transfer rate of read and write operations to and from storage system ports over the past 24 hours, summarized by CHA.

Note that this report is not supported if the monitored storage system is a midrange storage system.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/`

Record

Channel Adaptor Summary Record (`PI_CHS`)

Fields

Field Name	Description
Avg I/O / sec	Average frequency of read and write operations to and from storage system ports (operations per second) summarized by CHA
Avg Xfer / sec	Average transfer rate of read and write operations to and from storage system ports (MB per second) summarized by CHA
CHA Name	CHA name of the storage system

Drilldown Reports (Field Level)

Report Name	Description
CHA Avg IO Rate Status(8.6)	Displays a line graph showing the average frequency of read and write operations to and from storage system ports over the past 24 hours, summarized by CHA. This report also shows a table listing the frequency and transfer rate of read and write operations summarized by CHA. To display this report, click the following field in the `CHA Performance Status(8.6)` report: • Avg I/O / sec
CHA Avg Transfer Rate Status(8.6)	Displays a line graph showing the average transfer rate of read and write operations to and from storage system ports over the past 24 hours, summarized by CHA. This report also shows a table listing the

Report Name	Description
	frequency and transfer rate of read and write operations summarized by CHA. To display this report, click the following field in the `CHA Performance Status(8.6)` report: • Avg Xfer / sec
`Port Performance Status(8.6)`	Displays a table showing the average frequency and transfer rate of read and write operations to and from storage system ports over the past 24 hours. To display this report, click the following field in the `CHA Performance Status(8.6)` report: • CHA Name

CHA Performance Status(8.6) (Real-Time Report)

Overview

The `CHA Performance Status(8.6)` report displays a table that lists the average frequency and data transfer rate of read and write operations of each storage system port, which is summarized as a CHA value, in real time.

Note that this report is not supported if the monitored storage system is a midrange storage system.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Channel Adaptor Summary Record (`PI_CHS`)

Fields

Field Name	Description
Avg I/O / sec	Average read and write frequency (times per second) of each storage system port, summarized as a CHA value
Avg Xfer / sec	Average read and write data transfer rate (megabytes per second) of each storage system port, summarized as a CHA value
CHA Name	CHA name of the storage system

Drilldown Report (Field Level)

Report Name	Description
Port Performance Status(8.6)	Displays a table that lists configuration information about each storage system port in real time. To display this report, click the following field in the CHA Performance Status(8.6) report: • CHA Name

CLPR Configuration(6.0)

Overview

The CLPR Configuration(6.0) report displays a table listing CLPR configuration information in real time. However, this report cannot be used if the monitored storage system does not support the Cache Logical Partition (CLPR) function.

Storage Location

Reports/RAID/Status Reporting/Real-Time

Record

CLPR Configuration (PD_CLPC)

Fields

Field Name	Description
Cache Memory Capacity	Amount of cache memory allocated for this CLPR (MB)
CLPR Name	CLPR name
CLPR Number	CLPR number
SLPR Name	Name of the SLPR to which this CLPR belongs
SLPR Number	The number of the SLPR to which this CLPR belongs

CLPR Usage Details(6.0)

Overview

The CLPR Usage Details(6.0) report displays a table listing the cache memory usage statuses for each CLPR for the last hour. This report cannot be

used if the monitored storage system does not support the Cache Logical Partition (CLPR) function.

The field value for the capacity used by the side file is invalid if the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, HUS100 series, or Hitachi AMS2000/AMS/WMS/SMS series storage system.

Storage Location

Reports/RAID/Troubleshooting/Recent Past/

Record

CLPR Summary (PI_CLPS)

Fields

Field Name	Description
Cache Memory Capacity	Amount of cache memory allocated for this CLPR (MB)
Cache Side File Usage	Of the cache memory allocated for this CLPR, the amount that is being used by the side file (MB)
Cache Side File Usage %	Of the cache memory allocated for this CLPR, the percentage that is being used by the side file
Cache Write Pending Usage	Of the cache memory allocated for this CLPR, the amount that is being used by write-pending data (MB)
Cache Write Pending Usage %	Of the cache memory allocated for this CLPR, the percentage that is being used by write-pending data
CLPR Number	CLPR number

Drilldown Report (Field Level)

Report Name	Description
CLPR Configuration(6.0)	Displays a table listing the CLPR configuration information in real time. To display this report, click the following field in the CLPR Usage Details(6.0) report: • CLPR Number

CLPR Usage Details(7.2)

Overview

The `CLPR Usage Details(7.2)` report displays a table listing the cache memory usage statuses for each CLPR for the last hour. This report cannot be used if the monitored storage system does not support the Cache Logical Partition (CLPR) function.

The field value for the capacity used by the side file is invalid if the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, HUS100 series, or Hitachi AMS2000/AMS/WMS/SMS series storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

CLPR Summary (`PI_CLPS`)

Fields

Field Name	Description
Cache Memory Capacity	Amount of cache memory allocated for this CLPR (MB)
Cache Memory Usage	Amount of cache memory allocated for this CLPR that is being used
Cache Memory Usage %	Of the cache memory allocated for this CLPR, the percentage that is being used
Cache Side File Usage	Of the cache memory allocated for this CLPR, the amount that is being used by the side file (MB)
Cache Side File Usage %	Of the cache memory allocated for this CLPR, the percentage that is being used by the side file
Cache Write Pending Usage	Of the cache memory allocated for this CLPR, the amount that is being used by write-pending data (MB)
Cache Write Pending Usage %	Of the cache memory allocated for this CLPR, the percentage that is being used by write-pending data
CLPR Number	CLPR number

Drilldown Report (Field Level)

Report Name	Description
CLPR Configuration(6.0)	Displays a table that lists the CLPR configuration information in real time. To display this report, click the following field in the CLPR Usage Details(7.2) report: • CLPR Number

CLPR Usage Per Controller Details(7.2)

Overview

The CLPR Usage Per Controller Details(7.2) report displays a table that lists the operation statuses of the cache memory allocated for the CLPR of the controller or controllers for the last hour.

Note that this report is not supported if the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system.

Storage Location

Reports/RAID/Troubleshooting/Recent Past/

Record

CLPR Per Controller Summary (PI_CLCS)

Fields

Field Name	Description
Cache Memory Capacity	Amount of cache memory allocated for the CLPR of the controller or controllers (MB)
Cache Memory Usage	Of the cache memory allocated for the CLPR of the controller or controllers, the amount that is being used (MB)
Cache Memory Usage %	Of the cache memory allocated for the CLPR of the controller or controllers, the percentage that is being used
Cache Write Pending Usage	Of the cache memory allocated for the CLPR of the controller or controllers, the amount that is being used by write-pending data (MB)
Cache Write Pending Usage %	Of the cache memory allocated for the CLPR of the controller or controllers, the percentage that is being used by write-pending data

Field Name	Description
CLPR Number	CLPR number. If the record provides a summary of the performance values of all of the cache memory included for one controller, the value of this field is _Total.
Controller	Controller number

CLPR Usage Per Controller Status(7.2)

Overview

The `CLPR Usage Per Controller Status(7.2)` report displays a table that lists the operation statuses, in real time, of the cache memory allocated for the CLPR of the controller or controllers.

Note that this report is not supported if the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

CLPR Per Controller Summary (`PI_CLCS`)

Fields

Field Name	Description
Cache Memory Capacity	Amount of cache memory allocated for the CLPR of the controller or controllers (MB)
Cache Memory Usage	Of the cache memory allocated for the CLPR of the controller or controllers, the amount that is being used (MB)
Cache Memory Usage %	Of the cache memory allocated for the CLPR of the controller or controllers, the percentage that is being used
Cache Write Pending Usage	Of the cache memory allocated for the CLPR of the controller or controllers, the amount that is being used by write-pending data (MB)
Cache Write Pending Usage %	Of the cache memory allocated for the CLPR of the controller or controllers, the percentage that is being used by write-pending data

Field Name	Description
CLPR Number	CLPR number. If the record provides a summary of the performance values of all of the cache memory included for one controller, the value of this field is `_Total`.
Controller	Controller number

CLPR Usage Status(6.0) (Hourly Historical Report)

Overview

The `CLPR Usage Status(6.0)` report displays a table listing the cache memory usage statuses for each CLPR for the last 24 hours.

This report cannot be used if the monitored storage system does not support the Cache Logical Partition (CLPR) function.

The field value for the capacity used by the side file is invalid if the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, HUS100 series, or Hitachi AMS2000/AMS/WMS/SMS series storage system.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/`

Record

CLPR Summary (`PI_CLPS`)

Fields

Field Name	Description
Cache Memory Capacity	Amount of cache memory allocated for this CLPR (MB)
Cache Side File Usage	Of the cache memory allocated for this CLPR, the amount that is being used by the side file (MB)
Cache Side File Usage %	Of the cache memory allocated for this CLPR, the percentage that is being used by the side file
Cache Write Pending Usage	Of the cache memory allocated for this CLPR, the amount that is being used by write-pending data (MB)

Field Name	Description
Cache Write Pending Usage %	Of the cache memory allocated for this CLPR, the percentage that is being used by write-pending data
CLPR Number	CLPR number

Drilldown Report (Field Level)

Report Name	Description
CLPR Configuration(6.0)	Displays a table listing the CLPR configuration information in real time. To display this report, click the following field in the CLPR Usage Details(6.0) report: • CLPR Number

CLPR Usage Status(6.0) (Real-Time Report)

Overview

The CLPR Usage Status(6.0) report displays a table listing the cache memory usage statuses for each CLPR in real time.

This report cannot be used if the monitored storage system does not support the Cache Logical Partition (CLPR) function.

The field value for the capacity used by the side file is invalid if the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, HUS100 series, or Hitachi AMS2000/AMS/WMS/SMS series storage system.

Storage Location

Reports/RAID/Status Reporting/Real-Time/

Record

CLPR Summary (PI_CLPS)

Fields

Field Name	Description
Cache Memory Capacity	Amount of cache memory allocated for this CLPR (MB)

Field Name	Description
Cache Side File Usage	Of the cache memory allocated for this CLPR, the amount that is being used by the side file (MB)
Cache Side File Usage %	Of cache memory allocated for this CLPR, the percentage that is being used by the side file
Cache Write Pending Usage	Of the cache memory allocated for this CLPR, the amount that is being used by write-pending data (MB)
Cache Write Pending Usage %	Of the cache memory allocated for this CLPR, the percentage that is being used by write-pending data
CLPR Number	CLPR number

Drilldown Report (Field Level)

Report Name	Description
CLPR Configuration(6.0)	Displays a table listing the CLPR configuration information in real time. To display this report, click the following field in the CLPR Usage Details(6.0) report: • CLPR Number

CLPR Usage Status(7.2)

Overview

The CLPR Usage Status(7.2) report displays a table listing the cache memory usage statuses for each CLPR in real time.

This report cannot be used if the monitored storage system does not support the Cache Logical Partition (CLPR) function.

The field value for the capacity used by the side file is invalid if the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, HUS100 series, or Hitachi AMS2000/AMS/WMS/SMS series storage system.

Storage Location

Reports/RAID/Status Reporting/Real-Time/

Record

CLPR Summary (PI_CLPS)

Fields

Field Name	Description
Cache Memory Capacity	Amount of cache memory allocated for this CLPR (MB)
Cache Memory Usage	Of the cache memory allocated for this CLPR, the amount that is being used (MB)
Cache Memory Usage %	Of the cache memory allocated for this CLPR, the percentage that is being used (MB)
Cache Side File Usage	Of the cache memory allocated for this CLPR, the amount that is being used by the side file (MB)
Cache Side File Usage %	Of the cache memory allocated for this CLPR, the percentage that is being used by the side file
Cache Write Pending Usage	Of the cache memory allocated for this CLPR, the amount that is being used by write-pending data (MB)
Cache Write Pending Usage %	Of the cache memory allocated for this CLPR, the percentage that is being used by write-pending data
CLPR Number	CLPR number

Drilldown Report (Field Level)

Report Name	Description
CLPR Configuration(6.0)	Displays a table that lists the CLPR configuration information in real time. To display this report, click the following field in the CLPR Usage Status(7.2) report: • CLPR Number

External LDEV Configuration(5.0)

Overview

The External LDEV Configuration(5.0) report displays a table listing configuration information about each externally connected LDEV in real time. However, if no externally connected LDEVs are mapped in external storage systems, this report cannot be used.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Status Reporting/Real-Time/

Record

External LDEV Configuration (PD_ELC)

Fields

Field Name	Description
DKC Name	Product name of the externally connected storage system
External LDEV Number	Logical device number of the externally connected LDEV
LDEV Number	Logical device number
Serial Number	Serial number of the externally connected storage system
Vendor ID	Vendor name of the externally connected storage system

Logical Device 1 Performance Details(7.1)

Overview

The Logical Device 1 Performance Details(7.1) report displays a table listing the following information about each logical device whose logical device number is in the range from 00:40:00 to 00:7F:FF for the last hour:

- Frequency and data transfer rate of read and write operations
- Cache hit rate of read operations
- Average processing time per read and write request
- Frequency and data transfer rate of random operations
- Frequency and data transfer rate of sequential operations

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP G200, G350, G400, G600, G800, VSP F350, F400, F600, F800, VSP N400, N600, N800, or HUS VM storage system.

Storage Location

Reports/RAID/Troubleshooting/Recent Past/

Record

Logical Device Summary 1 (PI_LDS1)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Total I/O /sec	Frequency of random operations (times per second)
Random Total Xfer /sec	Data transfer rate of random operations (megabytes per second)
Read Hit %	Cache hit rate of read operations
Read I/O /sec	Frequency of read operations (times per second)
Read Response Rate	Average processing time per read request (microseconds)
Read Xfer /sec	Data transfer rate of read operations (megabytes per second)
Sequential Total I/O /sec	Frequency of sequential operations (times per second)
Sequential Total Xfer /sec	Data transfer rate of sequential operations (megabytes per second)
Total Response Rate	Average processing time per read and write request (microseconds)
Write I/O /sec	Frequency of write operations (times per second)
Write Response Rate	Average processing time per write request (microseconds)
Write Xfer /sec	Data transfer rate of write operations (megabytes per second)

Drilldown Reports (Field Level)

Report Name	Description
`Logical Device 1 Read Response Rate Status(7.1)`	Displays a table and line graph showing the average processing time per read request for the logical device for the last 24 hours. To display this report, click the following field in the `Logical Device 1 Performance Details(7.1)` report: • Read Response Rate
`Logical Device Configuration(7.1)`	Displays a table listing logical device configuration information in real time. To display this report, click the following field in the `Logical Device 1 Performance Details(7.1)` report: • LDEV Number

Logical Device 1 Performance Details(8.6)

Overview

The `Logical Device 1 Performance Details(8.6)` report displays a table that lists the following information about each logical device whose logical device number is in the range from 00:40:00 to 00:7F:FF for the last hour:

- Frequency and transfer rate of read and write operations
- Cache hit rate of read operations
- Average processing time per read and write request
- Frequency and transfer rate of random operations
- Frequency and transfer rate of sequential operations

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP G200, G350, G400, G600, G800, VSP F350, F400, F600, F800, VSP N400, N600, N800, or HUS VM storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

Logical Device Summary 1 (`PI_LDS1`)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Total I/O /sec	Frequency of random operations (operations per second)
Random Total Xfer /sec	Transfer rate of random operations (MB per second)
Read Hit %	Cache hit rate of read operations
Read I/O /sec	Frequency of read operations (operations per second)
Read Response Rate	Average processing time per read request (microseconds)
Read Xfer /sec	Transfer rate of read operations (MB per second)
Sequential Total I/O /sec	Frequency of sequential operations (operations per second)
Sequential Total Xfer /sec	Transfer rate of sequential operations (MB per second)
Total Response Rate	Average processing time per read and write request (microseconds)
Virtual DKC Name	Model name of the virtual storage machine to which Logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which Logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which Logical device belongs

Working with the Solution Set

Hitachi Tuning Manager Hardware Reports Reference

Field Name	Description
Write I/O /sec	Frequency of write operations (operations per second)
Write Response Rate	Average processing time per write request (microseconds)
Write Xfer /sec	Transfer rate of write operations (MB per second)

Drilldown Reports (Field Level)

Report Name	Description
Logical Device 1 Read Response Rate Status(8.6)	Displays a table and line graph showing the read response rate over the past 24 hours for LDEVs whose LDEV number is in the range from 00:40:00 to 00:7F:FF. To display this report, click the following field in the Logical Device 1 Performance Details(8.6) report: • Read Response Rate
Logical Device Configuration(8.6)	Displays a table that shows configuration information for a logical device in real time. To display this report, click the following field in the Logical Device Performance Details(8.6) report: • LDEV Number

Logical Device 1 Performance Extended(7.4)

Overview

The Logical Device 1 Performance Extended(7.4) report displays a table listing the following information about each logical device whose logical device number is in the range from 00:40:00 to 00:7F:FF for the last hour:

• Frequency and data transfer rate of random read and write operations
• Frequency and data transfer rate of sequential read and write operations

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP G200, G350, G400, G600, G800, VSP F350, F400, F600, F800, VSP N400, N600, N800, or HUS VM storage system.

Storage Location

Reports/RAID/Troubleshooting/Recent Past/

Record

LDEV Summary 1 - Extended (PI_LDE1)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Read I/O /sec	Frequency of random read operations (times per second)
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)
Random Write I/O /sec	Frequency of random write operations (times per second)
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)

Drilldown Report (Field Level)

Report Name	Description
`Logical Device Configuration(7.1)`	Displays a table listing logical device configuration information in real time. To display this report, click the following field in the `Logical Device 1 Performance Extended(7.4)` report: • LDEV Number

Logical Device 1 Performance Extended(7.6)

Overview

The `Logical Device 1 Performance Extended(7.6)` report displays a table listing the following information about each logical device whose logical device number is in the range from 00:40:00 to 00:7F:FF for the last hour:

• Frequency and data transfer rate of random read and write operations

• Frequency and data transfer rate of sequential read and write operations

• Usage rate

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP G200, G350, G400, G600, G800, VSP F350, F400, F600, F800, VSP N400, N600, N800, or HUS VM storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

LDEV Summary 1 - Extended (`PI_LDE1`)

Fields

Field Name	Description
Busy %	Usage rate of the logical device (%)
LDEV Number	Logical device number
Random Read I/O /sec	Frequency of random read operations (times per second)
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)
Random Write I/O /sec	Frequency of random write operations (times per second)
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)

Drilldown Report (Field Level)

Report Name	Description
Logical Device Configuration(7.1)	Displays a table listing logical device configuration information in real time. To display this report, click the following field in the `Logical Device 1 Performance Extended(7.6)` report: • LDEV Number

Logical Device 1 Performance Extended(8.6)

Overview

The `Logical Device 1 Performance Extended(8.6)` report displays a table listing, for the past hour, the frequency of random and sequential read and write operations, transfer rate of read and write operations, and logical device utilization for logical devices whose logical device number is in the range from 00:40:00 to 00:7F:FF.

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP G200, G350, G400, G600, G800, VSP F350, F400, F600, F800, VSP N400, N600, N800, or HUS VM storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

LDEV Summary 1 - Extended (`PI_LDE1`)

Fields

Field Name	Description
Busy %	Usage rate (%) of the logical device
LDEV Number	Logical device number
Random Read I/O /sec	Frequency of random read operations (operations per second)
Random Read Xfer /sec	Transfer rate of random read operations (MB per second)
Random Write I/O /sec	Frequency of random write operations (operations per second)
Random Write Xfer /sec	Transfer rate of random write operations (MB per second)
Sequential Read I/O /sec	Frequency of sequential read operations (operations per second)
Sequential Read Xfer /sec	Transfer rate of sequential read operations (MB per second)
Sequential Write I/O /sec	Frequency of sequential write operations (operations per second)
Sequential Write Xfer /sec	Transfer rate of sequential write operations (MB per second)
Virtual DKC Name	Model name of the virtual storage machine to which Logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which Logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which Logical device belongs

Drilldown Reports (Field Level)

Report Name	Description
Logical Device Configuration(8.6)	Displays a table that shows configuration information for a logical device in real time. To display this report, click the following field in the Logical Device Performance 1 Extended(8.6) report: • LDEV Number

Working with the Solution Set

Hitachi Tuning Manager Hardware Reports Reference

Logical Device 1 Read Response Rate Status(7.1)

Overview

The `Logical Device 1 Read Response Rate Status(7.1)` report displays a table and line graph showing the average processing time per read request, for the last 24 hours, for each logical device whose logical device number is in the range from 00:40:00 to 00:7F:FF.

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP G200, G350, G400, G600, G800, VSP F350, F400, F600, F800, VSP N400, N600, N800, or HUS VM storage system.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Logical Device Summary 1 (`PI_LDS1`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Response Rate	Average processing time (in microseconds) per read request
Read I/O /sec	Number of read operations per second
Write I/O /sec	Number of write operations per second

Logical Device 1 Read Response Rate Status(8.6)

Overview

The `Logical Device 1 Read Response Rate Status(8.6)` report displays a table and line graph showing the average processing time per read request over the past 24 hours for each logical device whose logical device number is in the range from 00:40:00 to 00:7F:FF.

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP G200, G350, G400, G600, G800, VSP F350, F400, F600, F800, VSP N400, N600, N800, or HUS VM storage system.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Logical Device Summary 1 (`PI_LDS1`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O /sec	Frequency of read operations (operations per second)
Read Response Rate	Average processing time per read request (microseconds)
Virtual DKC Name	Model name of the virtual storage machine to which Logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which Logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which Logical device belongs
Write I/O /sec	Frequency of write operations (operations per second)

Logical Device 2 Performance Details(7.1)

Overview

The `Logical Device 2 Performance Details(7.1)` report displays a table listing the following information about each logical device whose logical device number is in the range from 00:80:00 to 00:BF:FF for the last hour:

- Frequency and data transfer rate of read and write operations
- Cache hit rate of read operations
- Average processing time per read and write request
- Frequency and data transfer rate of random operations
- Frequency and data transfer rate of sequential operations

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP G200, G350, G370, G400, G600, G800, VSP F350, F370, F400, F600, F800, VSP N400, N600, N800, or HUS VM storage system.

Storage Location

Reports/RAID/Troubleshooting/Recent Past/

Record

Logical Device Summary 2 (`PI_LDS2`)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Total I/O /sec	Frequency of random operations (times per second)
Random Total Xfer /sec	Data transfer rate of random operations (megabytes per second)
Read Hit %	Cache hit rate of read operations
Read I/O /sec	Frequency of read operations (times per second)
Read Response Rate	Average processing time per read request (microseconds)
Read Xfer /sec	Data transfer rate of read operations (megabytes per second)
Sequential Total I/O /sec	Frequency of sequential operations (times per second)
Sequential Total Xfer /sec	Data transfer rate of sequential operations (megabytes per second)
Total Response Rate	Average processing time per read and write request (microseconds)
Write I/O /sec	Frequency of write operations (times per second)
Write Response Rate	Average processing time per write request (microseconds)
Write Xfer /sec	Data transfer rate of write operations (megabytes per second)

Drilldown Reports (Field Level)

Report Name	Description
Logical Device 2 Read Response Rate Status(7.1)	Displays a table and line graph showing the average processing time per read request for the logical device for the last 24 hours. To display this report, click the following field in the Logical Device 2 Performance Details(7.1) report: • Read Response Rate
Logical Device Configuration(7.1)	Displays a table listing logical device configuration information in real time. To display this report, click the following field in the Logical Device 2 Performance Details(7.1) report: • LDEV Number

Logical Device 2 Performance Details(8.6)

Overview

The Logical Device 2 Performance Details(8.6) report displays a table showing the following information for the past hour for logical devices whose logical device number is in the range from 00:80:00 to 00:BF:FF:

- Frequency and transfer rate of read and write operations
- Cache hit rate of read operations
- Average processing time per read and write request
- Frequency and transfer rate of random operations
- Frequency and transfer rate of sequential operations

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP G200, G350, G370, G400, G600, G800, VSP F350, F370, F400, F600, F800, VSP N400, N600, N800, or HUS VM storage system.

Storage Location

```
Reports/RAID/Troubleshooting/Recent Past/
```

Record

Logical Device Summary 2 (`PI_LDS2`)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Total I/O /sec	Frequency of random operations (operations per second)
Random Total Xfer /sec	Transfer rate of random operations (MB per second)
Read Hit %	Cache hit rate of read operations
Read I/O /sec	Frequency of read operations (operations per second)
Read Response Rate	Average processing time per read request (microseconds)
Read Xfer /sec	Transfer rate of read operations (MB per second)
Sequential Total I/O /sec	Frequency of sequential operations (operations per second)
Sequential Total Xfer /sec	Transfer rate of sequential operations (MB per second)
Total Response Rate	Average processing time per read and write request (microseconds)
Virtual DKC Name	Model name of the virtual storage machine to which Logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which Logical device belongs

Field Name	Description
Virtual Serial Number	Serial number of the virtual storage machine to which Logical device belongs
Write I/O /sec	Frequency of write operations (operations per second)
Write Response Rate	Average processing time per write request (microseconds)
Write Xfer /sec	Transfer rate of write operations (MB per second)

Drilldown Reports (Field Level)

Report Name	Description
Logical Device 2 Read Response Rate Status(8.6)	Displays a table and line graph showing the read response rates over the last 24 hours for logical devices whose LDEV number is in the range from 00:80:00 to 00:BF:FF. To display this report, click the following field in the Logical Device 2 Performance Details(8.6) report: • Read Response Rate
Logical Device Configuration(8.6)	Displays a table that shows configuration information for a logical device in real time. To display this report, click the following field in the Logical Device Performance Details(8.6) report: • LDEV Number

Logical Device 2 Performance Extended(7.4)

Overview

The Logical Device 2 Performance Extended(7.4) report displays a table listing the following information about each logical device whose logical device number is in the range from 00:80:00 to 00:BF:FF for the last hour:

- Frequency and data transfer rate of random read and write operations
- Frequency and data transfer rate of sequential read and write operations

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP G200, G350, G370, G400, G600, G800, VSP F350, F370, F400, F600, F800, VSP N400, N600, N800, or HUS VM storage system.

Storage Location

Reports/RAID/Troubleshooting/Recent Past/

Record

LDEV Summary 2 - Extended (`PI_LDE2`)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Read I/O /sec	Frequency of random read operations (times per second)
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)
Random Write I/O /sec	Frequency of random write operations (times per second)
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)

Drilldown Report (Field Level)

Report Name	Description
Logical Device Configuration(7.1)	Displays a table listing logical device configuration information in real time. To display this report, click the following field in the `Logical Device 2 Performance Extended(7.4)` report: • LDEV Number

Logical Device 2 Performance Extended(7.6)

Overview

The `Logical Device 2 Performance Extended(7.6)` report displays a table listing the following information about each logical device whose logical device number is in the range from 00:80:00 to 00:BF:FF for the last hour:

• Frequency and data transfer rate of random read and write operations

• Frequency and data transfer rate of sequential read and write operations

• Usage rate

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP G200, G350, G370, G400, G600, G800, VSP

F350, F370, F400, F600, F800, VSP N400, N600, N800, or HUS VM storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

LDEV Summary 2 - Extended (`PI_LDE2`)

Fields

Field Name	Description
Busy %	Usage rate of the logical device (%)
LDEV Number	Logical device number
Random Read I/O /sec	Frequency of random read operations (times per second)
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)
Random Write I/O /sec	Frequency of random write operations (times per second)
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)

Drilldown Report (Field Level)

Report Name	Description
`Logical Device Configuration(7.1)`	Displays a table listing logical device configuration information in real time. To display this report, click the following field in the `Logical Device 2 Performance Extended(7.6)` report: • LDEV Number

Logical Device 2 Performance Extended(8.6)

Overview

The `Logical Device 2 Performance Extended(8.6)` report displays a table showing the following information for the past hour for logical devices whose logical device number is in the range from 00:80:00 to 00:BF:FF:

- Frequency and transfer rate of random read and write operations
- Frequency and transfer rate of sequential read and write operations
- Utilization

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP G200, G350, G370, G400, G600, G800, VSP F350, F370, F400, F600, F800, VSP N400, N600, N800, or HUS VM storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

Logical Device Summary 2 (`PI_LDE2`)

Fields

Field Name	Description
Busy %	Usage rate (%) of the logical device
LDEV Number	Logical device number
Random Read I/O /sec	Frequency of random read operations (operations per second)
Random Read Xfer /sec	Transfer rate of random read operations (MB per second)
Random Write I/O /sec	Frequency of random write operations (operations per second)
Random Write Xfer /sec	Transfer rate of random write operations (MB per second)
Sequential Read I/O /sec	Frequency of sequential read operations (operations per second)
Sequential Read Xfer /sec	Transfer rate of sequential read operations (MB per second)
Sequential Write I/O /sec	Frequency of sequential write operations (operations per second)
Sequential Write Xfer /sec	Transfer rate of sequential write operations (MB per second)
Virtual DKC Name	Model name of the virtual storage machine to which Logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which Logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which Logical device belongs

Drilldown Report (Field Level)

Report Name	Description
Logical Device Configuration(8.6)	Displays a table that shows configuration information for a logical device in real time. To display this report, click the following field in the Logical Device Performance 2 Extended(8.6) report: • LDEV Number

Logical Device 2 Read Response Rate Status(7.1)

Overview

The Logical Device 2 Read Response Rate Status(7.1) report displays a table and line graph showing the average processing time per read request, for the last 24 hours, for each logical device whose logical device number is in the range from 00:80:00 to 00:BF:FF.

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP G200, G350, G370, G400, G600, G800, VSP F350, F370, F400, F600, F800, VSP N400, N600, N800, or HUS VM storage system.

Storage Location

Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/

Record

Logical Device Summary 2 (PI_LDS2)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Response Rate	Average processing time (in microseconds) per read request
Read I/O /sec	Number of read operations per second
Write I/O /sec	Number of write operations per second

Logical Device 2 Read Response Rate Status(8.6)

Overview

The Logical Device 2 Read Response Rate Status(8.6) report displays a table and line graph showing the average processing time over the past 24

hours for read requests issued to logical devices whose logical device number is in the range from 00:80:00 to 00:BF:FF:

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP G200, G350, G370, G400, G600, G800, VSP F350, F370, F400, F600, F800, VSP N400, N600, N800, or HUS VM storage system.

Storage Location

Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/

Record

Logical Device Summary 2 (`PI_LDS2`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O /sec	Frequency of read operations (operations per second)
Read Response Rate	Average processing time per read request (microseconds)
Virtual DKC Name	Model name of the virtual storage machine to which Logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which Logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which Logical device belongs
Write I/O /sec	Frequency of write operations (operations per second)

Logical Device 3 Performance Details(7.1)

Overview

The `Logical Device 3 Performance Details(7.1)` report displays a table listing the following information about each logical device whose logical device number is in the range from 00:C0:00 to 00:FE:FF for the last hour:

- Frequency and data transfer rate of read and write operations
- Cache hit rate of read operations
- Average processing time per read and write request
- Frequency and data transfer rate of random operations
- Frequency and data transfer rate of sequential operations

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP G200, G350, G370, G400, G600, G700, G800,

VSP F350, F370, F400, F600, F700, F800, VSP N400, N600, N800, or HUS VM storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

Logical Device Summary 3 (`PI_LDS3`)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Total I/O /sec	Frequency of random operations (times per second)
Random Total Xfer /sec	Data transfer rate of random operations (megabytes per second)
Read Hit %	Cache hit rate of read operations
Read I/O /sec	Frequency of read operations (times per second)
Read Response Rate	Average processing time per read request (microseconds)
Read Xfer /sec	Data transfer rate of read operations (megabytes per second)
Sequential Total I/O /sec	Frequency of sequential operations (times per second)
Sequential Total Xfer /sec	Data transfer rate of sequential operations (megabytes per second)
Total Response Rate	Average processing time per read and write request (microseconds)
Write I/O /sec	Frequency of write operations (times per second)
Write Response Rate	Average processing time per write request (microseconds)
Write Xfer /sec	Data transfer rate of write operations (megabytes per second)

Drilldown Reports (Field Level)

Report Name	Description
`Logical Device 3 Read Response Rate Status(7.1)`	Displays a table and line graph showing the average processing time per read request for the logical device for the last 24 hours. To display this report, click the following field in the `Logical Device 3 Performance Details(7.1)` report: • Read Response Rate

Report Name	Description
`Logical Device Configuration(7.1)`	Displays a table listing logical device configuration information in real time. To display this report, click the following field in the `Logical Device 3 Performance Details(7.1)` report: • LDEV Number

Logical Device 3 Performance Details(8.6)

Overview

The `Logical Device 3 Performance Details(8.6)` report displays a table showing the following information over the past hour for logical devices whose logical device number is in the range from 00:C0:00 to 00:FE:FF:

- Frequency and transfer rate of read and write operations
- Cache hit rate of read operations
- Average processing time per read and write request
- Frequency and transfer rate of random operations
- Frequency and transfer rate of sequential operations

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP G200, G350, G370, G400, G600, G700, G800, VSP F350, F370, F400, F600, F700, F800, VSP N400, N600, N800, or HUS VM storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

Logical Device Summary 3 (`PI_LDS3`)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Total I/O /sec	Frequency of random operations (operations per second)
Random Total Xfer /sec	Transfer rate of random operations (MB per second)
Read Hit %	Cache hit rate of read operations
Read I/O /sec	Frequency of read operations (operations per second)

Field Name	Description
Read Response Rate	Average processing time per read request (microseconds)
Read Xfer /sec	Transfer rate of read operations (MB per second)
Sequential Total I/O /sec	Frequency of sequential operations (operations per second)
Sequential Total Xfer /sec	Transfer rate of sequential operations (MB per second)
Total Response Rate	Average processing time per read and write request (microseconds)
Virtual DKC Name	Model name of the virtual storage machine to which Logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which Logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which Logical device belongs
Write I/O /sec	Frequency of write operations (operations per second)
Write Response Rate	Average processing time per write request (microseconds)
Write Xfer /sec	Transfer rate of write operations (MB per second)

Drilldown Reports (Field Level)

Report Name	Description
Logical Device 3 Read Response Rate Status(8.6)	Displays a table and line graph showing the read response rate over the past 24 hours for logical devices whose logical device number is within the range from 00:C0:00 to 00:FE:FF. To display this report, click the following field in the Logical Device 3 Performance Details(8.6) report: • Read Response Rate
Logical Device Configuration(8.6)	Displays a table that shows configuration information for a logical device in real time. To display this report, click the following field in the Logical Device Performance Details(8.6) report: • LDEV Number

Logical Device 3 Performance Extended(7.4)

Overview

The `Logical Device 3 Performance Extended(7.4)` report displays a table listing the following information about each logical device whose logical device number is in the range from 00:C0:00 to 00:FE:FF for the last hour:

- Frequency and data transfer rate of random read and write operations
- Frequency and data transfer rate of sequential read and write operations

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP G200, G350, G370, G400, G600, G700, G800, VSP F350, F370, F400, F600, F700, F800, VSP N400, N600, N800, or HUS VM storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

LDEV Summary 3 - Extended (`PI_LDE3`)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Read I/O /sec	Frequency of random read operations (times per second)
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)
Random Write I/O /sec	Frequency of random write operations (times per second)
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)

Drilldown Report (Field Level)

Report Name	Description
`Logical Device Configuration(7.1)`	Displays a table listing logical device configuration information in real time. To display this report, click the following field in the `Logical Device 3 Performance Extended(7.4)` report: • LDEV Number

Logical Device 3 Performance Extended(7.6)

Overview

The `Logical Device 3 Performance Extended(7.6)` report displays a table listing the following information about each logical device whose logical device number is in the range from 00:C0:00 to 00:FE:FF for the last hour:

- Frequency and data transfer rate of random read and write operations
- Frequency and data transfer rate of sequential read and write operations
- Usage rate

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP G200, G350, G370, G400, G600, G700, G800, VSP F350, F370, F400, F600, F700, F800, VSP N400, N600, N800, or HUS VM storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

LDEV Summary 3 - Extended (`PI_LDE3`)

Fields

Field Name	Description
Busy %	Usage rate of the logical device (%)
LDEV Number	Logical device number
Random Read I/O /sec	Frequency of random read operations (times per second)
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)
Random Write I/O /sec	Frequency of random write operations (times per second)
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)

Field Name	Description
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)

Drilldown Report (Field Level)

Report Name	Description
Logical Device Configuration(7.1)	Displays a table listing logical device configuration information in real time. To display this report, click the following field in the `Logical Device 3 Performance Extended(7.6)` report: • LDEV Number

Logical Device 3 Performance Extended(8.6)

Overview

The `Logical Device 3 Performance Extended(8.6)` report displays a table showing the following information over the past hour for logical devices whose logical device number is in the range from 00:C0:00 to 00:FE:FF:

• Frequency and transfer rate of random read and write operations

• Frequency and transfer rate of sequential read and write operations

• Utilization

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP G200, G350, G370, G400, G600, G700, G800, VSP F350, F370, F400, F600, F700, F800, VSP N400, N600, N800, or HUS VM storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

LDEV Summary 3 - Extended (`PI_LDE3`)

Fields

Field Name	Description
Busy %	Usage rate (%) of the logical device

Field Name	Description
LDEV Number	Logical device number
Random Read I/O /sec	Frequency of random read operations (operations per second)
Random Read Xfer /sec	Transfer rate of random read operations (MB per second)
Random Write I/O /sec	Frequency of random write operations (operations per second)
Random Write Xfer /sec	Transfer rate of random write operations (MB per second)
Sequential Read I/O /sec	Frequency of sequential read operations (operations per second)
Sequential Read Xfer /sec	Transfer rate of sequential read operations (MB per second)
Sequential Write I/O /sec	Frequency of sequential write operations (operations per second)
Sequential Write Xfer /sec	Transfer rate of sequential write operations (MB per second)
Virtual DKC Name	Model name of the virtual storage machine to which the logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which the logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which the logical device belongs

Drilldown Reports (Field Level)

Report Name	Description
Logical Device Configuration(8.6)	Displays a table that shows configuration information for a logical device in real time. To display this report, click the following field in the Logical Device 3 Performance Extended(8.6) report: • LDEV Number

Logical Device 3 Read Response Rate Status(7.1)

Overview

The Logical Device 3 Read Response Rate Status(7.1) report displays a table and line graph showing the average processing time per read request, for the last 24 hours, for each logical device whose logical device number is in the range from 00:C0:00 to 00:FE:FF.

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP G200, G350, G370, G400, G600, G700, G800, VSP F350, F370, F400, F600, F700, F800, VSP N400, N600, N800, or HUS VM storage system.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Logical Device Summary 3 (`PI_LDS3`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Response Rate	Average processing time (in microseconds) per read request
Read I/O /sec	Number of read operations per second
Write I/O /sec	Number of write operations per second

Logical Device 3 Read Response Rate Status(8.6)

Overview

The `Logical Device 3 Read Response Rate Status(8.6)` report displays a table and graph showing, for the past 24 hours, the average processing time per read request for logical devices whose logical device number is in the range from 00:C0:00 to 00:FE:FF:

Note that this report is not supported if the monitored storage system is a midrange storage system, VSP G200, G350, G370, G400, G600, G700, G800, VSP F350, F370, F400, F600, F700, F800, VSP N400, N600, N800, or HUS VM storage system.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Logical Device Summary 3 (`PI_LDS3`)

Fields

Field Name	Description
LDEV Number	Logical device number

Field Name	Description
Read I/O /sec	Frequency of read operations (operations per second)
Read Response Rate	Average processing time per read request (microseconds)
Virtual DKC Name	Model name of the virtual storage machine to which the logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which the logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which the logical device belongs
Write I/O /sec	Frequency of write operations (operations per second)

Logical Device Configuration

Overview

The `Logical Device Configuration` report displays a table listing configuration information about each logical device in real time.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Logical Device Configuration (`PD_LDC`)

Fields

Field Name	Description
LDEV Number	Logical device number
RAID Group Number	Parity group number

Logical Device Configuration(5.0)

Overview

The `Logical Device Configuration(5.0)` report displays a table listing configuration information about each logical device in real time.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Logical Device Configuration (`PD_LDC`)

Fields

Field Name	Description
Emulation Type	Logical device emulation type
LDEV Location	Information to indicate if the logical device is an externally connected LDEV: • Internal • External
LDEV Number	Logical device number
LUSE Volume	Information indicating whether the logical device is a component of a LUSE
RAID Group Number	Parity group number

Drilldown Reports (Field Level)

Report Name	Description
Array Group Configuration(5.0)	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the Logical Device Configuration(5.0) report: • RAID Group Number
External LDEV Configuration(5.0)	Displays configuration information about each externally connected LDEV in real time. To display this report, click the following field in the Logical Device Configuration(5.0) report: • LDEV Location The drilldown report will only be displayed if the LDEV Location value is External.
LUSE Configuration(5.0)	Displays a table listing configuration information about each logical device that configures a LUSE in real time. To display this report, click the following field in the Logical Device Configuration(5.0) report: • LUSE Volume The drilldown report will only be displayed if the LUSE Volume value is LUSE.

Logical Device Configuration(7.1)

Overview

The `Logical Device Configuration(7.1)` report displays a table listing configuration information about each logical device in real time.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Logical Device Configuration (`PD_LDC`)

Fields

Field Name	Description
CLPR Number	The number of the CLPR to which the logical device is assigned
Collection Time	Time (in GMT) when data is collected from the storage system
Emulation Type	Logical device emulation type
LDEV Location	Information indicating whether the logical device is an externally connected LDEV: • Internal • External
LDEV Number	Logical device number
LUSE Volume	Information indicating whether the logical device is a component of a LUSE
Pool ID	Pool ID of the Dynamic Provisioning pool to which the logical device belongs
RAID Group Number	Parity group number
SLPR Number	The number of the SLPR to which the logical device belongs
Volume Type	Information indicating whether the logical device is a V-VOL or pool volume for Dynamic Provisioning: • V-VOL • POOL

Drilldown Reports (Field Level)

Report Name	Description
Array Group Configuration(5.0)	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the Logical Device Configuration(7.1) report: • RAID Group Number
CLPR Configuration(6.0)	Displays a table listing CLPR configuration information in real time. To display this report, click the following field in the Logical Device Configuration(7.1) report: • CLPR Number
External LDEV Configuration(5.0)	Displays a table listing configuration information about each externally connected LDEV in real time. To display this report, click the following field in the Logical Device Configuration(7.1) report: • LDEV Location The drilldown report will only be displayed if the LDEV Location value is External.
LUSE Configuration(7.1)	Displays a table listing configuration information about each logical device that configures a LUSE in real time. To display this report, click the following field in the Logical Device Configuration(7.1) report: • LUSE Volume The drilldown report will only be displayed if the LUSE Volume value is LUSE.
Pool Configuration(7.1)	Displays a table listing capacity and configuration information about each Dynamic Provisioning pool in real time. To display this report, click the following field in the Logical Device Configuration(7.1) report: • Pool ID

Logical Device Configuration(7.8)

Overview

The Logical Device Configuration(7.8) report displays a table listing configuration information about each logical device in real time.

Storage Location

Reports/RAID/Status Reporting/Real-Time/

Record

Logical Device Configuration (`PD_LDC`)

Fields

Field Name	Description
CLPR Number	The number of the CLPR to which the logical device is assigned
Collection Time	Time (in GMT) when data is collected from the storage system
Emulation Type	Emulation type for the logical device
LDEV Location	Information indicating whether the logical device is an externally connected LDEV: • Internal • External
LDEV Number	Logical device number
LUSE Volume	Information indicating whether the logical device is a logical device configuring a LUSE volume: • LUSE
MP Blade	Character string that identifies the MP Blade that has ownership rights to the logical device
Pool ID	ID of the pool
RAID Group Number	Parity group number
SLPR Number	The number of the SLPR to which the logical device belongs
Volume Type	Information indicating whether the logical device is a V-VOL for Dynamic Provisioning or a pool volume for Dynamic Provisioning: • V-VOL • POOL

Drilldown Reports (Field Level)

Report Name	Description
`Array Group Configuration(7.5)`	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the `Logical Device Configuration(7.8)` report: • RAID Group Number
`CLPR Configuration(6.0)`	Displays a table listing CLPR configuration information in real time. To display this report, click the following field in the `Logical Device Configuration(7.8)` report: • CLPR Number

Report Name	Description
External LDEV Configuration(5.0)	Displays a table listing configuration information about an externally connected LDEV in real time. To display this report, click the following field in the `Logical Device Configuration(7.8)` report: • LDEV Location The drilldown report will be displayed only if the LDEV Location value is `External`.
LUSE Configuration(7.1)	Displays a table listing configuration information about the logical devices that configure a LUSE volume in real time. To display this report, click the following field in the `Logical Device Configuration(7.8)` report: • LUSE Volume The drilldown report will be displayed only if the LUSE Volume value is `LUSE`.
Pool Configuration(7.1)	Displays a table listing capacity and configuration information about the Dynamic Provisioning pool in real time. To display this report, click the following field in the `Logical Device Configuration(7.8)` report: • Pool ID
Processor Busy Rate Status(6.0) (Hourly Historical Report)	Displays a table listing the storage system processor usage for the last 24 hours. To display this report, click the following field in the `Logical Device Configuration(7.8)` report: • MP Blade

Logical Device Configuration(8.6)

Overview

The `Logical Device Configuration(8.6)` report displays a table that shows configuration information for a logical device in real time.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Logical Device Configuration (`PD_LDC`)

Fields

Field Name	Description
CLPR Number	CLPR number of the CLPR to which the logical device is allocated
Collection Time	Time (in GMT) when data is collected from the storage system

Working with the Solution Set

Field Name	Description
Emulation Type	Emulation type of the logical device
LDEV Location	Information indicating whether the logical device is an external LDEV • Internal • External
LDEV Number	Logical device number
LUSE Volume	Information indicating whether the logical device is part of a LUSE • LUSE
MP Blade	Character string that identifies the MP Blade that has ownership rights for the logical device
Pool ID	Pool ID of the Dynamic Provisioning pool to which the logical device belongs
RAID Group Number	Parity group number
SLPR Number	SLPR number of the SLPR to which the logical device belongs
Virtual DKC Name	Model name of the virtual storage machine to which the logical device belongs
Virtual LDEV Number	Serial number of the virtualized logical device to which the logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which the logical device belongs
Volume Type	Information indicating whether the logical device is a V-VOL for Dynamic Provisioning or a pool volume for Dynamic Provisioning. • V-VOL • POOL

Drilldown Reports (Field Level)

Report Name	Description
Array Group Configuration(7.5)	Displays a table showing configuration information for parity groups in real time. To display this report, click the following field in the `Logical Device Configuration(8.6)` report: • RAID Group Number
CLPR Configuration(6.0)	Displays a table showing configuration information of a CLPR in real time. To display this report, click the following field in the `Logical Device Configuration(8.6)` report: • CLPR Number
External LDEV Configuration(5.0)	Displays a table showing configuration information for an external LDEV in real time. To display this report, click the following field in the `Logical Device Configuration(8.6)` report: • LDEV Location

Report Name	Description
	The drilldown report only appears if the value of LDEV Location is `External`.
`LUSE Configuration(7.1)`	Displays a table that shows configuration information for the logical devices that make up a LUSE in real time. To display this report, click the following field in the `Logical Device Configuration(8.6)` report: • LUSE Volume The drilldown report only appears if the value of LUSE Volume is `LUSE`.
`Pool Configuration(7.1)`	Displays a table showing information about the capacity and configuration of a Dynamic Provisioning pool in real time. To display this report, click the following field in the `Logical Device Configuration(8.6)` report: • Pool ID
`Processor Busy Rate Status(6.0)` (hourly historical report)	Displays a table showing storage system processor utilization over the past 24 hours. To display this report, click the following field in the `Logical Device Configuration(8.6)` report: • MP Blade

Logical Device IO Rate Status(8.6) (Hourly Historical Report)

Overview

The `Logical Device IO Rate Status(8.6)` report displays the frequency of read and write operations for logical devices over the past 24 hours.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O / sec	Frequency of read operations (operations per second)
Virtual DKC Name	Model name of the virtual storage machine to which the LDEV belongs
Virtual LDEV Number	Device number of the virtualized logical device to which the LDEV belongs

Field Name	Description
Virtual Serial Number	Serial number of the virtual storage machine to which the LDEV belongs
Write I/O / sec	Frequency of write operations (operations per second)

Drilldown Report (Report Level)

Report Name	Description
Logical Device Transfer Rate Status(8.6) (hourly historical report)	Displays a table showing the transfer rate of read and write operations for logical devices over the past 24 hours

Drilldown Reports (Field Level)

Report Name	Description
Logical Device Configuration(8.6) (real-time report)	Displays a table that shows configuration information for a logical device in real time. To display this report, click the following field in the Logical Device IO Rate Status(8.6) report: • LDEV Number
Logical Device Read IO Rate Status(8.6)	Displays a line graph showing the frequency of read operations for logical devices over the past 24 hours. To display this report, click the following field in the Logical Device IO Rate Status(8.6) report: • Read I/O / sec
Logical Device Write IO Rate Status(8.6)	Displays a line graph showing the frequency of write operations for logical devices over the past 24 hours. To display this report, click the following field in the Logical Device IO Rate Status(8.6) report: • Write I/O / sec

Logical Device IO Rate Status(8.6) (Real-Time Report)

Overview

The Logical Device IO Rate Status(8.6) report displays the read and write frequency of each logical device in real time.

Storage Location

Reports/RAID/Status Reporting/Real-Time/

Record

Logical Device Summary (PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O / sec	Read frequency (times per second)
Virtual DKC Name	Model name of the virtual storage machine to which Logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which Logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which the logical device belongs
Write I/O / sec	Write frequency (times per second)

Drilldown Report (Report Level)

Report Name	Description
Logical Device Transfer Rate Status(8.6) (Real-Time Report)	Displays a table that lists the read and write data transfer rate of each logical device in real time.

Drilldown Reports (Field Level)

Report Name	Description
Logical Device Configuration(8.6)	Displays a table that lists logical device configuration information in real time. To display this report, click the following field in the Logical Device IO Rate Status(8.6) report: • LDEV Number

Logical Device IO Rate Status (Hourly Historical Report)

Overview

The Logical Device IO Rate Status report displays a table listing the frequency of read and write operations of each logical device for the last 24 hours.

Storage Location

Reports/RAID/Status Reporting/Daily Trend/

Record

Logical Device Summary (PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O / sec	Read frequency (times per second)
Write I/O / sec	Write frequency (times per second)

Drilldown Report (Report Level)

Report Name	Description
Logical Device Transfer Rate Status (Hourly Historical Report)	Displays a table listing the read and write data transfer rate for the last 24 hours for each logical device.

Drilldown Reports (Field Level)

Report Name	Description
Logical Device Configuration (Real-Time Report)	Displays a table listing configuration information about each logical device in real time. To display this report, click the following field in the Logical Device IO Rate Status report: • LDEV Number
Logical Device Read IO Rate Status	Displays a line graph showing the read frequency for the last 24 hours for each logical device. To display this report, click the following field in the Logical Device IO Rate Status report: • Read I/O / sec
Logical Device Write IO Rate Status	Displays a line graph showing the write frequency for the last 24 hours for each logical device. To display this report, click the following field in the Logical Device IO Rate Status report: • Write I/O / sec

Logical Device IO Rate Status (Real-Time Report)

Overview

The Logical Device IO Rate Status report displays a table listing the frequency of read and write operations of each logical device in real time.

Storage Location

Reports/RAID/Status Reporting/Real-Time/

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O / sec	Read frequency (times per second)
Write I/O / sec	Write frequency (times per second)

Drilldown Report (Report Level)

Report Name	Description
`Logical Device Transfer Rate Status` (Real-Time Report)	Displays a table listing the read and write data transfer rate for each logical device in real time.

Drilldown Report (Field Level)

Report Name	Description
`Logical Device Configuration`	Displays a table listing configuration information about each logical device in real time. To display this report, click the following field in the `Logical Device IO Rate Status` report: • LDEV Number

Logical Device Performance Details

Overview

The `Logical Device Performance Details` report displays a table listing the following information about each logical device for the last hour:

- Frequency and data transfer rate of read and write operations
- Cache hit rate of read and write operations

Note that the field value for the cache hit rate of write operations is invalid if the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Hit %	Cache hit rate for read operations
Read I/O / sec	Read frequency (times per second)
Read Xfer / sec	Read data transfer rate (megabytes per second)
Write Hit %	Cache hit rate for write operations
Write I/O / sec	Write frequency (times per second)
Write Xfer / sec	Write data transfer rate (megabytes per second)

Drilldown Report (Field Level)

Report Name	Description
Logical Device Configuration	Displays a table listing configuration information about each logical device in real time. To display this report, click the following field in the Logical Device Performance Details report: • LDEV Number

Logical Device Performance Details(6.0)

Overview

The Logical Device Performance Details(6.0) report displays a table listing the following information about each logical device for the last hour:

• Frequency and data transfer rate of read and write operations

• Cache hit rate of read and write operations

• Average processing time per read and write request

Note that the field value for the cache hit rate of write operations is invalid if the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Hit %	Cache hit rate for read operations
Read I/O / sec	Read frequency (times per second)
Read Response Rate	Average processing time per read request (microseconds)
Read Xfer / sec	Read data transfer rate (megabytes per second)
Total Response Rate	Average processing time per read and write request (microseconds)
Write Hit %	Cache hit rate for write operations
Write I/O / sec	Write frequency (times per second)
Write Response Rate	Average processing time per write request (microseconds)
Write Xfer / sec	Write data transfer rate (megabytes per second)

Drilldown Report (Field Level)

Report Name	Description
`Logical Device Configuration(5.0)`	Displays a table listing configuration information about each logical device in real time. To display this report, click the following field in the `Logical Device Performance Details(6.0)` report: • LDEV Number

Logical Device Performance Details(7.0)

Overview

The `Logical Device Performance Details(7.0)` report displays a table listing the following information about each logical device for the last hour:

•   Frequency and data transfer rate of read and write operations

- Cache hit rate of read and write operations
- Average processing time per read and write request
- Frequency and data transfer rate of random operations
- Frequency and data transfer rate of sequential operations

Note that the field value for the cache hit rate of write operations is invalid if the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system. Also, the field value for random or sequential operations is invalid if the monitored storage system is an HUS100 series, or a Hitachi AMS2000/AMS/WMS/SMS series storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Total I/O /sec	Frequency of random operations (times per second)
Random Total Xfer /sec	Data transfer rate of random operations (megabytes per second)
Read Hit %	Cache hit rate of read operations
Read I/O /sec	Frequency of read operations (times per second)
Read Response Rate	Average processing time per read request (microseconds)
Read Xfer /sec	Data transfer rate of read operations (megabytes per second)
Sequential Total I/O /sec	Frequency of sequential operations (times per second)
Sequential Total Xfer /sec	Data transfer rate of sequential operations (megabytes per second)
Total Response Rate	Average processing time per read and write request (microseconds)
Write Hit %	Cache hit rate of write operations
Write I/O /sec	Frequency of write operations (times per second)
Write Response Rate	Average processing time per write request (microseconds)
Write Xfer /sec	Data transfer rate of write operations (megabytes per second)

Drilldown Report (Field Level)

Report Name	Description
Logical Device Configuration(5.0)	Displays a table listing logical device configuration information in real time. To display this report, click the following field in the Logical Device Performance Details(7.0) report: • LDEV Number

Logical Device Performance Details(7.1)

Overview

The Logical Device Performance Details(7.1) report displays a table listing the following information about each logical device (see **Note 1**) for the last hour:

• Frequency and data transfer rate of read and write operations

• Cache hit rate of read and write operations

• Average processing time per read and write request

• Frequency and data transfer rate of random operations

• Frequency and data transfer rate of sequential operations

Note that the field value for the cache hit rate of write operations is invalid if the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system. Also, the field value for random or sequential operations is invalid if the monitored storage system is an HUS100 series, or a Hitachi AMS2000/AMS/WMS/SMS series storage system.

Note: If the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system, this report only displays information about a logical device whose logical device number is in the range from 00:00:00 to 00:3F:FF.

Storage Location

Reports/RAID/Troubleshooting/Recent Past/

Record

Logical Device Summary (PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Total I/O /sec	Frequency of random operations (times per second)
Random Total Xfer /sec	Data transfer rate of random operations (megabytes per second)
Read Hit %	Cache hit rate of read operations
Read I/O /sec	Frequency of read operations (times per second)
Read Response Rate	Average processing time per read request (microseconds)
Read Xfer /sec	Data transfer rate of read operations (megabytes per second)
Sequential Total I/O /sec	Frequency of sequential operations (times per second)
Sequential Total Xfer /sec	Data transfer rate of sequential operations (megabytes per second)
Total Response Rate	Average processing time per read and write request (microseconds)
Write Hit %	Cache hit rate of write operations
Write I/O /sec	Frequency of write operations (times per second)
Write Response Rate	Average processing time per write request (microseconds)
Write Xfer /sec	Data transfer rate of write operations (megabytes per second)

Drilldown Reports (Field Level)

Report Name	Description
Logical Device Configuration(7.1)	Displays a table listing logical device configuration information in real time. To display this report, click the following field in the Logical Device Performance Details(7.1) report: • LDEV Number
Logical Device Read Response Rate Status(7.1)	Displays a table and line graph showing the average processing time per read request for the logical device for the last 24 hours. To display this report, click the following field in the Logical Device Performance Details(7.1) report: • Read Response Rate

Logical Device Performance Details(8.6)

Overview

The `Logical Device Performance Details(8.6)` report displays a table listing the following information about logical devices[#] over the past hour:

- Frequency and transfer rate of read and write operations
- Cache hit rate of read and write operations
- Average processing time per read and write request
- Frequency and transfer rate of random and sequential operations

Note that the field value for the cache hit rate of write operations is invalid if the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system.

[#]

The field value for the random or sequential operations is invalid if the monitored storage system is an HUS100 series, or Hitachi AMS2000/AMS/WMS/SMS series storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Total I/O /sec	Frequency of random operations (operations per second)
Random Total Xfer /sec	Transfer rate of random operations (MB per second)
Read Hit %	Cache hit rate of read operations
Read I/O /sec	Frequency of read operations (operations per second)
Read Response Rate	Average processing time per read request (microseconds)
Read Xfer /sec	Transfer rate of read operations (MB per second)

Field Name	Description
Sequential Total I/O /sec	Frequency of sequential operations (operations per second)
Sequential Total Xfer /sec	Transfer rate of sequential operations (MB per second)
Total Response Rate	Average processing time per read and write request (microseconds)
Virtual DKC Name	Model name of the virtual storage machine to which Logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which Logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which Logical device belongs
Write Hit %	Cache hit rate of write operations
Write I/O /sec	Frequency of write operations (operations per second)
Write Response Rate	Average processing time per write request (microseconds)
Write Xfer /sec	Transfer rate of write operations (MB per second)

Drilldown Reports (Field Level)

Report Name	Description
Logical Device Configuration(8.6)	Displays a table that shows configuration information for a logical device in real time. To display this report, click the following field in the Logical Device Performance Details(8.6) report: • LDEV Number
Logical Device Read Response Rate Status(8.6)	Displays a table and line graph showing the Read Response Rate over the past 24 hours for LDEVs whose LDEV number is in the range from 00:00:00 to 00:3F:FF. To display this report, click the following field in the Logical Device Performance Details(8.6) report: • Read Response Rate

Logical Device Performance Extended(7.4)

Overview

The `Logical Device Performance Extended(7.4)` report displays a table listing the following information about each logical device (see *Note*) for the last hour:

- Frequency and data transfer rate of random read and write operations
- Frequency and data transfer rate of sequential read and write operations

Note: If the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system, this report only displays information about a logical device whose logical device number is in the range from 00:00:00 to 00:3F:FF.

Note that this report is not supported if the monitored storage system is a Hitachi AMS/WMS series.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

LDEV Summary - Extended (`PI_LDE`)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Read I/O /sec	Frequency of random read operations (times per second)
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)
Random Write I/O /sec	Frequency of random write operations (times per second)
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)

Drilldown Report (Field Level)

Report Name	Description
Logical Device Configuration(7.1)	Displays a table listing logical device configuration information in real time. To display this report, click the following field in the `Logical Device Performance Extended(7.4)` report: • LDEV Number

Logical Device Performance Extended(7.6)

Overview

The `Logical Device Performance Extended(7.6)` report displays a table listing the following information about each logical device (see *Note*) for the last hour:

- Frequency and data transfer rate of random read and write operations
- Frequency and data transfer rate of sequential read and write operations
- Usage rate

Note: If the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system, this report only displays information about a logical device whose logical device number is in the range from 00:00:00 to 00:3F:FF.

Note that this report is not supported if the monitored storage system is a Hitachi AMS/WMS series.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

LDEV Summary - Extended (`PI_LDE`)

Fields

Field Name	Description
Busy %	Usage rate of the logical device (%)
LDEV Number	Logical device number
Random Read I/O /sec	Frequency of random read operations (times per second)
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)

Field Name	Description
Random Write I/O /sec	Frequency of random write operations (times per second)
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)

Drilldown Report (Field Level)

Report Name	Description
Logical Device Configuration(7.1)	Displays a table listing logical device configuration information in real time. To display this report, click the following field in the `Logical Device Performance Extended(7.6)` report: • LDEV Number

Logical Device Performance Extended (8.6)

Overview

The `Logical Device Performance Extended(8.6)` report displays a table showing the following information for logical devices[#] over the past hour:

- Frequency and data transfer rate of random read and write operations
- Frequency and data transfer rate of sequential read and write operations
- Utilization

[#]

> If the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series device, this report only displays information for logical devices whose logical device number is in the range from 00:00:00 to 00:3F:FF.

Note that this report is not supported if the monitored storage system is a Hitachi AMS/WMS series.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

LDEV Summary - Extended (`PI_LDE`)

Fields

Field Name	Description
Busy %	Usage rate (%) of the logical device
LDEV Number	Logical device number
Random Read I/O /sec	Frequency of random read operations (operations per second)
Random Read Xfer /sec	Transfer rate of random read operations (MB per second)
Random Write I/O /sec	Frequency of random write operations (operations per second)
Random Write Xfer /sec	Transfer rate of random write operations (MB per second)
Sequential Read I/O /sec	Frequency of sequential read operations (operations per second)
Sequential Read Xfer /sec	Transfer rate of sequential read operations (MB per second)
Sequential Write I/O /sec	Frequency of sequential write operations (operations per second)
Sequential Write Xfer /sec	Transfer rate of sequential write operations (MB per second)
Virtual DKC Name	Model name of the virtual storage machine to which the logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which the logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which the logical device belongs

Drilldown Reports (Field Level)

Report Name	Description
Logical Device Configuration(8.6)	Displays a table that shows configuration information for a logical device in real time. To display this report, click the following field in the Logical Device Performance Extended(8.6) report: • LDEV Number

Logical Device Read Cache Hit Rate - Worst 10

Overview

The `Logical Device Read Cache Hit Rate - Worst 10` report displays a table listing the ten logical devices with the lowest cache hit rates of read operations in real time.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Hit %	Cache hit rate for read operations

Drilldown Reports (Report Level)

Report Name	Description
`Logical Device Read IO Rate - Top 10`	Displays a table listing the ten logical devices with the highest read frequencies in real time.
`Logical Device Read Transfer Rate - Top 10`	Displays a table listing the ten logical devices with the fastest read data transfer rates in real time.
`Logical Device Write Cache Hit Rate - Worst 10`	Displays a table listing the ten logical devices with the lowest write cache hit rates in real time.
`Logical Device Write IO Rate - Top 10`	Displays a table listing the ten logical devices with the highest write frequencies in real time.
`Logical Device Write Transfer Rate - Top 10`	Displays a table listing the ten logical devices with the fastest write data transfer rates in real time.

Drilldown Report (Field Level)

Report Name	Description
`Logical Device Configuration`	Displays a table listing configuration information about each logical device in real time. To display this report, click the following

Report Name	Description
	field in the `Logical Device Read Cache Hit Rate - Worst 10` report: • LDEV Number

Logical Device Read Cache Hit Rate - Worst 10 (8.6)

Overview

The `Logical Device Read Cache Hit Rate - Worst 10 (8.6)` report displays a table showing the ten logical devices with the lowest cache hit rates for read operations, in real time.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Hit %	Cache hit rate of read operations
Virtual DKC Name	Model name of the virtual storage machine to which the logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which the logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which the logical device belongs

Drilldown Reports (Report Level)

Report Name	Description
`Logical Device Read IO Rate - Top 10(8.6)`	Displays a table showing the ten logical devices with the highest frequency of read operations in real time
`Logical Device Read Transfer Rate - Top 10(8.6)`	Displays a table showing the ten logical devices with the fastest processing rates for read operations in real time
`Logical Device Write Cache Hit Rate - Worst 10(8.6)`	Displays a table showing the ten logical devices with the lowest cache hit rates for write operations in real time

Report Name	Description
Logical Device Write IO Rate - Top 10(8.6)	Displays a table showing the ten logical devices with the highest frequency of write operations in real time
Logical Device Write Transfer Rate - Top 10(8.6)	Displays a table showing the ten logical devices with the fastest transfer rates for write operations in real time

Drilldown Reports (Field Level)

Report Name	Description
Logical Device Configuration(8.6)	Displays a table that shows configuration information for a logical device in real time. To display this report, click the following field in the Logical Device Read Cache Hit Rate - Worst 10(8.6) report: • LDEV Number

Logical Device Read IO Rate - Top 10

Overview

The Logical Device Read IO Rate - Top 10 report displays a table listing the ten logical devices with the highest read frequencies in real time.

Storage Location

Reports/RAID/Troubleshooting/Real-Time/

Record

Logical Device Summary (PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O / sec	Read frequency (times per second)

Drilldown Reports (Report Level)

Report Name	Description
`Logical Device Read Cache Hit Rate - Worst 10`	Displays a table listing the ten logical devices with the lowest read cache hit rates in real time.
`Logical Device Read Transfer Rate - Top 10`	Displays a table listing the ten logical devices with the fastest read data transfer rates in real time.
`Logical Device Write Cache Hit Rate - Worst 10`	Displays a table listing the ten logical devices with the lowest write cache hit rates in real time.
`Logical Device Write IO Rate - Top 10`	Displays a table listing the ten logical devices with the highest write frequencies in real time.
`Logical Device Write Transfer Rate - Top 10`	Displays a table listing the ten logical devices with the fastest write data transfer rates in real time.

Drilldown Report (Field Level)

Report Name	Description
`Logical Device Configuration`	Displays a table listing configuration information about each logical device in real time. To display this report, click the following field in the `Logical Device Read IO Rate - Top 10` report: • LDEV Number

Logical Device Read IO Rate - Top 10(8.6)

Overview

The `Logical Device Read IO Rate - Top 10(8.6)` report displays a table that shows, in real time, the ten logical devices with the highest frequency of read operations.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O /sec	Frequency of read operations (operations per second)
Virtual DKC Name	Model name of the virtual storage machine to which the logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which the logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which the logical device belongs

Drilldown Reports (Report Level)

Report Name	Description
Logical Device Read Cache Hit Rate – Worst 10(8.6)	Displays a table showing the ten logical devices with the lowest cache hit rate for read operations in real time
Logical Device Read Transfer Rate – Top 10(8.6)	Displays a table showing the ten logical devices with the fastest transfer rates for read operations in real time
Logical Device Write Cache Hit Rate – Worst 10(8.6)	Displays a table showing the ten logical devices with the lowest cache hit rates for write operations in real time
Logical Device Write IO Rate – Top 10(8.6)	Displays a table showing the ten logical devices with the highest frequency of write operations in real time
Logical Device Write Transfer Rate – Top 10(8.6)	Displays a table showing the ten logical devices with the fastest transfer rates for write operations in real time

Drilldown Reports (Field Level)

Report Name	Description
Logical Device Configuration(8.6)	Displays a table that shows configuration information for a logical device in real time. To display this report, click the following field in the Logical Device Read IO Rate – Top 10(8.6) report: • LDEV Number

Working with the Solution Set

Logical Device Read IO Rate Status

Overview

The `Logical Device Read IO Rate Status` report displays a line graph showing the read frequency for the last 24 hours for each logical device, and a table listing the frequency and data transfer rate of read and write operations for the last 24 hours for each logical device.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O / sec	Read frequency (times per second)
Read Xfer / sec	Data transfer rate for read operations (megabytes per second)
Write I/O / sec	Write frequency (times per second)
Write Xfer / sec	Data transfer rate for write operations (megabytes per second)

Drilldown Reports (Field Level)

Report Name	Description
`Logical Device Configuration`	Displays a table listing configuration information about each logical device in real time. To display this report, click the following field in the `Logical Device Read IO Rate Status` report: • LDEV Number
`Logical Device Read IO Rate Status`	Displays a graph showing the read frequency for the last 24 hours for each logical device. To display this report, click the following field in the `Logical Device Read IO Rate Status` report: • Read I/O / sec
`Logical Device Read Transfer Rate Status`	Displays a graph showing the read data transfer rate for the last 24 hours for each logical device. To display this report, click the following field in the `Logical Device Read IO Rate Status` report: • Read Xfer / sec

Report Name	Description
`Logical Device Write IO Rate Status`	Displays a graph showing the write frequency for the last 24 hours for each logical device. To display this report, click the following field in the `Logical Device Read IO Rate Status` report: • Write I/O / sec
`Logical Device Write Transfer Rate Status`	Displays a graph showing the write data transfer rate for the last 24 hours for each logical device. To display this report, click the following field in the `Logical Device Read IO Rate Status` report: • Write Xfer / sec

Logical Device Read IO Rate Status(8.6)

Overview

The `Logical Device Read IO Rate Status(8.6)` report displays a line graph showing the frequency of read operations from logical devices over the past 24 hours. This report also displays a table showing the frequency and transfer rate for read and write operations to and from logical devices over the last 24 hours.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O /sec	Frequency of read operations (operations per second)
Read Xfer /sec	Transfer rate of read operations (MB per second)
Virtual DKC Name	Model name of the virtual storage machine to which the logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which the logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which the logical device belongs

Working with the Solution Set

Hitachi Tuning Manager Hardware Reports Reference

Field Name	Description
Write I/O /sec	Frequency of write operations (operations per second)
Write Xfer /sec	Transfer rate of write operations (MB per second)

Drilldown Reports (Field Level)

Report Name	Description
Logical Device Configuration(8.6)	Displays a table that shows configuration information for a logical device in real time. To display this report, click the following field in the Logical Device Read IO Rate Status(8.6) report: • LDEV Number
Logical Device Read IO Rate Status(8.6)	Displays a graph showing the frequency of read operations for logical devices over the past 24 hours. To display this report, click the following field in the Logical Device Read IO Rate Status(8.6) report: • Read I/O /sec
Logical Device Read Transfer Rate Status(8.6)	Displays a graph showing the transfer rate for read operations from logical devices over the past 24 hours. To display this report, click the following field in the Logical Device Read IO Rate Status(8.6) report: • Read Xfer /sec
Logical Device Write IO Rate Status(8.6)	Displays a graph showing the frequency of write operations to logical devices over the past 24 hours. To display this report, click the following field in the Logical Device Read IO Rate Status(8.6) report: • Write I/O /sec
Logical Device Write Transfer Rate Status(8.6)	Displays a graph showing the transfer rate for write operations to logical devices over the last 24 hours. To display this report, click the following field in the Logical Device Read IO Rate Status(8.6) report: • Write Xfer /sec

Logical Device Read Response Rate - Top 10(6.0)

Overview

The `Logical Device Read Response Rate - Top 10(6.0)` report displays a table listing the ten logical devices with the longest average processing times per read request in real time.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Response Rate	Average processing time per read request (microseconds)

Drilldown Report (Report Level)

Report Name	Description
`Logical Device Write Response Rate - Top 10(6.0)`	Displays a table listing the ten logical devices with the longest average processing times per write request.

Drilldown Report (Field Level)

Report Name	Description
`Logical Device Configuration(5.0)`	Displays a table listing configuration information about each logical device in real time. To display this report, click the following field in the `Logical Device Read Response Rate - Top 10(6.0)` report: • LDEV Number

Logical Device Read Response Rate - Top 10(8.6)

Overview

The `Logical Device Read Response Rate - Top 10(8.6)` report displays a table that shows, in real time, the ten logical devices with the longest average processing times for read requests.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Response Rate	Average processing time per read request (microseconds)
Virtual DKC Name	Model name of the virtual storage machine to which the logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which the logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which the logical device belongs

Drilldown Reports (Report Level)

Report Name	Description
`Logical Device Write Response Rate - Top 10(8.6)`	Displays a table that shows, in real time, the ten logical devices with the longest average processing times per write request

Drilldown Reports (Field Level)

Report Name	Description
`Logical Device Configuration(8.6)`	Displays a table that shows configuration information for a logical device in real time. To display this report, click the following field in the `Logical Device Read Response Rate - Top 10(8.6)` report: • LDEV Number

Logical Device Read Response Rate Status(7.1)

Overview

The `Logical Device Read Response Rate Status(7.1)` report displays a table and line graph showing the average processing time per read request for each logical device for the last 24 hours.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Response Rate	Average processing time (in microseconds) per read request
Read I/O /sec	Number of read operations per second
Write I/O /sec	Number of write operations per second

Logical Device Read Response Rate Status(8.6)

Overview

The `Logical Device Read Response Rate Status(8.6)` report displays a table and line graph showing the average read request processing time for logical devices over the past 24 hours.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O /sec	Frequency of read operations (operations per second)

Field Name	Description
Read Response Rate	Average processing time per read request (microseconds)
Virtual DKC Name	Model name of the virtual storage machine to which the logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which the logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which the logical device belongs
Write I/O /sec	Frequency of write operations (operations per second)

Logical Device Read Transfer Rate - Top 10

Overview

The `Logical Device Read Transfer Rate - Top 10` report displays a table listing the ten logical devices with the fastest data transfer rates of read operations in real time.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Xfer / sec	Data transfer rate for read operations (megabytes per second)

Drilldown Reports (Report Level)

Report Name	Description
`Logical Device Read Cache Hit Rate - Worst 10`	Displays a table listing the ten logical devices with the lowest read cache hit rates in real time.
`Logical Device Read IO Rate - Top 10`	Displays a table listing the ten logical devices with the highest read frequencies in real time.
`Logical Device Write Cache Hit Rate - Worst 10`	Displays a table listing the ten logical devices with the lowest write cache hit rates in real time.

Report Name	Description
Logical Device Write IO Rate - Top 10	Displays a table listing the ten logical devices with the highest write frequencies in real time.
Logical Device Write Transfer Rate - Top 10	Displays a table listing the ten logical devices with the fastest write data transfer rates in real time.

Drilldown Report (Field Level)

Report Name	Description
Logical Device Configuration	Displays a table listing configuration information about each logical device in real time. To display this report, click the following field in the Logical Device Read Transfer Rate - Top 10 report: • LDEV Number

Logical Device Read Transfer Rate - Top 10(8.6)

Overview

The Logical Device Read Transfer Rate - Top 10(8.6) report displays a table that shows, in real time, the ten logical devices with the highest transfer rates for read operations.

Storage Location

Reports/RAID/Troubleshooting/Real-Time/

Record

Logical Device Summary (PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Xfer /sec	Transfer rate of read operations (MB per second)
Virtual DKC Name	Model name of the virtual storage machine to which the logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which the logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which the logical device belongs

Drilldown Reports (Report Level)

Report Name	Description
Logical Device Read Cache Hit Rate - Worst 10(8.6)	Displays a table that shows, in real time, the ten logical devices with the lowest cache hit rate for read operations
Logical Device Read IO Rate - Top 10(8.6)	Displays a table that shows, in real time, the ten logical devices with the highest frequency of read operations
Logical Device Write Cache Hit Rate - Worst 10(8.6)	Displays a table that shows, in real time, the ten logical devices with the lowest cache hit rate for write operations
Logical Device Write IO Rate - Top 10(8.6)	Displays a table that shows, in real time, the ten logical devices with the highest frequency of write operations
Logical Device Write Transfer Rate - Top 10(8.6)	Displays a table that shows, in real time, the ten logical devices with the fastest transfer rates for write operations

Drilldown Reports (Field Level)

Report Name	Description
Logical Device Configuration(8.6)	Displays a table that shows configuration information for a logical device in real time. To display this report, click the following field in the Logical Device Read Transfer Rate - Top 10(8.6) report: • LDEV Number

Logical Device Read Transfer Rate Status

Overview

The Logical Device Read Transfer Rate Status report displays a line graph showing the data transfer rate of read operations for the last 24 hours for each logical device, and a table listing the frequency and the data transfer rate of read and write operations for the last 24 hours for each logical device.

Storage Location

Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/

Record

Logical Device Summary (PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O / sec	Read frequency (times per second)
Read Xfer / sec	Data transfer rate for read operations (megabytes per second)
Write I/O / sec	Write frequency (times per second)
Write Xfer / sec	Data transfer rate for write operations (megabytes per second)

Drilldown Reports (Field Level)

Report Name	Description
Logical Device Configuration	Displays a table listing configuration information about each logical device in real time. To display this report, click the following field in the Logical Device Read Transfer Rate Status report: • LDEV Number
Logical Device Read IO Rate Status	Displays a graph showing the read frequency for each logical device for the last 24 hours. To display this report, click the following field in the Logical Device Read Transfer Rate Status report: • Read I/O / sec
Logical Device Read Transfer Rate Status	Displays a graph showing the read data transfer rate for each logical device for the last 24 hours. To display this report, click the following field in the Logical Device Read Transfer Rate Status report: • Read Xfer / sec
Logical Device Write IO Rate Status	Displays a graph showing the write frequency for each logical device for the last 24 hours. To display this report, click the following field in the Logical Device Read Transfer Rate Status report: • Write I/O / sec
Logical Device Write Transfer Rate Status	Displays a graph showing the write data transfer rate for each logical device for the last 24 hours. To display this report, click the following field in the Logical Device Read Transfer Rate Status report: • Write Xfer / sec

Working with the Solution Set

Logical Device Read Transfer Rate Status(8.6)

Overview

The `Logical Device Read Transfer Rate Status(8.6)` report displays a line graph showing the read transfer rate for logical devices over the past 24 hours. It also displays a table showing the frequency and transfer rate of read and write operations to and from logical devices over the past 24 hours.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O /sec	Frequency of read operations (operations per second)
Read Xfer /sec	Transfer rate of read operations (MB per second)
Virtual DKC Name	Model name of the virtual storage machine to which the logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which the logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which the logical device belongs
Write I/O /sec	Frequency of write operations (operations per second)
Write Xfer /sec	Transfer rate of write operations (MB per second)

Drilldown Reports (Field Level)

Report Name	Description
`Logical Device Configuration(8.6)`	Displays a table that shows configuration information for a logical device in real time. To display this report, click the following field in the `Logical Device Transfer Rate Status(8.6)` report: • LDEV Number

Report Name	Description
Logical Device Read IO Rate Status(8.6)	Displays a graph showing the frequency of read operations for logical devices over the past 24 hours. To display this report, click the following field in the Logical Device Transfer Rate Status(8.6) report: • Read I/O / sec
Logical Device Read Transfer Rate Status(8.6)	Displays the transfer rate of read operations for logical devices over the past 24 hours. To display this report, click the following field in the Logical Device Read Transfer Rate Status(8.6) report: • Read Xfer /sec
Logical Device Write IO Rate Status(8.6)	Displays a graph showing the frequency of write operations for logical devices over the past 24 hours. To display this report, click the following field in the Logical Device Read Transfer Rate Status(8.6) report: • Write I/O / sec
Logical Device Write Transfer Rate Status(8.6)	Displays a graph showing the write transfer rate for logical devices over the past 24 hours. To display this report, click the following field in the Logical Device Read Transfer Rate Status(8.6) report: • Write Xfer / sec

Logical Device Transfer Rate Status(8.6) (Hourly Historical Report)

Overview

The Logical Device Transfer Rate Status(8.6) report displays the data transfer rate of read and write operations of each logical device for the last 24 hours.

Storage Location

Reports/RAID/Status Reporting/Daily Trend/

Record

Logical Device Summary (PI_LDS)

Working with the Solution Set

Fields

Field Name	Description
LDEV Number	Logical device number
Read Xfer /sec	Read data transfer rate (megabytes per second)
Virtual DKC Name	Product name of the virtual storage machine to which the logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which the logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which the logical device belongs
Write Xfer /sec	Write data transfer rate (megabytes per second)

Drilldown Reports (Report Level)

Report Name	Description
Logical Device IO Rate Status(8.6) (Hourly Historical Report)	Displays a table that lists the read and write frequency for each logical device for the last 24 hours.

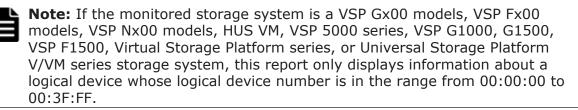## Drilldown Reports (Field Level)

Report Name	Description
Logical Device Configuration(8.6)	Displays a table that lists configuration information about each logical device in real time. To display this report, click the following field in the Logical Device Transfer Rate Status(8.6) report: • LDEV Number
Logical Device Read Transfer Rate Status(8.6)	Displays a line graph that shows the read frequency for each logical device for the last 24 hours. To display this report, click the following field in the Logical Device Transfer Rate Status(8.6) report: • Read Xfer / sec
Logical Device Write Transfer Rate Status(8.6)	Displays a line graph that shows the write frequency for each logical device for the last 24 hours. To display this report, click the following field in the Logical Device Transfer Rate Status(8.6) report: • Write Xfer / sec

Logical Device Transfer Rate Status(8.6) (Real-Time Report)

The `Logical Device Transfer Rate Status(8.6)` report displays a table listing the data transfer rate of read and write operations of each logical device in real time.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Xfer /sec	Read data transfer rate (megabytes per second)
Virtual DKC Name	Model name of the virtual storage machine to which the logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which the logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which the logical device belongs
Write Xfer /sec	Write data transfer rate (megabytes per second)

Drilldown Report (Report Level)

Report Name	Description
`Logical Device Configuration(8.6)`	Displays a table listing the read and write frequency for each logical device in real time.

Drilldown Reports (Field Level)

Report Name	Description
`Logical Device Configuration(8.6)`	Displays a table listing configuration information about each logical device in real time. To display this report, click the following field in the `Logical Device Transfer Rate Status(8.6)` report: • LDEV Number

Logical Device Transfer Rate Status (Hourly Historical Report)

Overview

The `Logical Device Transfer Rate Status` report displays a table listing the data transfer rate of read and write operations of each logical device for the last 24 hours.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Xfer / sec	Read data transfer rate (megabytes per second)
Write Xfer / sec	Write data transfer rate (megabytes per second)

Drilldown Report (Report Level)

Report Name	Description
`Logical Device IO Rate Status` (Hourly Historical Report)	Displays a table listing the read and write frequency for the last 24 hours for each logical device.

Drilldown Reports (Field Level)

Report Name	Description
`Logical Device Configuration`	Displays a table listing configuration information about each logical device in real time. To display this report, click the following field in the `Logical Device Transfer Rate Status` report: • LDEV Number
`Logical Device Read Transfer Rate Status`	Displays a line graph showing the read frequency for each logical device for the last 24 hours. To display this report, click the following field in the `Logical Device Transfer Rate Status` report:

Report Name	Description
	• Read Xfer / sec
`Logical Device Write Transfer Rate Status`	Displays a line graph showing the write frequency for each logical device for the last 24 hours. To display this report, click the following field in the `Logical Device Transfer Rate Status` report: • Write Xfer / sec

Logical Device Transfer Rate Status (Real-Time Report)

Overview

The `Logical Device Transfer Rate Status` report displays a table listing the data transfer rate of read and write operations of each logical device in real time.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Xfer / sec	Data transfer rate for read operations (megabytes per second)
Write Xfer / sec	Data transfer rate for write operations (megabytes per second)

Drilldown Report (Report Level)

Report Name	Description
`Logical Device IO Rate Status` (Real-Time Report)	Displays a table listing the read and write frequency for each logical device in real time.

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Drilldown Report (Field Level)

Report Name	Description
Logical Device Configuration	Displays a table listing configuration information about each logical device in real time. To display this report, click the following field in the `Logical Device Transfer Rate Status` report: • LDEV Number

Logical Device Write Cache Hit Rate - Worst 10

Overview

The `Logical Device Write Cache Hit Rate - Worst 10` report displays a table listing the ten logical devices with the lowest cache hit rates of write operations in real time.

Note that the field value for the cache hit rate of write operations is invalid if the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Write Hit %	Cache hit rate for write operations

Drilldown Reports (Report Level)

Report Name	Description
Logical Device Read Cache Hit Rate - Worst 10	Displays a table listing the ten logical devices with the lowest read cache hit rates in real time.
Logical Device Read IO Rate - Top 10	Displays a table listing the ten logical devices with the highest read frequencies in real time.

Report Name	Description
`Logical Device Read Transfer Rate - Top 10`	Displays a table listing the ten logical devices with the fastest read data transfer rates in real time.
`Logical Device Write IO Rate - Top 10`	Displays a table listing the ten logical devices with the highest write frequencies in real time.
`Logical Device Write Transfer Rate - Top 10`	Displays a table listing the ten logical devices with the fastest write data transfer rates in real time.

Drilldown Report (Field Level)

Report Name	Description
`Logical Device Configuration`	Displays a table listing configuration information about each logical device in real time. To display this report, click the following field in the `Logical Device Write Cache Hit Rate - Top 10` report: • LDEV Number

Logical Device Write Cache Hit Rate - Worst 10(8.6)

Overview

The `Logical Device Write Cache Hit Rate - Worst 10(8.6)` report displays a table that shows, in real time, the ten logical devices with the lowest cache hit rate for write operations.

Note that fields related to cache hit rates for write operations are invalid when the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number

Field Name	Description
Virtual DKC Name	Model name of the virtual storage machine to which the logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which the logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which the logical device belongs
Write Hit %	Cache hit rate of write operations

Drilldown Reports (Report Level)

Report Name	Description
Logical Device Read Cache Hit Rate - Worst 10(8.6)	Displays a table that shows, in real time, the ten logical devices with the lowest cache hit rate for read operations
Logical Device Read IO Rate - Top 10(8.6)	Displays a table that shows, in real time, the ten logical devices with the highest frequency of read operations
Logical Device Read Transfer Rate - Top 10(8.6)	Displays a table that shows, in real time, the ten logical devices with the fastest transfer rates for read operations
Logical Device Write IO Rate - Top 10(8.6)	Displays a table that shows, in real time, the ten logical devices with the highest frequency of write operations
Logical Device Write Transfer Rate - Top 10(8.6)	Displays a table that shows, in real time, the ten logical devices with the fastest transfer rates for write operations

Drilldown Reports (Field Level)

Report Name	Description
Logical Device Configuration(8.6)	Displays a table that shows configuration information for a logical device in real time. To display this report, click the following field in the `Logical Device Write Cache Hit Rate - Top 10(8.6)` report: • LDEV Number

Logical Device Write IO Rate - Top 10

Overview

The `Logical Device Write IO Rate - Top 10` report displays a table listing the ten logical devices with the highest write frequencies in real time.

Storage Location

Reports/RAID/Troubleshooting/Real-Time/

Record

Logical Device Summary (PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Write I/O / sec	Write frequency (times per second)

Drilldown Reports (Report Level)

Report Name	Description
Logical Device Read Cache Hit Rate - Worst 10	Displays a table listing the ten logical devices with the lowest read cache hit rates in real time.
Logical Device Read IO Rate - Top 10	Displays a table listing the ten logical devices with the highest read frequencies in real time.
Logical Device Read Transfer Rate - Top 10	Displays a table listing the ten logical devices with the fastest read data transfer rates in real time.
Logical Device Write Cache Hit Rate - Worst 10	Displays a table listing the ten logical devices with the lowest write cache hit rates in real time.
Logical Device Write Transfer Rate - Top 10	Displays a table listing the ten logical devices with the fastest write data transfer rates in real time.

Drilldown Report (Field Level)

Report Name	Description
Logical Device Configuration	Displays a table listing configuration information about each logical device in real time. To display this report, click the following field in the Logical Device Write IO Rate - Top 10 report: • LDEV Number

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Logical Device Write IO Rate - Top 10(8.6)

Overview

The `Logical Device Write IO Rate - Top 10(8.6)` report displays a table that shows, in real time, the ten logical devices with the highest frequency of write operations.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Virtual DKC Name	Model name of the virtual storage machine to which the logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which the logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which the logical device belongs
Write I/O /sec	Frequency of write operations (operations per second)

Drilldown Reports (Report Level)

Report Name	Description
Logical Device Read Cache Hit Rate - Worst 10(8.6)	Displays a table that shows, in real time, the ten logical devices with the lowest cache hit rate for read operations
Logical Device Read IO Rate - Top 10(8.6)	Displays a table that shows, in real time, the ten logical devices with the highest frequency of read operations
Logical Device Read Transfer Rate - Top 10(8.6)	Displays a table that shows, in real time, the ten logical devices with the fastest transfer rates for read operations
Logical Device Write Cache Hit Rate - Worst 10(8.6)	Displays a table that shows, in real time, the ten logical devices with the lowest cache hit rate for write operations
Logical Device Write Transfer Rate - Top 10(8.6)	Displays a table that shows, in real time, the ten logical devices with the fastest transfer rates for write operations

Drilldown Reports (Field Level)

Report Name	Description
Logical Device Configuration(8.6)	Displays a table that shows configuration information for a logical device in real time. To display this report, click the following field in the `Logical Device Write IO Rate - Top 10(8.6)` report: • LDEV Number

Logical Device Write IO Rate Status

Overview

The `Logical Device Write IO Rate Status` report displays a line graph showing the write frequency of each logical device for the last 24 hours, and a table listing the frequency and data transfer rate of read and write operations of each logical device for the last 24 hours.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O / sec	Read frequency (times per second)
Read Xfer / sec	Data transfer rate for read operations (megabytes per second)
Write I/O / sec	Write frequency (times per second)
Write Xfer / sec	Data transfer rate for write operations (megabytes per second)

Drilldown Reports (Field Level)

Report Name	Description
Logical Device Configuration	Displays a table listing configuration information about each logical device in real time. To display this report, click the following field in the `Logical Device Write IO Rate Status` report: • LDEV Number

Report Name	Description
`Logical Device Read IO Rate Status`	Displays a graph showing the read frequency for each logical device for the last 24 hours. To display this report, click the following field in the `Logical Device Write IO Rate Status` report: • Read I/O / sec
`Logical Device Read Transfer Rate Status`	Displays a graph showing the read data transfer rate for each logical device for the last 24 hours. To display this report, click the following field in the `Logical Device Write IO Rate Status` report: • Read Xfer / sec
`Logical Device Write IO Rate Status`	Displays a graph showing the write frequency for each logical device for the last 24 hours. To display this report, click the following field in the `Logical Device Write IO Rate Status` report: • Write I/O / sec
`Logical Device Write Transfer Rate Status`	Displays a graph showing the write data transfer rate for each logical device for the last 24 hours. To display this report, click the following field in the `Logical Device Write IO Rate Status` report: • Write Xfer / sec

Logical Device Write IO Rate Status(8.6)

Overview

The `Logical Device Write IO Rate Status(8.6)` report displays a line graph showing the frequency of write operations for logical devices over the past 24 hours. It also displays a table that shows the frequency and transfer rate of read and write operations for logical devices over the past 24 hours.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O /sec	Frequency of read operations (operations per second)

Field Name	Description
Read Xfer /sec	Transfer rate of read operations (MB per second)
Virtual DKC Name	Model name of the virtual storage machine to which the logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which the logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which the logical device belongs
Write I/O /sec	Frequency of write operations (operations per second)
Write Xfer /sec	Transfer rate of write operations (MB per second)

Drilldown Reports (Field Level)

Report Name	Description
Logical Device Configuration(8.6)	Displays a table that shows configuration information for a logical device in real time. To display this report, click the following field in the Logical Device Write IO Rate Status(8.6) report: • LDEV Number
Logical Device Read IO Rate Status(8.6)	Displays a graph showing the frequency of read operations for logical devices over the past 24 hours. To display this report, click the following field in the Logical Device Write IO Rate Status(8.6) report: • Read I/O /sec
Logical Device Read Transfer Rate Status(8.6)	Displays a graph showing the transfer rate of read operations for logical devices over the past 24 hours. To display this report, click the following field in the Logical Device Write IO Rate Status(8.6) report: • Read Xfer / sec
Logical Device Write IO Rate Status(8.6)	Displays a graph showing the frequency of write operations for logical devices over the past 24 hours. To display this report, click the following field in the Logical Device Write IO Rate Status(8.6) report: • Write I/O /sec
Logical Device Write Transfer Rate Status(8.6)	Displays a graph showing the frequency of write operations for logical devices over the past 24 hours. To display this report,

Report Name	Description
	click the following field in the `Logical Device Write IO Rate Status(8.6)` report: • Write Xfer /sec

Logical Device Write Response Rate - Top 10(6.0)

Overview

The `Logical Device Write Response Rate - Top 10(6.0)` report displays a table listing the ten logical devices with the longest average processing times per write request in real time.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Write Response Rate	Average processing time per write request (microseconds)

Drilldown Report (Report Level)

Report Name	Description
`Logical Device Read Response Rate – Top 10(6.0)`	Displays a table listing the ten logical devices with the longest average processing times per read request in real time.

Drilldown Report (Field Level)

Report Name	Description
`Logical Device Configuration(5.0)`	Displays a table listing configuration information about each logical device in real time. To display this report, click the following field in the `Logical Device Write Response Rate - Top 10(6.0)` report: • LDEV Number

Logical Device Write Response Rate - Top 10(8.6)

Overview

The `Logical Device Write Response Rate - Top 10(8.6)` report displays a table that shows, in real time, the ten logical devices with the longest average processing time per write request.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Virtual DKC Name	Model name of the virtual storage machine to which the logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which the logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which the logical device belongs
Write Response Rate	Average processing time per write request (microseconds)

Drilldown Reports (Report Level)

Report Name	Description
`Logical Device Read Response Rate - Top 10(8.6)`	Displays, in real time, the ten logical devices with the longest average processing time per read request

Drilldown Reports (Field Level)

Report Name	Description
`Logical Device Configuration(8.6)`	Displays a table that shows configuration information for a logical device in real time. To display this report, click the following field in the `Logical Device Write Response Rate - Top 10(8.6)` report: • LDEV Number

Logical Device Write Transfer Rate - Top 10

Overview

The `Logical Device Write Transfer Rate - Top 10` report displays a table listing the ten logical devices with the fastest data transfer rates of write operations in real time.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Write Xfer / sec	Data transfer rate for write operations (megabytes per second)

Drilldown Reports (Report Level)

Report Name	Description
`Logical Device Read Cache Hit Rate - Worst 10`	Displays a table listing the ten logical devices with the lowest read cache hit rates in real time.
`Logical Device Read IO Rate - Top 10`	Displays a table listing the ten logical devices with the highest read frequencies in real time.
`Logical Device Read Transfer Rate - Top 10`	Displays a table listing the ten logical devices with the fastest read data transfer rates in real time.
`Logical Device Write Cache Hit Rate - Worst 10`	Displays a table listing the ten logical devices with the lowest write cache hit rates in real time.
`Logical Device Write IO Rate - Top 10`	Displays a table listing the ten logical devices with the highest write frequencies in real time.

Drilldown Report (Field Level)

Report Name	Description
`Logical Device Configuration`	Displays a table listing configuration information about each logical device in real time. To display this report, click the following field in the

Report Name	Description
	`Logical Device Write Transfer Rate - Top 10` report: • LDEV Number

Logical Device Write Transfer Rate - Top 10(8.6)

Overview

The `Logical Device Write Transfer Rate - Top 10(8.6)` report displays a table that shows, in real time, the ten logical devices with the fastest transfer rates for write operations.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Virtual DKC Name	Model name of the virtual storage machine to which the logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which the logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which the logical device belongs
Write Xfer /sec	Data transfer rate for write operations (megabytes per second)

Drilldown Reports (Report Level)

Report Name	Description
`Logical Device Read Cache Hit Rate - Worst 10(8.6)`	Displays a table that shows, in real time, the ten logical devices with the lowest cache hit rate for read operations
`Logical Device Read IO Rate - Top 10(8.6)`	Displays a table that shows, in real time, the ten logical devices with the highest frequency of read operations

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Hitachi Tuning Manager Hardware Reports Reference

Report Name	Description
`Logical Device Read Transfer Rate - Top 10(8.6)`	Displays a table that shows, in real time, the ten logical devices with the fastest transfer rates for read operations
`Logical Device Write Cache Hit Rate - Worst 10(8.6)`	Displays a table that shows, in real time, the ten logical devices with the lowest cache hit rate for write operations
`Logical Device Write IO Rate - Top 10(8.6)`	Displays a table that shows, in real time, the ten logical devices with the highest frequency of write operations

Drilldown Reports (Field Level)

Report Name	Description
`Logical Device Configuration(8.6)`	Displays a table that shows configuration information for a logical device in real time. To display this report, click the following field in the `Logical Device Write Transfer Rate - Top 10(8.6)` report: • LDEV Number

Logical Device Write Transfer Rate Status

Overview

The `Logical Device Write Transfer Rate Status` report displays a line graph showing the data transfer rate of write operations of each logical device for the last 24 hours, and a table listing the frequency and data transfer rate of read and write operations of each logical device for the last 24 hours.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O / sec	Read frequency (times per second)

Field Name	Description
Read Xfer / sec	Data transfer rate for read operations (megabytes per second)
Write I/O / sec	Write frequency (times per second)
Write Xfer / sec	Data transfer rate for write operations (megabytes per second)

Drilldown Reports (Field Level)

Report Name	Description
Logical Device Configuration	Displays a table listing configuration information about each logical device in real time. To display this report, click the following field in the `Logical Device Write Transfer Rate Status` report: • LDEV Number
Logical Device Read IO Rate Status	Displays a graph showing the read frequency for each logical device for the last 24 hours. To display this report, click the following field in the `Logical Device Write Transfer Rate Status` report: • Read I/O / sec
Logical Device Read Transfer Rate Status	Displays a graph showing the read data transfer rate for each logical device for the last 24 hours. To display this report, click the following field in the `Logical Device Write Transfer Rate Status` report: • Read Xfer / sec
Logical Device Write IO Rate Status	Displays a graph showing the write frequency for each logical device for the last 24 hours. To display this report, click the following field in the `Logical Device Write Transfer Rate Status` report: • Write I/O / sec
Logical Device Write Transfer Rate Status	Displays a graph showing the write data transfer rate for each logical device for the last 24 hours. To display this report, click the following field in the `Logical Device Write Transfer Rate Status` report: • Write Xfer / sec

Logical Device Write Transfer Rate Status(8.6)

Overview

The `Logical Device Write Transfer Rate Status(8.6)` report displays a line graph showing the transfer rate of write operations to logical devices over the past 24 hours. It also displays a table showing the frequency and

transfer rate of read and write operations to and from logical devices over the past 24 hours.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Logical Device Summary (`PI_LDS`)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O /sec	Frequency of read operations (operations per second)
Read Xfer /sec	Transfer rate of read operations (MB per second)
Virtual DKC Name	Model name of the virtual storage machine to which the logical device belongs
Virtual LDEV Number	Device number of the virtualized logical device to which the logical device belongs
Virtual Serial Number	Serial number of the virtual storage machine to which the logical device belongs
Write I/O /sec	Frequency of write operations (operations per second)
Write Xfer /sec	Transfer rate of write operations (MB per second)

Drilldown Reports (Field Level)

Report Name	Description
Logical Device Configuration(8.6)	Displays a table that shows configuration information for a logical device in real time. To display this report, click the following field in the `Logical Device Write Transfer Rate Status(8.6)` report: • LDEV Number
Logical Device Read IO Rate Status(8.6)	Displays a graph showing the frequency of read operations for logical devices over the past 24 hours. To display this report, click the following field in the `Logical Device Write Transfer Rate Status(8.6)` report: • Read I/O /sec

Report Name	Description
Logical Device Read Transfer Rate Status(8.6)	Displays a graph showing the transfer rate of read operations for logical devices over the past 24 hours. To display this report, click the following field in the Logical Device Write Transfer Rate Status(8.6) report: • Read Xfer /sec
Logical Device Write IO Rate Status(8.6)	Displays a graph showing the frequency of write operations for logical devices over the past 24 hours. To display this report, click the following field in the Logical Device Write Transfer Rate Status(8.6) report: • Write I/O /sec
Logical Device Write Transfer Rate Status(8.6)	Displays a graph showing the transfer rate of write operations to logical devices over the past 24 hours. To display this report, click the following field in the Logical Device Write Transfer Rate Status(8.6) report: • Write Xfer /sec

LUSE Configuration(5.0)

Overview

The LUSE Configuration(5.0) report displays a table listing configuration information about the logical device which configures a LUSE in real time.

However, if no LUSE exists in the storage system, this report cannot be used.

Storage Location

Reports/RAID/Status Reporting/Real-Time/

Record

LUSE Configuration (PD_LSEC)

Fields

Field Name	Description
Emulation Type	Emulation type for the logical device
LDEV Location	Information to indicate if the logical device is an externally connected LDEV: • Internal

Working with the Solution Set

Field Name	Description
	• External
LDEV Number	Logical device number
Main LDEV Number	Representative logical device number of the LUSE to which the logical device belongs
RAID Group Number	Parity group number

Drilldown Reports (Field Level)

Report Name	Description
Array Group Configuration(5.0)	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the LUSE Configuration(5.0) report: • RAID Group Number
External LDEV Configuration(5.0)	Displays a table listing configuration information about each externally connected LDEV in real time. To display this report, click the following field in the LUSE Configuration(5.0) report: • LDEV Location The drilldown report will only be displayed if the value of LDEV Location is External.
Logical Device Configuration(5.0)	Displays a table listing configuration information about each logical device in real time. To display this report, click the following field in the LUSE Configuration(5.0) report: • Main LDEV Number

LUSE Configuration(7.1)

Overview

The LUSE Configuration(7.1) report displays a table listing configuration information about the logical device which configures a LUSE in real time.

However, if no LUSE exists in the storage system, this report cannot be used.

Storage Location

Reports/RAID/Status Reporting/Real-Time/

Record

LUSE Configuration (PD_LSEC)

Fields

Field Name	Description
CLPR Number	The number of the CLPR to which the logical device is assigned
Collection Time	Time (in GMT) when data is collected from the storage system
Emulation Type	Emulation type for the logical device
LDEV Location	Information indicating whether the logical device is an externally connected LDEV: • Internal • External
LDEV Number	Logical device number
Main LDEV Number	Representative logical device number of the LUSE to which the logical device belongs
Pool ID	Pool ID of the Dynamic Provisioning pool to which the logical device belongs
RAID Group Number	Parity group number
SLPR Number	The number of the SLPR to which the logical device belongs
Volume Type	Information indicating whether the logical device is a V-VOL for Dynamic Provisioning

Drilldown Reports (Field Level)

Report Name	Description
Array Group Configuration(5.0)	Displays a table listing parity group configuration information in real time. To display this report, click the following field in the LUSE Configuration(7.1) report: • RAID Group Number
CLPR Configuration(6.0)	Displays a table listing CLPR configuration information in real time. To display this report, click the following field in the LUSE Configuration(7.1) report: • CLPR Number
External LDEV Configuration(5.0)	Displays a table listing configuration information about each externally connected LDEV in real time. To display this report, click the following field in the LUSE Configuration(7.1) report: • LDEV Location The drilldown report will only be displayed if the value of LDEV Location is External.

Report Name	Description
`Logical Device Configuration(7.1)`	Displays a table listing configuration information about each logical device in real time. To display this report, click the following field in the `LUSE Configuration(7.1)` report: • Main LDEV Number
`Pool Configuration(7.1)`	Displays a table listing capacity and configuration information about each Dynamic Provisioning pool in real time. To display this report, click the following field in the `LUSE Configuration(7.1)` report: • Pool ID

Physical Device Busy Rate - Top 10(7.2)

Overview

The `Physical Device Busy Rate - Top 10(7.2)` report displays a table that lists, in real time, which ten drives are used most in a storage system.

Note that this report is not supported if the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

Physical Device Operation Status (`PI_PDOS`)

Fields

Field Name	Description
Avg Tag Count	Average number of commands accumulated in the command queue of the drive
Busy %	Drive usage
Controller	Controller number
HDU Number	HDU number of the drive
Max Tag Count	Maximum number of commands accumulated in the command queue of the drive over the last minute
RAID Group Number	Number of the parity group to which the drive belongs

Field Name	Description
Unit Number	Unit number of the drive

Physical Device Busy Rate - Top 10(7.5)

Overview

The `Physical Device Busy Rate - Top 10(7.5)` report displays a table that lists, in real time, which ten drives are used most in a storage system.

Note that this report is not supported if the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

Physical Device Operation Status (`PI_PDOS`)

Fields

Field Name	Description
Avg Tag Count	Average number of commands accumulated in the command queue of the drive
Busy %	Drive usage
Controller	Controller number
HDU Number	HDU number of the drive
Max Tag Count	Maximum number of commands accumulated in the command queue of the drive over the last minute
Pool ID	Pool ID of the Dynamic Provisioning pool to which the drive belongs
RAID Group Number	Number of the parity group to which the drive belongs
RAID Group Type	Information indicating whether the drive belongs to a Dynamic Provisioning pool: • POOL
Unit Number	Unit number of the drive

Physical Device Busy Rate Details(7.2)

Overview

The `Physical Device Busy Rate Details(7.2)` report displays a table that lists the operation status of each drive in a storage system over the last hour.

Note that this report is not supported if the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

Physical Device Operation Status (`PI_PDOS`)

Fields

Field Name	Description
Avg Tag Count	Average number of commands accumulated in the command queue of the drive
Busy %	Drive usage
Controller	Controller number
HDU Number	HDU number of the drive
Max Tag Count	Maximum number of commands accumulated in the command queue of the drive over the last minute
RAID Group Number	Number of the parity group to which the drive belongs
Unit Number	Unit number of the drive

Physical Device Busy Rate Details(7.5)

Overview

The `Physical Device Busy Rate Details(7.5)` report displays a table that lists the operation status of each drive in a storage system over the last hour.

Note that this report is not supported if the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

Physical Device Operation Status (`PI_PDOS`)

Fields

Field Name	Description
Avg Tag Count	Average number of commands accumulated in the command queue of the drive
Busy %	Drive usage
Controller	Controller number
HDU Number	HDU number of the drive
Max Tag Count	Maximum number of commands accumulated in the command queue of the drive over the last minute
Pool ID	Pool ID of the Dynamic Provisioning pool to which the drive belongs
RAID Group Number	Number of the parity group to which the drive belongs
RAID Group Type	Information indicating whether the drive belongs to a Dynamic Provisioning pool: • POOL
Unit Number	Unit number of the drive

Physical Device Busy Rate Status(7.2)

Overview

The `Physical Device Busy Rate Status(7.2)` report displays a table that lists operation status of each drive in a storage system in real time.

Note that this report is not supported if the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Physical Device Operation Status (`PI_PDOS`)

Fields

Field Name	Description
Avg Tag Count	Average number of commands accumulated in the command queue of the drive
Busy %	Drive usage
Controller	Controller number
HDU Number	HDU number of the drive
Max Tag Count	Maximum number of commands accumulated in the command queue of the drive over the last minute
RAID Group Number	Number of the parity group to which the drive belongs
Unit Number	Unit number of the drive

Physical Device Busy Rate Status(7.5)

Overview

The `Physical Device Busy Rate Status(7.5)` report displays a table that lists, in real time, the operation status of each drive in a storage system.

Note that this report is not supported if the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Physical Device Operation Status (`PI_PDOS`)

Fields

Field Name	Description
Avg Tag Count	Average number of commands accumulated in the command queue of the drive
Busy %	Drive usage
Controller	Controller number
HDU Number	HDU number of the drive

Field Name	Description
Max Tag Count	Maximum number of commands accumulated in the command queue of the drive over the last minute
Pool ID	Pool ID of the Dynamic Provisioning pool to which the drive belongs
RAID Group Number	Number of the parity group to which the drive belongs
RAID Group Type	Information indicating whether the drive belongs to a Dynamic Provisioning pool: • POOL
Unit Number	Unit number of the drive

Pool Configuration(7.1)

Overview

The `Pool Configuration(7.1)` report displays a table listing capacity and configuration information about each Dynamic Provisioning pool in real time. However, if no Dynamic Provisioning pool exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, or Hitachi AMS/WMS series storage system.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Pool Configuration (`PD_PLC`)

Fields

Field Name	Description
Attribute	Type of the pool: For Universal Storage Platform V/VM series, HUS100 series, or Hitachi AMS2000 series storage systems: • Dynamic Provisioning For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems: • Dynamic Provisioning • Dynamic Provisioning (Tiering)

Field Name	Description
Collection Time	Time (in GMT) when data is collected from the storage system
Emulation Type	Emulation type for the pool
Free Capacity	The amount of unused capacity in the pool (GB)
Pool ID	ID of the pool

Pool Volume Count	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage systems:
	
	    Number of Dynamic Provisioning pool volumes in the pool
	
	For HUS100 series or Hitachi AMS2000 series storage systems:
	
	    Number of parity groups that make up the pool

Status	Pool capacity status For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage systems: • NORMAL (the status is normal) • WARNING (the usage rate of the pool capacity has exceeded the value of the Threshold field or the Warning Threshold field) • BLOCKED (the usage rate of the pool capacity is 100%, and the pool is blocked) For HUS100 series or Hitachi AMS2000 series storage systems: • Normal (the status is normal) • Early Alert Over (the usage rate of the pool capacity has exceeded the Early Alert threshold) • Depletion Alert Over (the usage rate of the pool capacity has exceeded the Depletion Alert threshold) • Capacity Depleted (the usage rate of the pool capacity is 100%)
Threshold	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems: System threshold (%) or depletion threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field) For the Universal Storage Platform V/VM series storage systems:

Field Name	Description
	Pool Threshold Value 1 set for the usage rate of the pool capacity (the value of the Usage % field)
	For HUS100 series or Hitachi AMS2000 series storage systems:
	Early Alert threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field)
Total Actual Capacity	Actual capacity of the pool (GB)
Total Managed Capacity	Virtual capacity of all Dynamic Provisioning V-VOLs mapped to the pool (GB)
Usage %	Usage rate of the pool capacity
Used Capacity	Size of the used capacity of the pool (GB)
Virtual Volume Count	Number of Dynamic Provisioning V-VOLs mapped to the pool
Warning Threshold	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems:
	User-defined threshold (%) or warning threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field)
	For the Universal Storage Platform V/VM series storage systems:
	Pool Threshold Value 2 set for the usage rate of the pool capacity (the value of the Usage % field)
	For HUS100 series or Hitachi AMS2000 series storage systems:
	Depletion Alert threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field)

Drilldown Report (Field Level)

Report Name	Description
Pool Usage Trend(7.1)	Displays a line graph showing the usage of each Dynamic Provisioning pool, and a table listing capacity and configuration information for the last month. To display this report, click the following field in the Pool Configuration(7.1) report: • Pool ID

Pool Configuration(9.0)

Overview

The `Pool Configuration(9.0)` report displays a table listing capacity and configuration information about each Dynamic Provisioning pool in real time. However, if no Dynamic Provisioning pool exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, or Hitachi AMS/WMS series storage system.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Pool Configuration (`PD_PLC`)

Fields

Field Name	Description
Attribute	Type of the pool:
	For Universal Storage Platform V/VM series, HUS100 series, or Hitachi AMS2000 series storage systems:
	• Dynamic Provisioning
	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems:
	• Dynamic Provisioning
	• Dynamic Provisioning (Tiering)
Collection Time	Time (in GMT) when data is collected from the storage system
Emulation Type	Emulation type for the pool
Free Capacity	The amount of unused capacity in the pool (GB)
Pool ID	ID of the pool
Pool Volume Count	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage systems:
	Number of Dynamic Provisioning pool volumes in the pool
	For HUS100 series or Hitachi AMS2000 series storage systems:
	Number of parity groups that make up the pool

Field Name	Description
Reserved Capacity	The capacity for the reserved pages in the pool (GB)
Status	Pool capacity status
	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage systems:
	• NORMAL (the status is normal)
	• WARNING (the usage rate of the pool capacity has exceeded the value of the Threshold field or the Warning Threshold field)
	• BLOCKED (the usage rate of the pool capacity is 100%, and the pool is blocked)
	For HUS100 series or Hitachi AMS2000 series storage systems:
	• Normal (the status is normal)
	• Early Alert Over (the usage rate of the pool capacity has exceeded the Early Alert threshold)
	• Depletion Alert Over (the usage rate of the pool capacity has exceeded the Depletion Alert threshold)
	• Capacity Depleted (the usage rate of the pool capacity is 100%)
Threshold	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems:
	System threshold (%) or depletion threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field)
	For the Universal Storage Platform V/VM series storage systems:
	Pool Threshold Value 1 set for the usage rate of the pool capacity (the value of the Usage % field)
	For HUS100 series or Hitachi AMS2000 series storage systems:
	Early Alert threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field)
Total Actual Capacity	Actual capacity of the pool (GB)
Total Managed Capacity	Virtual capacity of all Dynamic Provisioning V-VOLs mapped to the pool (GB)
Usage %	Usage rate of the pool capacity
Used Capacity	Size of the used capacity of the pool (GB)
Virtual Volume Count	Number of Dynamic Provisioning V-VOLs mapped to the pool

Working with the Solution Set

Field Name	Description

Warning Threshold	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems:
	
	    User-defined threshold (%) or warning threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field)
	
	For the Universal Storage Platform V/VM series storage systems:
	
	    Pool Threshold Value 2 set for the usage rate of the pool capacity (the value of the Usage % field)
	
	For HUS100 series or Hitachi AMS2000 series storage systems:
	
	    Depletion Alert threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field)

Drilldown Report (Field Level)

Report Name	Description
Pool Usage Trend(9.0)	Displays a line graph showing the usage of each Dynamic Provisioning pool, and a table listing capacity and configuration information for the last month. To display this report, click the following field in the `Pool Configuration(9.0)` report: • Pool ID

Pool Configuration(9.4)

Overview

The `Pool Configuration(9.4)` report displays a table listing capacity and configuration information about each Dynamic Provisioning pool in real time. However, if no Dynamic Provisioning pool exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, or Hitachi AMS/WMS series storage system.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Pool Configuration (`PD_PLC`)

Fields

Field Name	Description
Attribute	Type of the pool: For Universal Storage Platform V/VM series, HUS100 series, or Hitachi AMS2000 series storage systems: • Dynamic Provisioning For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems: • Dynamic Provisioning • Dynamic Provisioning (Tiering)
Collection Time	Time (in GMT) when data is collected from the storage system
Emulation Type	Emulation type for the pool
FMC Pool Capacity Saving	The saved capacity with the accelerated compression function (GB)
FMC Pool Capacity Saving %	Reduction rate (%) of capacity reduced by accelerated compression function
Free Capacity	The amount of unused capacity in the pool (GB)
Physical Capacity Free	Total amount of free capacity in the physical capacity of the parity groups that make up the pool (GB)
Physical Capacity Total	Total amount of the physical capacity of the parity groups that make up the pool (GB)
Physical Capacity Usage %	Usage percentage of the physical capacity of the parity groups that make up the pool
Physical Capacity Used	Total amount of used capacity in the physical capacity of the parity groups that make up the pool (GB)
Pool Capacity Expansion %	Expansion percentage of the pool capacity by using FMC Accelerated Compression
Pool ID	ID of the pool
Pool Volume Count	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage systems: Number of Dynamic Provisioning pool volumes in the pool For HUS100 series or Hitachi AMS2000 series storage systems: Number of parity groups that make up the pool
Reserved Capacity	The capacity for the reserved pages in the pool (GB)
Status	Pool capacity status

Field Name	Description
	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage systems:
	• NORMAL (the status is normal)
	• WARNING (the usage rate of the pool capacity has exceeded the value of the Threshold field or the Warning Threshold field)
	• BLOCKED (the usage rate of the pool capacity is 100%, and the pool is blocked)
	For HUS100 series or Hitachi AMS2000 series storage systems:
	• Normal (the status is normal)
	• Early Alert Over (the usage rate of the pool capacity has exceeded the Early Alert threshold)
	• Depletion Alert Over (the usage rate of the pool capacity has exceeded the Depletion Alert threshold)
	• Capacity Depleted (the usage rate of the pool capacity is 100%)
Threshold	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems:
	System threshold (%) or depletion threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field)
	For the Universal Storage Platform V/VM series storage systems:
	Pool Threshold Value 1 set for the usage rate of the pool capacity (the value of the Usage % field)
	For HUS100 series or Hitachi AMS2000 series storage systems:
	Early Alert threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field)
Total Actual Capacity	Capacity of the pool (GB)
Total Managed Capacity	Virtual capacity of all Dynamic Provisioning V-VOLs mapped to the pool (GB)
Usage %	Usage rate of the pool capacity
Used Capacity	Size of the used capacity of the pool (GB)
Virtual Volume Count	Number of Dynamic Provisioning V-VOLs mapped to the pool
Warning Threshold	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP

Field Name	Description
	G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems:
	User-defined threshold (%) or warning threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field)
	For the Universal Storage Platform V/VM series storage systems:
	Pool Threshold Value 2 set for the usage rate of the pool capacity (the value of the Usage % field)
	For HUS100 series or Hitachi AMS2000 series storage systems:
	Depletion Alert threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field)

Drilldown Report (Field Level)

Report Name	Description
Pool Usage Trend(9.4)	Displays a line graph showing the usage of each Dynamic Provisioning pool, and a table listing capacity and configuration information for the last month. To display this report, click the following field in the Pool Configuration(9.4) report: • Pool ID
Pool Tier Type Usage Trend(9.4)	Displays a table and stacked-area graph showing the capacity usage rate for each type of tier over the past month for Dynamic Provisioning pools that have tier management enabled. To display this report, click the following field in the Pool Configuration(9.4) report: • FMC Pool Capacity Saving • FMC Pool Capacity Saving % • Pool Capacity Expansion %

Pool Frequency Distribution Status(8.6)

Overview

The Pool Frequency Distribution Status(8.6) report displays a table showing the frequency of page I/O operations in Dynamic Provisioning pools over the past 24 hours. Note that you cannot use this report when there are no Dynamic Provisioning pools in the monitored storage system.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/`

Record

Pool Frequency Distribution (`PD_PLF`)

Fields

Field Name	Description
Avg Page I/O /sec	Frequency of pool read and write operations (operations per second)
Capacity	Total pool capacity
Monitor Collection End Time	Time when collection of monitoring information ended on the storage system
Monitor Collection Start Time	Time when collection of monitoring information began on the storage system
Partition Number	Partition number
Pool ID	ID of the pool

Pool Performance Status(7.8)

Overview

The `Pool Performance Status(7.8)` report displays a table listing performance information for each Dynamic Provisioning pool for the last 24 hours.

However, if no Dynamic Provisioning pool exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi AMS/WMS series storage system.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/`

Record

Pool Summary (`PI_PLS`)

Fields

Field Name	Description
Pool ID	ID of the pool

Field Name	Description
Read Response Rate	Average processing time (in microseconds) per read request for the V-VOLs mapped to the Dynamic Provisioning pool
Write Response Rate	Average processing time (in microseconds) per write request for the V-VOLs mapped to the Dynamic Provisioning pool

Drilldown Reports (Field Level)

Report Name	Description
Pool Configuration(7.1)	Displays a table listing capacity and configuration information about the Dynamic Provisioning pool in real time. To display this report, click the following field in the Pool Performance Status(7.8) report: • Pool ID
Pool Read Response Rate Status(7.8)	Displays a table and line graph showing the average processing time per read request for the Dynamic Provisioning pool for the last 24 hours. To display this report, click the following field in the Pool Performance Status(7.8) report: • Read Response Rate

Pool Performance Status(8.0)

Overview

The Pool Performance Status(8.0) report displays a table listing performance information for each Dynamic Provisioning pool for the last 24 hours.

However, if no Dynamic Provisioning pool exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi AMS/WMS series storage system.

Storage Location

Reports/RAID/Status Reporting/Daily Trend/

Record

Pool Summary (PI_PLS)

Fields

Field Name	Description
Pool ID	ID of the pool
Read I/O /sec	Frequency of read operations (times per second) for the virtual volumes mapped to the Dynamic Provisioning pool
Read Response Rate	Average processing time (in microseconds) per read request for the virtual volumes mapped to the Dynamic Provisioning pool
Write I/O /sec	Frequency of write operations (times per second) for the virtual volumes mapped to the Dynamic Provisioning pool
Write Response Rate	Average processing time (in microseconds) per write request for the virtual volumes mapped to the Dynamic Provisioning pool

Drilldown Reports (Field Level)

Report Name	Description
Pool Configuration(7.1)	Displays a table listing capacity and configuration information about the Dynamic Provisioning pool in real time. To display this report, click the following field in the `Pool Performance Status(8.0)` report: • Pool ID
Pool Read IO Rate Status(8.0)	Displays a table and line graph showing the frequency of read operations for the Dynamic Provisioning pool for the last 24 hours. To display this report, click the following field in the `Pool Performance Status(8.0)` report: • Read I/O /sec
Pool Read Response Rate Status(7.8)	Displays a table and line graph showing the average processing time per read request for the Dynamic Provisioning pool for the last 24 hours. To display this report, click the following field in the `Pool Performance Status(8.0)` report: • Read Response Rate
Pool Write IO Rate Status(8.0)	Displays a table and line graph showing the frequency of write operations for the Dynamic Provisioning pool for the last 24 hours. To display this report, click the following field in the `Pool Performance Status(8.0)` report: • Write I/O /sec

Pool Performance Status(8.4)

Overview

The `Pool Performance Status(8.4)` report displays a table listing performance information for each Dynamic Provisioning pool for the last 24 hours.

However, if no Dynamic Provisioning pool exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi AMS/WMS series storage system.

Storage Location

Reports/RAID/Status Reporting/Daily Trend/

Record

Pool Summary (`PI_PLS`)

Fields

Field Name	Description
Pool ID	ID of the pool
Read I/O /sec	Frequency of read operations (times per second) for the virtual volumes mapped to the Dynamic Provisioning pool
Read Response Rate	Average processing time (in microseconds) per read request for the virtual volumes mapped to the Dynamic Provisioning pool
Read Xfer /sec	Read data transfer rate of the virtual volumes mapped to the Dynamic Provisioning pool (megabytes per second)
Write I/O /sec	Frequency of write operations (times per second) for the virtual volumes mapped to the Dynamic Provisioning pool
Write Response Rate	Average processing time (in microseconds) per write request for the virtual volumes mapped to the Dynamic Provisioning pool
Write Xfer /sec	Write data transfer rate of the virtual volumes mapped to the Dynamic Provisioning pool (megabytes per second)

Drilldown Reports (Field Level)

Report Name	Description
Pool Configuration(7.1)	Displays a table listing capacity and configuration information about the Dynamic Provisioning pool in real time. To display this report, click the following field in the `Pool Performance Status(8.4)` report: • Pool ID
Pool Read IO Rate Status(8.0)	Displays a table and line graph showing the frequency of read operations for the Dynamic Provisioning pool for the last 24 hours. To display this report, click the following field in the `Pool Performance Status(8.4)` report: • Read I/O /sec
Pool Read Response Rate Status(7.8)	Displays a table and line graph showing the average processing time per read request for the Dynamic

Report Name	Description
	Provisioning pool for the last 24 hours. To display this report, click the following field in the `Pool Performance Status(8.4)` report: • Read Response Rate
`Pool Read Transfer Rate Status(8.4)`	Displays a table and line graph showing the read data transfer rate of the Dynamic Provisioning pool for the last 24 hours. To display this report, click the following field in the `Pool Performance Status(8.4)` report: • Read Xfer /sec
`Pool Write IO Rate Status(8.0)`	Displays a table and line graph showing the frequency of write operations for the Dynamic Provisioning pool for the last 24 hours. To display this report, click the following field in the `Pool Performance Status(8.4)` report: • Write I/O /sec
`Pool Write Transfer Rate Status(8.4)`	Displays a table and line graph showing the write data transfer rate of the Dynamic Provisioning pool for the last 24 hours. To display this report, click the following field in the `Pool Performance Status(8.4)` report: • Write Xfer /sec

Pool Read IO Rate Status(8.0)

Overview

The `Pool Read IO Rate Status(8.0)` report displays a table and line graph showing the frequency of read operations for each Dynamic Provisioning pool for the last 24 hours.

However, if no Dynamic Provisioning pool exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi AMS/WMS series storage system.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Pool Summary (`PI_PLS`)

Fields

Field Name	Description
Pool ID	ID of the pool

Field Name	Description
Read I/O /sec	Frequency of read operations (times per second) for the virtual volumes mapped to the Dynamic Provisioning pool
Read Response Rate	Average processing time (in microseconds) per read request for the virtual volumes mapped to the Dynamic Provisioning pool
Write I/O /sec	Frequency of write operations (times per second) for the virtual volumes mapped to the Dynamic Provisioning pool
Write Response Rate	Average processing time (in microseconds) per write request for the virtual volumes mapped to the Dynamic Provisioning pool

Pool Read Response Rate Status(7.8)

Overview

The `Pool Read Response Rate Status(7.8)` report displays a table and line graph showing the average processing time per read request for each Dynamic Provisioning pool for the last 24 hours.

However, if no Dynamic Provisioning pool exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi AMS/WMS series storage system.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Pool Summary (`PI_PLS`)

Fields

Field Name	Description
Pool ID	ID of the pool
Read Response Rate	Average processing time (in microseconds) per read request for the V-VOLs mapped to the Dynamic Provisioning pool

Pool Read Transfer Rate Status(8.4)

Overview

The `Pool Read Transfer Rate Status(8.4)` report displays a table and line graph showing the read data transfer rate of each Dynamic Provisioning pool for the last 24 hours.

However, if no Dynamic Provisioning pool exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi AMS/WMS series storage system.

Storage Location

Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/

Record

Pool Summary (PI_PLS)

Fields

Field Name	Description
Pool ID	Pool ID of the pool
Read I/O /sec	Read frequency of the virtual volumes mapped to the Dynamic Provisioning pool (times per second)
Read Response Rate	Average processing time (in microseconds) per read request for the virtual volumes mapped to the Dynamic Provisioning pool
Read Xfer /sec	Read data transfer rate of the virtual volumes mapped to the Dynamic Provisioning pool (megabytes per second)
Write I/O /sec	Write frequency of the virtual volumes mapped to the Dynamic Provisioning pool (times per second)
Write Response Rate	Average processing time (in microseconds) per write request for the virtual volumes mapped to the Dynamic Provisioning pool
Write Xfer /sec	Write data transfer rate of the virtual volumes mapped to the Dynamic Provisioning pool (megabytes per second)

Pool Relocation Moved Pages Status(8.2)

Overview

The Pool Relocation Moved Pages Status(8.2) report displays tier relocation information and the number of pages that have been moved by tier relocation over the past month for Dynamic Provisioning pools that have tier management enabled. The tier relocation information is shown in a table and the number of moved pages is shown in a line graph.

However, if no Dynamic Provisioning pools that have tier management enabled exist in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Monthly Trend/Drilldown Only/`

Record

Pool Page Relocation (`PD_PLR`)

Fields

Field Name	Description
Moved Pages	Number of pages moved by tier relocation
Pool ID	ID of the pool
Progress %	Progress of tier relocation (%)
Relocation End Time	Time that tier relocation in the storage system ended
Relocation Start Time	Time that tier relocation in the storage system started
Relocation Status	Status of the tier relocation when processing completed

Pool Relocation Moved Pages Status(8.6)

Overview

The `Pool Relocation Moved Pages Status(8.6)` report displays the tier relocation information and number of pages that have been moved by tier relocation over the past month for Dynamic Provisioning pools that have tier management enabled. The tier relocation information is shown in a table and the number of moved pages is shown in a line graph.

However, if no Dynamic Provisioning pools that have tier management enabled exist in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Monthly Trend/Drilldown Only/`

Record

Pool Page Relocation (`PD_PLR`)

Fields

Field Name	Description
Moved Pages	Number of pages moved as part of tier relocation

Field Name	Description
Pool ID	ID of the pool
Progress %	Progress of tier relocation (%)
Relocation End Time	Time when tier relocation ended in the storage system
Relocation Start Time	Time when tier relocation began in the storage system
Relocation Status	Completion status of tier relocation
Relocation Time	Time taken to relocate tiers

Pool Relocation Status(8.2)

Overview

The `Pool Relocation Status(8.2)` report displays a table showing tier relocation information over the past month for Dynamic Provisioning pools that have tier management enabled.

However, if no Dynamic Provisioning pools that have tier management enabled exist in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Monthly Trend/`

Record

Pool Page Relocation (`PD_PLR`)

Fields

Field Name	Description
Moved Pages	Number of pages moved by tier relocation
Pool ID	ID of the pool
Progress %	Progress of tier relocation (%)
Relocation End Time	Time that tier relocation in the storage system ended
Relocation Start Time	Time that tier relocation in the storage system started
Relocation Status	Status of the tier relocation when processing completed

Drilldown Report (Field Level)

Report Name	Description
Pool Relocation Moved Pages Status(8.2)	Displays tier relocation information and the number of pages that have been moved by tier relocation over the past month for Dynamic Provisioning pools that have tier management enabled. The tier relocation information is shown in a table and the number of moved pages is shown in a line graph. To display this report, click the following field in the `Pool Relocation Status(8.2)` report: • Pool ID

Pool Relocation Status(8.6)

Overview

The `Pool Relocation Status(8.6)` report displays a table showing information about tier relocation over the past month for Dynamic Provisioning pools that are subject to tier management.

Note that you cannot use this report if there are no Dynamic Provisioning pools that are subject to tier management in the monitored storage system.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Monthly Trend/`

Record

Pool Page Relocation (`PD_PLR`)

Fields

Field Name	Description
Moved Pages	Number of pages moved as part of tier relocation
Pool ID	ID of the pool
Progress %	Progress of tier relocation (%)
Relocation End Time	Time when tier relocation ended in the storage system
Relocation Start Time	Time when tier relocation began in the storage system
Relocation Status	Completion status of tier relocation
Relocation Time	Time taken to relocate tiers

Drilldown Reports (Field Level)

Report Name	Description
Pool Relocation Moved Pages Status(8.6)	Displays a table showing information about tier relocation over the past month for Dynamic Provisioning pools that are subject to tier management, and a line graph showing the number of pages moved as part of tier relocation. To display this report, click the following field in the `Pool Relocation Status(8.6)` report: • Pool ID

Pool Tier IO Rate Status(8.2)

Overview

The `Pool Tier IO Rate Status(8.2)` report displays a table showing the read and write processing rate for each type of tier over the past 24 hours for Dynamic Provisioning pools that have tier management enabled.

However, if no Dynamic Provisioning pools that have tier management enabled exist in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a midrange storage system, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/`

Record

Pool Tier Type I/O Information (`PI_PLTI`)

Fields

Field Name	Description
Avg I/O /sec	Read and write processing rate (number of times per second) for the tier
Pool ID	ID of the pool
Tier Number	Number of the tier
Tier Type	Type of the tier

Drilldown Reports (Field Level)

Report Name	Description
Pool Tier IO Rate Trend(8.2)	Displays a table and line graph showing the read and write processing rate for each type of tier over the past 24 hours for Dynamic Provisioning pools that have tier management

Report Name	Description
	enabled. To display this report, click the following field in the `Pool Tier IO Rate Status(8.2)` report: • Pool ID
`Virtual Volume Tier Type IO Rate Trend(8.2)`	Displays a table and line graph showing the read and write processing rate for each type of tier over the past 24 hours for Dynamic Provisioning V-VOLs that have tier management enabled. To display this report, click the following field in the `Pool Tier IO Rate Status(8.2)` report: • Avg I/O /sec

Pool Tier IO Rate Trend(8.2)

Overview

The `Pool Tier IO Rate Trend(8.2)` report displays a table and line graph showing the read and write processing rate for each type of tier over the past 24 hours for Dynamic Provisioning pools that have tier management enabled.

However, if no Dynamic Provisioning pools that have tier management enabled exist in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a midrange storage system, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Pool Tier Type I/O Information (`PI_PLTI`)

Fields

Field Name	Description
Avg I/O /sec	Read and write processing rate (number of times per second) for the tier
Pool ID	ID of the pool
Tier Number	Number of the tier
Tier Type	Type of the tier

Working with the Solution Set

Hitachi Tuning Manager Hardware Reports Reference

Pool Tier Relocation Status(8.2)

Overview

The `Pool Tier Relocation Status(8.2)` report displays a table showing tier relocation information over the past month for Dynamic Provisioning pools that have tier management enabled.

However, if no Dynamic Provisioning pools that have tier management enabled exist in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Monthly Trend/`

Record

Pool Tier Page Relocation (`PD_PLTR`)

Fields

Field Name	Description
Demoted Pages	Number of pages moved to lower-level tiers
Pool ID	ID of the pool
Promoted Pages	Number of pages moved to upper-level tiers
Relocation End Time	Time that tier relocation in the storage system ended
Relocation Start Time	Time that tier relocation in the storage system started
Tier Number	Number of the tier
Tier Type	Type of the tier

Drilldown Report (Field Level)

Report Name	Description
`Pool Tier Relocation Trend(8.2)`	Displays tier relocation information and the number of pages that have been moved by tier relocation over the past month for Dynamic Provisioning pools that have tier management enabled. The tier relocation information is shown in a table and the number of moved pages is shown in a stacked-column graph. To display this report, click the following field in the `Pool Tier Relocation Status(8.2)` report: • Pool ID

Pool Tier Relocation Status(8.6)

Overview

The `Pool Tier Relocation Status(8.6)` report displays a table showing information about tier relocation over the past month for Dynamic Provisioning pools that are subject to tier management.

Note that you cannot use this report if there are no Dynamic Provisioning pools that are subject to tier management in the monitored storage system.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Monthly Trend/`

Record

Pool Tier Page Relocation (`PD_PLTR`)

Fields

Field Name	Description
Demoted Pages	Number of pages moved to lower-level tiers
Pool ID	ID of the pool
Promoted Pages	Number of pages moved to higher-level tiers
Relocation End Time	Time when tier relocation ended in the storage system
Relocation Start Time	Time when tier relocation began in the storage system
Relocation Time	Time taken to relocate tiers
Tier Number	Tier number of the tier
Tier Type	Type of the tier

Drilldown Reports (Field Level)

Report Name	Description
`Pool Tier Relocation Trend(8.6)`	Displays a table showing information about tier relocation over the past month for Dynamic Provisioning pools that are subject to tier management, and a stacked bar graph showing the number of pages moved as part of tier relocation. To display this report, click the following field in the `Pool Tier Relocation Status(8.6)` report: • Pool ID

Pool Tier Relocation Trend(8.2)

Overview

The `Pool Tier Relocation Trend(8.2)` report displays tier relocation information and the number of pages that have been moved by tier relocation over the past month for Dynamic Provisioning pools that have tier management enabled. The tier relocation information is shown in a table and the number of moved pages is shown in a stacked-column graph.

However, if no Dynamic Provisioning pools that have tier management enabled exist in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Monthly Trend/Drilldown Only/`

Record

Pool Tier Page Relocation (`PD_PLTR`)

Fields

Field Name	Description
Demoted Pages	Number of pages moved to lower-level tiers
Pool ID	ID of the pool
Promoted Pages	Number of pages moved to upper-level tiers
Relocation End Time	Time that tier relocation in the storage system ended
Relocation Start Time	Time that tier relocation in the storage system started
Tier Number	Number of the tier
Tier Type	Type of the tier

Pool Tier Relocation Trend(8.6)

Overview

The `Pool Tier Relocation Trend(8.6)` report displays a table showing information about tier relocation over the past month for Dynamic Provisioning pools that are subject to tier management, and a stacked bar graph showing the number of pages moved as part of tier relocation.

Note that you cannot use this report if there are no Dynamic Provisioning pools that are subject to tier management in the monitored storage system.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Monthly Trend/Drilldown Only/`

Record

Pool Tier Page Relocation (`PD_PLTR`)

Fields

Field Name	Description
Demoted Pages	Number of pages moved to lower-level tiers
Pool ID	ID of the pool
Promoted Pages	Number of pages moved to higher-level tiers
Relocation End Time	Time when tier relocation ended in the storage system
Relocation Start Time	Time when tier relocation began in the storage system
Relocation Time	Time taken to relocate tiers
Tier Number	Tier number of the tier
Tier Type	Type of the tier

Pool Tier Type Configuration(7.8)

Overview

The `Pool Tier Type Configuration(7.8)` report displays, in real time, a table that lists capacity and configuration information for each tier type of a Dynamic Provisioning pool that has tier management enabled.

However, if no Dynamic Provisioning pool that has tier management enabled exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Pool Tier Type Configuration (`PD_PLTC`)

Fields

Field Name	Description
Free Capacity	The amount of free capacity in the tier (GB)
Pool ID	ID of the pool
Tier Number	Tier number
Tier Type	Tier type
Total Capacity	Actual capacity of the tier (GB)
Usage % in Pool	Of the total actual capacity of a Dynamic Provisioning pool that has tier management enabled, the percentage of the capacity used by the tier
Usage % in Tier	Of the total actual capacity of the tier, the percentage of used capacity
Used Capacity	Size of the used capacity of the tier (GB)

Drilldown Report (Field Level)

Report Name	Description
Pool Tier Type Usage Trend(7.8)	Displays a table and stacked area graph showing the usage for the last month for each tier type of a Dynamic Provisioning pool that has tier management enabled. To display this report, click the following field in the `Pool Tier Type Configuration(7.8)` report: • Pool ID

Pool Tier Type Configuration(8.0)

Overview

The `Pool Tier Type Configuration(8.0)` report displays, in real time, a table that lists capacity and configuration information for each tier type of a Dynamic Provisioning pool that has tier management enabled.

However, if no Dynamic Provisioning pool that has tier management enabled exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Pool Tier Type Configuration (`PD_PLTC`)

Fields

Field Name	Description
Free Capacity	The amount of unused capacity in the tier (GB)
Pool ID	ID of the pool
Tier Number	Tier number
Tier Type	Tier type
Total Capacity	Actual capacity of the tier (GB)
Usage % in Pool	Of the total actual capacity of a Dynamic Provisioning pool that has tier management enabled, the percentage of the capacity used by the tier
Usage % in Tier	Of the total actual capacity of the tier, the percentage of used capacity
Used Capacity	Size of the used capacity of the tier (GB)

Drilldown Reports (Field Level)

Report Name	Description
Pool Tier Type Usage Trend(7.8)	Displays a table and stacked area graph showing the usage rate for the last month for each tier type of a Dynamic Provisioning pool that has tier management enabled. To display this report, click the following field in the `Pool Tier Type Configuration(8.0)` report: • Pool ID
Virtual Volume Tier Type Used Capacity Trend(8.0)	Displays a table and line graph showing the size of the used capacity and the usage rate for the last month for each tier type of a Dynamic Provisioning V-VOL that has tier management enabled. To display this report, click the following field in the `Pool Tier Type Configuration(8.0)` report: • Tier Type

Pool Tier Type Configuration(8.2)

Overview

The `Pool Tier Type Configuration(8.2)` report displays a table in real time showing the capacity information and the configuration information for each type of tier for Dynamic Provisioning pools that have tier management enabled.

However, if no Dynamic Provisioning pools that have tier management enabled exist in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Pool Tier Type Configuration (`PD_PLTC`)

Fields

Field Name	Description
Free Capacity	The amount of unused capacity in the tier (GB)
Monitoring Mode	Monitoring mode of the pool
Pool ID	ID of the pool
Tier Number	Number of the tier
Tier Type	Type of the tier
Total Capacity	Actual capacity of the tier (GB)
Usage % in Pool	Of the total capacity of a Dynamic Provisioning pool that has tier management enabled, the percentage of the capacity used by the tier (%)
Usage % in Tier	Of the total capacity of the tier, the percentage used (%)
Used Capacity	Capacity used by the tier (GB)

Drilldown Reports (Field Level)

Report Name	Description
`Pool Tier Type Usage Trend(7.8)`	Displays a table and stacked-area graph showing the capacity usage rate for each type of tier over the past month for Dynamic Provisioning pools that have tier management enabled. To display this report, click the following field in the `Pool Tier Type Configuration(8.2)` report: • Pool ID
`Virtual Volume Tier Type Used Capacity Trend(8.0)`	Displays a table and line graph showing the used capacity and usage rate for each type of tier over the past month for Dynamic Provisioning V-VOLs that have tier management enabled. To display this report, click the following field in the `Pool Tier Type Configuration(8.2)` report: • Tier Type

Pool Tier Type Configuration(9.4)

Overview

The `Pool Tier Type Configuration(9.4)` report displays a table in real time showing the capacity information and the configuration information for each type of tier for Dynamic Provisioning pools that have tier management enabled.

However, if no Dynamic Provisioning pools that have tier management enabled exist in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Pool Tier Type Configuration (`PD_PLTC`)

Fields

Field Name	Description
FMC Capacity Expansion %	Expansion percentage of the FMC capacity by using Accelerated Compression
FMC Pool Capacity Free	Total amount of free capacity in the FMC volumes that make up the tier (GB)
FMC Pool Capacity Saving	Amount of used capacity in the tier that was reduced by FMC compression functionality (GB)
FMC Pool Capacity Saving %	Percentage of used capacity in the tier that was reduced by FMC compression functionality
FMC Pool Capacity Total	Total amount of capacity of the FMC volumes that make up the tier (GB)
FMC Pool Capacity Usage %	Usage percentage of the capacity of the FMC volumes that make up the tier
FMC Pool Capacity Used	Total amount of capacity of the FMC volumes that make up the tier that is being used by data
Free Capacity	The amount of unused capacity in the tier (GB)
Monitoring Mode	Monitoring mode of the pool
Physical FMC Capacity Free	Total amount of free capacity in the physical capacity of the parity groups that make up the tier (GB)
Physical FMC Capacity Total	Total amount of the physical capacity of the parity groups that make up the tier (GB)

Field Name	Description
Physical FMC Capacity Usage %	Usage percentage of the physical capacity of the parity groups that make up the tier
Physical FMC Capacity Used	Total amount of used capacity in the physical capacity of the parity groups that make up the tier (GB)
Pool ID	ID of the pool
Tier Number	Number of the tier
Tier Type	Type of the tier
Total Capacity	Capacity of the tier (GB)
Usage % in Pool	Of the capacity of a Dynamic Provisioning pool that has tier management enabled, the percentage of the capacity used by the tier (%)
Usage % in Tier	Of the capacity of the tier, the percentage used (%)
Used Capacity	Capacity used by the tier (GB)

Drilldown Reports (Field Level)

Report Name	Description
Pool Tier Type Usage Trend(9.4)	Displays a table and stacked-area graph showing the capacity usage rate for each type of tier over the past month for Dynamic Provisioning pools that have tier management enabled. To display this report, click the following field in the Pool Tier Type Configuration(9.4) report: • Pool ID
Virtual Volume Tier Type Used Capacity Trend(8.0)	Displays a table and line graph showing the used capacity and usage rate for each type of tier over the past month for Dynamic Provisioning V-VOLs that have tier management enabled. To display this report, click the following field in the Pool Tier Type Configuration(9.4) report: • Tier Type

Pool Tier Type IO Rate Status(8.0)

Overview

The `Pool Tier Type IO Rate Status(8.0)` report displays a table and line graph showing the frequency of read and write operations for the last month for each tier type of a Dynamic Provisioning pool that has tier management enabled.

However, if no Dynamic Provisioning pool that has tier management enabled exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

Reports/RAID/Monthly Trend/Drilldown Only/

Record

Pool Tier Type Operation Status (`PD_PLTS`)

Fields

Field Name	Description
Avg I/O /sec	Frequency of I/O operations (times per second) processed by the tier within the time period defined in the storage system
Avg IOPS Utilization %	Tier activity rate (%)
Monitor Collection End Time	Time at which collection of the storage system monitoring information ended
Monitor Collection Start Time	Time at which collection of the storage system monitoring information started
Pool ID	ID of the pool
Tier Type	Tier type
Tier Number	Tier number

Pool Tier Type IO Rate Status(8.6)

Overview

The `Pool Tier Type IO Rate Status(8.6)` report displays a table and line graph showing the frequency of read and write operations over the past month for each tier type in Dynamic Provisioning pools that are subject to tier management.

Note that you cannot use this report if there are no Dynamic Provisioning pools that are subject to tier management in the monitored storage system.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

Reports/RAID/Monthly Trend/Drilldown Only/

Record

Pool Tier Type Operation Status (`PD_PLTS`)

Fields

Field Name	Description
Avg I/O /sec	I/O operations processed per second by the tier within the time period defined in the storage system
Avg IOPS Utilization %	Utilization of the tier (%)
Monitor Collection End Time	Time when collection of monitoring information for the storage system ended
Monitor Collection Start Time	Time when collection of monitoring information for the storage system began
Pool ID	ID of the pool
Tier Number	Tier number of the tier
Tier Range I/O /sec	Maximum number of I/O operations processed per second by the tier during the monitoring period
Tier Type	Tier type

Pool Tier Type Performance Status(7.8)

Overview

The `Pool Tier Type Performance Status(7.8)` report displays a table that lists the performance information for the last month for each tier type of a Dynamic Provisioning pool that has tier management enabled.

However, if no Dynamic Provisioning pool that has tier management enabled exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Monthly Trend/`

Record

Pool Tier Type Operation Status (`PD_PLTS`)

Fields

Field Name	Description
Avg IOPS Utilization %	Tier activity rate
Monitor Collection End Time	Time at which collection of the storage system monitoring information ended
Monitor Collection Start Time	Time at which collection of the storage system monitoring information started
Pool ID	ID of the pool
Tier Type	Tier type
Tier Number	Tier number

Drilldown Reports (Field Level)

Report Name	Description
Pool Tier Type Configuration(7.8)	Displays, in real time, a table that lists capacity and configuration information for each tier type of a Dynamic Provisioning pool that has tier management enabled. To display this report, click the following field in the `Pool Tier Type Performance Status(7.8)` report: • Pool ID
Pool Tier Type Utilization Rate Status(7.8)	Displays a table and line graph showing the activity rate for the last month for each tier type of a Dynamic Provisioning pool that has tier management enabled. To display this report, click the following field in the `Pool Tier Type Performance Status(7.8)` report: • Avg IOPS Utilization %

Pool Tier Type Performance Status(8.0)

Overview

The `Pool Tier Type Performance Status(8.0)` report displays a table that lists the performance information for the last month for each tier type of a Dynamic Provisioning pool that has tier management enabled.

However, if no Dynamic Provisioning pool that has tier management enabled exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Monthly Trend/`

Record

Pool Tier Type Operation Status (`PD_PLTS`)

Fields

Field Name	Description
Avg I/O /sec	Frequency of I/O operations (times per second) processed by the tier within the time period defined in the storage system
Avg IOPS Utilization %	Tier activity rate (%)
Monitor Collection End Time	Time at which collection of the storage system monitoring information ended
Monitor Collection Start Time	Time at which collection of the storage system monitoring information started
Pool ID	ID of the pool
Tier Type	Tier type
Tier Number	Tier number

Drilldown Reports (Field Level)

Report Name	Description
Pool Tier Type Configuration(7.8)	Displays, in real time, a table that lists capacity and configuration information for each tier type of a Dynamic Provisioning pool that has tier management enabled. To display this report, click the following field in the `Pool Tier Type Performance Status(8.0)` report: • Pool ID
Pool Tier Type IO Rate Status(8.0)	Displays a table and line graph showing the frequency of read and write operations for the last month for each tier type of a Dynamic Provisioning pool that has tier management enabled. To display this report, click the following field in the `Pool Tier Type Performance Status(8.0)` report: • Avg I/O /sec
Pool Tier Type Utilization Rate Status(7.8)	Displays a table and line graph showing the activity rate for the last month for each tier type of a Dynamic Provisioning pool that has tier management enabled. To display this report, click the following field in the `Pool Tier Type Performance Status(8.0)` report: • Avg IOPS Utilization %

Pool Tier Type Performance Status(8.6)

Overview

The `Pool Tier Type Performance Status(8.6)` report displays a table showing performance information over the past month for each tier type in Dynamic Provisioning pools that are subject to tier management.

Note that you cannot use this report if there are no Dynamic Provisioning pools that are subject to tier management in the monitored storage system.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Monthly Trend/`

Record

Pool Tier Type Operation Status (`PD_PLTS`)

Fields

Field Name	Description
Avg I/O /sec	I/O operations processed per second by the tier within the time period defined in the storage system (operations per second)
Avg IOPS Utilization %	Utilization of the tier (%)
Monitor Collection End Time	Time when collection of monitoring information for the storage system ended
Monitor Collection Start Time	Time when collection of monitoring information for the storage system began
Pool ID	ID of the pool
Tier Number	Tier number of the tier
Tier Range I/O /sec	Minimum number of I/O operations processed per second by the tier during the monitoring period
Tier Type	Type of the tier

Drilldown Reports (Field Level)

Report Name	Description
`Pool Tier Type Configuration(7.8)`	Displays a table that shows, in real time, information about the capacity and configuration of each tier type in Dynamic Provisioning pools that are subject to tier management. To display

Report Name	Description
	this report, click the following field in the `Pool Tier Type Performance Status(8.6)` report: • Pool ID
`Pool Tier Type IO Rate Status(8.6)`	Displays a table and line graph showing the frequency of read and write operations over the past month for each tier type in Dynamic Provisioning pools that are subject to tier management. To display this report, click the following field in the `Pool Tier Type Performance Status(8.6)` report: • Avg I/O /sec
`Pool Tier Type Utilization Rate Status(7.8)`	Displays a table and line graph showing the utilization over the past month for each tier type in Dynamic Provisioning pools that are subject to tier management. To display this report, click the following field in the `Pool Tier Type Performance Status(8.6)` report: • Avg IOPS Utilization %

Pool Tier Type Usage Trend(7.8)

Overview

The `Pool Tier Type Usage Trend(7.8)` report displays a table and stacked area graph that shows the usage for the last month for each tier type of a Dynamic Provisioning pool that has tier management enabled.

However, if no Dynamic Provisioning pool that has tier management enabled exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Monthly Trend/Drilldown Only/`

Record

Pool Tier Type Configuration (`PD_PLTC`)

Fields

Field Name	Description
Pool ID	ID of the pool
Tier Number	Tier number
Tier Type	Tier type

Field Name	Description
Usage % in Pool	Of the total actual capacity of a Dynamic Provisioning pool that has tier management enabled, the percentage of capacity used by the tier

Drilldown Report (Field Level)

Report Name	Description
`Virtual Volume Tier Type Configuration(7.8)`	Displays, in real time, a table listing capacity and configuration information for each tier type of a Dynamic Provisioning V-VOL that has tier management enabled. To display this report, click the following field in the `Pool Tier Type Usage Trend(7.8)` report: • Pool ID

Pool Tier Type Usage Trend(9.4)

Overview

The `Pool Tier Type Usage Trend(9.4)` report displays a table and stacked area graph that shows the usage for the last month for each tier type of a Dynamic Provisioning pool that has tier management enabled.

However, if no Dynamic Provisioning pool that has tier management enabled exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Monthly Trend/Drilldown Only/`

Record

Pool Tier Type Configuration (`PD_PLTC`)

Fields

Field Name	Description
FMC Capacity Expansion %	Expansion percentage of the FMC capacity by using Accelerated Compression
FMC Pool Capacity Free	Total amount of free capacity in the FMC volumes that make up the tier (GB)
FMC Pool Capacity Saving	Amount of used capacity in the tier that was reduced by FMC compression functionality (GB)

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Field Name	Description
FMC Pool Capacity Saving %	Percentage of used capacity in the tier that was reduced by FMC compression functionality
FMC Pool Capacity Total	Total amount of capacity of the FMC volumes that make up the tier (GB)
FMC Pool Capacity Usage %	Usage percentage of the capacity of the FMC volumes that make up the tier
FMC Pool Capacity Used	Total amount of capacity of the FMC volumes that make up the tier that is being used by data
Physical FMC Capacity Free	Total amount of free capacity in the physical capacity of the parity groups that make up the tier (GB)
Physical FMC Capacity Total	Total amount of the physical capacity of the parity groups that make up the tier (GB)
Physical FMC Capacity Usage %	Usage percentage of the physical capacity of the parity groups that make up the tier
Physical FMC Capacity Used	Total amount of used capacity in the physical capacity of the parity groups that make up the tier (GB)
Pool ID	ID of the pool
Tier Number	Tier number
Tier Type	Tier type
Usage % in Pool	Of the capacity of a Dynamic Provisioning pool that has tier management enabled, the percentage of capacity used by the tier

Drilldown Report (Field Level)

Report Name	Description
`Virtual Volume Tier Type Configuration(7.8)`	Displays, in real time, a table listing capacity and configuration information for each tier type of a Dynamic Provisioning V-VOL that has tier management enabled. To display this report, click the following field in the `Pool Tier Type Usage Trend(9.4)` report: • Pool ID

Pool Tier Type Utilization Rate Status(7.8)

Overview

The `Pool Tier Type Utilization Rate Status(7.8)` report displays a table and line graph showing the activity rate for the last month for each tier type of a Dynamic Provisioning pool that has tier management enabled.

However, if no Dynamic Provisioning pool that has tier management enabled exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

Reports/RAID/Monthly Trend/Drilldown Only/

Record

Pool Tier Type Operation Status (`PD_PLTS`)

Fields

Field Name	Description
Avg IOPS Utilization %	Tier activity rate
Pool ID	ID of the pool
Tier Number	Tier number
Tier Type	Tier type

Pool Usage Trend(7.1)

Overview

The `Pool Usage Trend(7.1)` report displays a line graph showing the usage of each Dynamic Provisioning pool, and a table listing capacity and configuration information about each Dynamic Provisioning pool for the last month. However, if no Dynamic Provisioning pool exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, or Hitachi AMS/WMS series storage system.

Storage Location

Reports/RAID/Monthly Trend/

Record

Pool Configuration (`PD_PLC`)

Fields

Field Name	Description
Attribute	Type of the pool:
	For Universal Storage Platform V/VM series, HUS100 series, or Hitachi AMS2000 series storage systems:

Field Name	Description
	• Dynamic Provisioning
	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems:
	• Dynamic Provisioning
	• Dynamic Provisioning (Tiering)
Collection Time	Time (in GMT) when data is collected from the storage system
Emulation Type	Emulation type for the pool
Free Capacity	The amount of unused capacity in the pool (GB)
Pool ID	ID of the pool

Pool Volume Count	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, and Universal Storage Platform V/VM series storage systems:
	
	    Number of Dynamic Provisioning pool volumes in the pool
	
	For HUS100 series or Hitachi AMS2000 series storage systems:
	
	    Number of parity groups that make up the pool

Status	Pool capacity status For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, and Universal Storage Platform V/VM series storage systems: • NORMAL (the status is normal) • WARNING (the usage rate of the pool capacity has exceeded the value of the Threshold field or the Warning Threshold field) • BLOCKED (the usage rate of the pool capacity is 100%, and the pool is blocked) For HUS100 series or Hitachi AMS2000 series storage systems: • Normal (the status is normal) • Early Alert Over (the usage rate of the pool capacity has exceeded the Early Alert threshold) • Depletion Alert Over (the usage rate of the pool capacity has exceeded the Depletion Alert threshold) • Capacity Depleted (the usage rate of the pool capacity is 100%)
Threshold	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP

Field Name	Description

	G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems:
	
	    System threshold (%) or depletion threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field)
	
	For the Universal Storage Platform V/VM series storage systems:
	
	    Pool Threshold Value 1 set for the usage rate of the pool capacity (the value of the Usage % field)
	
	For HUS100 series or Hitachi AMS2000 series storage systems:
	
	    Early Alert threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field)

Total Actual Capacity	Actual capacity of the pool (GB)
Total Managed Capacity	Virtual capacity of all Dynamic Provisioning V-VOLs mapped to the pool (GB)
Usage %	Usage rate of the pool capacity
Used Capacity	Size of the used capacity of the pool (GB)
Virtual Volume Count	Number of Dynamic Provisioning V-VOLs mapped to the pool

Warning Threshold	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems:
	
	    User-defined threshold (%) or warning threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field)
	
	For the Universal Storage Platform V/VM series storage systems:
	
	    Pool Threshold Value 2 set for the usage rate of the pool capacity (the value of the Usage % field)
	
	For HUS100 series or Hitachi AMS2000 series storage systems:
	
	    Depletion Alert threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field)

Drilldown Report (Field Level)

Report Name	Description
Virtual Volume Usage Trend(7.1)	Displays a line graph showing the usage rate of each Dynamic Provisioning V-VOL, and a table listing capacity and configuration information about each Dynamic Provisioning V-VOL over the last month. To

Report Name	Description
	display this report, click the following field in the `Pool Usage Trend(7.1)` report: • Pool ID

Pool Usage Trend(9.0)

Overview

The `Pool Usage Trend(9.0)` report displays a line graph showing the usage of each Dynamic Provisioning pool, and a table listing capacity and configuration information about each Dynamic Provisioning pool for the last month. However, if no Dynamic Provisioning pool exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, or Hitachi AMS/WMS series storage system.

Storage Location

`Reports/RAID/Monthly Trend/`

Record

Pool Configuration (`PD_PLC`)

Fields

Field Name	Description
Attribute	Type of the pool: For Universal Storage Platform V/VM series, HUS100 series, or Hitachi AMS2000 series storage systems: • Dynamic Provisioning For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems: • Dynamic Provisioning • Dynamic Provisioning (Tiering)
Collection Time	Time (in GMT) when data is collected from the storage system
Emulation Type	Emulation type for the pool
Free Capacity	The amount of unused capacity in the pool (GB)
Pool ID	ID of the pool
Pool Volume Count	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP

Field Name	Description
	G1000, G1500, VSP F1500, Virtual Storage Platform series, and Universal Storage Platform V/VM series storage systems:
	Number of Dynamic Provisioning pool volumes in the pool
	For HUS100 series or Hitachi AMS2000 series storage systems:
	Number of parity groups that make up the pool
Reserved Capacity	The capacity for the reserved pages in the pool (GB)
Status	Pool capacity status
	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, and Universal Storage Platform V/VM series storage systems:
	• NORMAL (the status is normal)
	• WARNING (the usage rate of the pool capacity has exceeded the value of the Threshold field or the Warning Threshold field)
	• BLOCKED (the usage rate of the pool capacity is 100%, and the pool is blocked)
	For HUS100 series or Hitachi AMS2000 series storage systems:
	• Normal (the status is normal)
	• Early Alert Over (the usage rate of the pool capacity has exceeded the Early Alert threshold)
	• Depletion Alert Over (the usage rate of the pool capacity has exceeded the Depletion Alert threshold)
	• Capacity Depleted (the usage rate of the pool capacity is 100%)
Threshold	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems:
	System threshold (%) or depletion threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field)
	For the Universal Storage Platform V/VM series storage systems:
	Pool Threshold Value 1 set for the usage rate of the pool capacity (the value of the Usage % field)
	For HUS100 series or Hitachi AMS2000 series storage systems:
	Early Alert threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field)

Working with the Solution Set

Field Name	Description
Total Actual Capacity	Actual capacity of the pool (GB)
Total Managed Capacity	Virtual capacity of all Dynamic Provisioning V-VOLs mapped to the pool (GB)
Usage %	Usage rate of the pool capacity
Used Capacity	Size of the used capacity of the pool (GB)
Virtual Volume Count	Number of Dynamic Provisioning V-VOLs mapped to the pool
Warning Threshold	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems: User-defined threshold (%) or warning threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field) For the Universal Storage Platform V/VM series storage systems: Pool Threshold Value 2 set for the usage rate of the pool capacity (the value of the Usage % field) For HUS100 series or Hitachi AMS2000 series storage systems: Depletion Alert threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field)

Drilldown Report (Field Level)

Report Name	Description
Virtual Volume Usage Trend(9.0)	Displays a line graph showing the usage rate of each Dynamic Provisioning V-VOL, and a table listing capacity and configuration information about each Dynamic Provisioning V-VOL over the last month. To display this report, click the following field in the Pool Usage Trend(9.0) report: • Pool ID

Pool Usage Trend(9.4)

Overview

The Pool Usage Trend(9.4) report displays a line graph showing the usage of each Dynamic Provisioning pool, and a table listing capacity and configuration information about each Dynamic Provisioning pool for the last month. However, if no Dynamic Provisioning pool exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, or Hitachi AMS/WMS series storage system.

Storage Location

`Reports/RAID/Monthly Trend/`

Record

Pool Configuration (`PD_PLC`)

Fields

Field Name	Description
Attribute	Type of the pool:
	For Universal Storage Platform V/VM series, HUS100 series, or Hitachi AMS2000 series storage systems:
	• Dynamic Provisioning
	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems:
	• Dynamic Provisioning
	• Dynamic Provisioning (Tiering)
Collection Time	Time (in GMT) when data is collected from the storage system
Emulation Type	Emulation type for the pool
FMC Pool Capacity Saving	The saved capacity with the accelerated compression function (GB)
FMC Pool Capacity Saving %	Reduction rate (%) of capacity reduced by accelerated compression function
Free Capacity	The amount of unused capacity in the pool (GB)
Physical Capacity Free	Total amount of free capacity in the physical capacity of the parity groups that make up the pool (GB)
Physical Capacity Total	Total amount of the physical capacity of the parity groups that make up the pool (GB)
Physical Capacity Usage %	Usage percentage of the physical capacity of the parity groups that make up the pool
Physical Capacity Used	Total amount of used capacity in the physical capacity of the parity groups that make up the pool (GB)
Pool Capacity Expansion %	Expansion percentage of the pool capacity by using FMC Accelerated Compression
Pool ID	ID of the pool

Field Name	Description

Pool Volume Count	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 , Virtual Storage Platform series, and Universal Storage Platform V/VM series storage systems:
	
	    Number of Dynamic Provisioning pool volumes in the pool
	
	For HUS100 series or Hitachi AMS2000 series storage systems:
	
	    Number of parity groups that make up the pool

Reserved Capacity	The capacity for the reserved pages in the pool (GB)
Status	Pool capacity status For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, and Universal Storage Platform V/VM series storage systems: • NORMAL (the status is normal) • WARNING (the usage rate of the pool capacity has exceeded the value of the Threshold field or the Warning Threshold field) • BLOCKED (the usage rate of the pool capacity is 100%, and the pool is blocked) For HUS100 series or Hitachi AMS2000 series storage systems: • Normal (the status is normal) • Early Alert Over (the usage rate of the pool capacity has exceeded the Early Alert threshold) • Depletion Alert Over (the usage rate of the pool capacity has exceeded the Depletion Alert threshold) • Capacity Depleted (the usage rate of the pool capacity is 100%)

Threshold	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems:
	
	    System threshold (%) or depletion threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field)
	
	For the Universal Storage Platform V/VM series storage systems:
	
	    Pool Threshold Value 1 set for the usage rate of the pool capacity (the value of the Usage % field)
	
	For HUS100 series or Hitachi AMS2000 series storage systems:

Field Name	Description
	Early Alert threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field)
Total Actual Capacity	Capacity of the pool (GB)
Total Managed Capacity	Virtual capacity of all Dynamic Provisioning V-VOLs mapped to the pool (GB)
Usage %	Usage rate of the pool capacity
Used Capacity	Size of the used capacity of the pool (GB)
Virtual Volume Count	Number of Dynamic Provisioning V-VOLs mapped to the pool
Warning Threshold	For the VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems: User-defined threshold (%) or warning threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field) For the Universal Storage Platform V/VM series storage systems: Pool Threshold Value 2 set for the usage rate of the pool capacity (the value of the Usage % field) For HUS100 series or Hitachi AMS2000 series storage systems: Depletion Alert threshold (%) set for the usage rate of the pool capacity (the value of the Usage % field)

Drilldown Report (Field Level)

Report Name	Description
`Virtual Volume Usage Trend(9.0)`	Displays a line graph showing the usage rate of each Dynamic Provisioning V-VOL, and a table listing capacity and configuration information about each Dynamic Provisioning V-VOL over the last month. To display this report, click the following field in the `Pool Usage Trend(9.4)` report: • Pool ID
`Pool Tier Type Usage Trend(9.4)`	Displays a table and stacked-area graph showing the capacity usage rate for each type of tier over the past month for Dynamic Provisioning pools that have tier management enabled. To display this report, click the following field in the `Pool Usage Trend(9.4)` report: • FMC Pool Capacity Saving • FMC Pool Capacity Saving %

Report Name	Description
	• Pool Capacity Expansion %

Pool Write IO Rate Status(8.0)

Overview

The `Pool Write IO Rate Status(8.0)` report displays a table and line graph showing the frequency of write operations for each Dynamic Provisioning pool for the last 24 hours.

However, if no Dynamic Provisioning pool exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi AMS/WMS series storage system.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Pool Summary (`PI_PLS`)

Field Name	Description
Pool ID	ID of the pool
Read I/O /sec	Frequency of read operations (times per second) for the virtual volumes mapped to the Dynamic Provisioning pool
Read Response Rate	Average processing time (in microseconds) per read request for the virtual volumes mapped to the Dynamic Provisioning pool
Write I/O /sec	Frequency of write operations (times per second) for the virtual volumes mapped to the Dynamic Provisioning pool
Write Response Rate	Average processing time (in microseconds) per write request for the virtual volumes mapped to the Dynamic Provisioning pool

Pool Write Transfer Rate Status(8.4)

Overview

The `Pool Write Transfer Rate Status(8.4)` report displays a table and line graph showing the write data transfer rate of each Dynamic Provisioning pool for the last 24 hours.

However, if no Dynamic Provisioning pool exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi AMS/WMS series storage system.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Pool Summary (`PI_PLS`)

Field Name	Description
Pool ID	Pool ID of the pool
Read I/O /sec	Read frequency of the virtual volumes mapped to the Dynamic Provisioning pool (times per second)
Read Response Rate	Average processing time (in microseconds) per read request for the virtual volumes mapped to the Dynamic Provisioning pool
Read Xfer /sec	Read data transfer rate of the virtual volumes mapped to the Dynamic Provisioning pool (megabytes per second)
Write I/O /sec	Write frequency of the virtual volumes mapped to the Dynamic Provisioning pool (times per second)
Write Response Rate	Average processing time (in microseconds) per write request for the virtual volumes mapped to the Dynamic Provisioning pool
Write Xfer /sec	Write data transfer rate of the virtual volumes mapped to the Dynamic Provisioning pool (megabytes per second)

Port Avg IO Rate Status

Overview

The `Port Avg IO Rate Status` report displays a line graph showing the average frequency of read and write operations of each storage system port for the last 24 hours, and a table listing the average frequency and average data transfer rate of read and write operations of each storage system port for the last 24 hours.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Avg I/O / sec	Average read and write frequency (times per second) for storage system ports
Avg Xfer / sec	Average read and write data transfer rate (megabytes per second) for storage system ports
Port Name	Storage system port name
Port Number	Storage system port number

Drilldown Reports (Field Level)

Report Name	Description
Port Avg IO Rate Status	Displays a line graph showing the read and write average frequency for the last 24 hours for each storage system port. To display this report, click the following field in the `Port Avg IO Rate Status` report: • Avg I/O / sec
Port Avg Transfer Rate Status	Displays a line graph showing the average read and write data transfer rate for the last 24 hours for each storage system port. To display this report, click the following field in the `Port Avg IO Rate Status` report: • Avg Xfer / sec
Port Configuration	Displays a table listing configuration information about each storage system port in real time. To display this report, click the following field in the `Port Avg IO Rate Status` report: • Port Name

Port Avg IO Rate Status(8.6)

Overview

The `Port Avg IO Rate Status(8.6)` report displays a line graph showing the average frequency of read and write operations to and from storage system ports over the past 24 hours, and a table showing the average frequency and average transfer rate of these operations over the past 24 hours.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Avg I/O /sec	Average frequency of read and write operations to and from storage system ports (operations per second)
Avg Xfer /sec	Average transfer rate of read and write operations to and from storage system ports (MB per second)
CHA Name	Name of storage system CHA
Port Name	Name of storage system port
Port Number	Port number of storage system port

Drilldown Reports (Field Level)

Report Name	Description
Port Avg IO Rate Status(8.6)	Displays a line graph showing the average frequency of read and write operations to and from storage system ports over the past 24 hours. To display this report, click the following field in the `Port Avg IO Rate Status` report(8.6): • Avg I/O /sec
Port Avg Transfer Rate Status(8.6)	Displays a line graph showing the average transfer rate of read and write operations to and from storage system ports over the past 24 hours. To display this report, click the following field in the `Port Avg IO Rate Status` report(8.6): • Avg Xfer /sec
Port Configuration(8.6)	Displays a table that shows information about the configuration of storage system ports in real time. To display this report, click the following field in the `Port Avg IO Rate Status` report(8.6): • Port Name

Port Avg Transfer Rate Status

Overview

The `Port Avg Transfer Rate Status` report displays a line graph showing the average data transfer rate of read and write operations of each storage system port for the last 24 hours, and a table listing the average frequency and average data transfer rate of read and write operations of each storage system port for the last 24 hours.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Avg I/O / sec	Average read and write frequency (times per second) for storage system ports
Avg Xfer / sec	Average read and write data transfer rate (megabytes per second) for storage system ports
Port Name	Storage system port name
Port Number	Storage system port number

Drilldown Reports (Field Level)

Report Name	Description
`Port Avg IO Rate Status`	Displays a line graph showing the read and write average frequency for the last 24 hours for each storage system port. To display this report, click the following field in the `Port Avg Transfer Rate Status` report: • Avg I/O / sec
`Port Avg Transfer Rate Status`	Displays a line graph showing the average read and write data transfer rate for the last 24 hours for each storage system port. To display this report, click the following field in the `Port Avg Transfer Rate Status` report: • Avg Xfer / sec
`Port Configuration`	Displays a table listing configuration information about each storage system port in real time. To display this report, click the following field in the `Port Avg Transfer Rate Status` report: • Port Name

Port Avg Transfer Rate Status(8.6)

Overview

The `Port Avg Transfer Rate Status(8.6)` report displays a line graph showing the average transfer rate for read and write operations to and from storage system ports over the past 24 hours, and a table showing the

average frequency and average transfer rate for read and write operations to and from storage system ports over the past 24 hours.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Avg I/O /sec	Average frequency of read and write operations to and from storage system ports (operations per second)
Avg Xfer /sec	Average transfer rate of read and write operations to and from storage system ports (MB per second)
CHA Name	CHA name of the storage system
Port Name	Port name of the storage system
Port Number	Port number of the storage system

Drilldown Reports (Field Level)

Report Name	Description
`Port Avg IO Rate Status(8.6)`	Displays a line graph showing the average frequency of read and write operations to and from storage system ports over the past 24 hours. To display this report, click the following field in the `Port Avg Transfer Rate Status(8.6)` report: • Avg I/O /sec
`Port Avg Transfer Rate Status(8.6)`	Displays a line graph showing the average transfer rate of read and write operations to and from storage system ports over the past 24 hours. To display this report, click the following field in the `Port Avg Transfer Rate Status(8.6)` report: • Avg Xfer /sec
`Port Configuration(8.6)`	Displays a table that shows information about the configuration of a storage system port in real time. To display this report, click the following field in the `Port Avg Transfer Rate Status(8.6)` report: • Port Name

Port Configuration

Overview

The `Port Configuration` report displays a table listing configuration information about each storage system port in real time.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Port Configuration (`PD_PTC`)

Fields

Field Name	Description
Port Name	Storage system port name
Port Number	Storage system port number
Port Type	Storage system port type

Port Configuration(5.0)

Overview

The `Port Configuration(5.0)` report displays a table listing configuration information about each storage system port in real time.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Port Configuration (`PD_PTC`)

Fields

Field Name	Description
Port Name	Storage system port name
Port Number	Storage system port number
Port Type	Storage system port type
Port WWN	Storage system port WWN

Port Configuration(7.0)

Overview

The `Port Configuration(7.0)` report displays a table listing configuration information about each storage system port in real time.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Port Configuration (`PD_PTC`)

Fields

Field Name	Description
Port Name	Storage system port name
Port Number	Storage system port number
Port Role	Storage system port role
Port Type	Storage system port type
Port WWN	Storage system port WWN

Port Configuration(8.6)

Overview

The `Port Configuration(8.6)` report displays a table that shows information about the configuration of storage system ports in real time.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Port Configuration (`PD_PTC`)

Fields

Field Name	Description
CHA Name	CHA name of the storage system
Port Name	Port name of the storage system
Port Number	Port number of the storage system

Working with the Solution Set

Field Name	Description
Port Role	Role assigned to the storage system port
Port Speed	Speed setting of the storage system port
Port Type	Type of storage system port
Port WWN	WWN of the storage system port

Port Initiator Avg IO Rate Status(8.8)

Overview

The `Port Avg IO Rate Status(8.8)` report displays a line graph showing the average frequency of read and write operations to and from both Initiator and External ports of storage system over the past 24 hours, and a table showing the average frequency and average transfer rate of these operations over the past 24 hours.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Avg I/O /sec	Average frequency of read and write operations to and from storage system ports (operations per second)
Avg Xfer /sec	Average transfer rate of read and write operations to and from storage system ports (MB per second)
CHA Name	Name of storage system CHA
Initiator Avg I/O /sec	Average frequency of read and write operations to and from both Initiator and External ports (operations per second) when the port role is "Initiator" or "External"
Initiator Avg Xfer /sec	Average transfer rate of read and write operations to and from both Initiator and External ports (MB per second) when the port role is "Initiator" or "External"
Port Name	Name of storage system port
Port Number	Port number of storage system port
Port Role	Role of storage system port

Drilldown Reports (Field Level)

Report Name	Description
Port Configuration(8.6)	Displays a table that shows information about the configuration of storage system ports in real time. To display this report, click the following field in the `Port Avg IO Rate Status` report(8.8): • Port Name
Port Initiator Avg IO Rate Status(8.8)	Displays a line graph showing the average frequency of read and write operations to and from both Initiator and External ports of storage system over the past 24 hours. To display this report, click the following field in the `Port Initiator Avg IO Rate Status` report(8.8): • Initiator Avg I/O / sec
Port Initiator Avg Transfer Rate Status(8.8)	Displays a line graph showing the average transfer rate of read and write operations to and from both Initiator and External ports of storage system over the past 24 hours. To display this report, click the following field in the `Port Initiator Avg IO Rate Status` report(8.8): • Initiator Avg Xfer / sec

Port Initiator Avg Transfer Rate Status(8.8)

Overview

The `Port Initiator Avg Transfer Rate Status(8.8)` report displays a line graph showing the average transfer rate for read and write operations to and from both Initiator and External ports of storage system over the past 24 hours, and a table showing the average frequency and average transfer rate for read and write operations to and from storage system ports over the past 24 hours.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Avg I/O /sec	Average frequency of read and write operations to and from storage system ports (operations per second)

Field Name	Description
Avg Xfer /sec	Average transfer rate of read and write operations to and from storage system ports (MB per second)
CHA Name	CHA name of the storage system
Initiator Avg I/O /sec	Average frequency of read and write operations to and from both Initiator and External ports (operations per second) when the port role is "Initiator" or "External"
Initiator Avg Xfer /sec	Average transfer rate of read and write operations to and from both Initiator and External ports (MB per second) when the port role is "Initiator" or "External"
Port Name	Port name of the storage system
Port Number	Port number of the storage system
Port Role	Role of storage system port

Drilldown Reports (Field Level)

Report Name	Description
Port Configuration(8.6)	Displays a table that shows information about the configuration of storage system ports in real time. To display this report, click the following field in the `Port Avg Transfer Rate Status` report(8.8): • Port Name
Port Initiator Avg IO Rate Status(8.8)	Displays a line graph showing the average frequency of read and write operations to and from both Initiator and External ports of storage system over the past 24 hours. To display this report, click the following field in the `Port Initiator Avg Transfer Rate Status` report(8.8): • Initiator Avg I/O / sec
Port Initiator Avg Transfer Rate Status(8.8)	Displays a line graph showing the average transfer rate of read and write operations to and from both Initiator and External ports of storage system over the past 24 hours. To display this report, click the following field in the `Port Initiator Avg Transfer Rate Status` report(8.8): • Initiator Avg Xfer / sec

Port IO Rate - Top 10

Overview

The `Port IO Rate - Top 10` report displays a table listing the ten storage system ports with the highest frequencies of read and write operations in real time.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Avg I/O / sec	Average read and write frequency (times per second) for storage system ports
Port Name	Storage system port name
Port Number	Storage system port number

Drilldown Report (Report Level)

Report Name	Description
`Port Transfer Rate - Top 10`	Displays a table listing the ten storage system ports with the fastest read and write data transfer rates in real time.

Drilldown Report (Field Level)

Report Name	Description
`Port Configuration`	Displays a table listing configuration information about each storage system port in real time. To display this report, click the following field in the `Port IO Rate - Top 10` report: • Port Name

Port IO Rate Status (Hourly Historical Report)

Overview

The `Port IO Rate Status` report displays a table listing the average frequency of read and write operations of each storage system port for the last 24 hours.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Avg I/O / sec	Storage system port average read and write frequency (times per second)
Port Name	Storage system port name
Port Number	Storage system port number

Drilldown Report (Report Level)

Report Name	Description
`Port Transfer Rate Status` (Hourly Historical Report)	Displays a table listing the average read and write data transfer rate for the last 24 hours for each storage system port.

Drilldown Reports (Field Level)

Report Name	Description
`Port Avg IO Rate Status`	Displays a line graph showing the average read and write frequency for the last 24 hours for each storage system port. To display this report, click the following field in the `Port IO Rate Status` report: • Avg I/O / sec
`Port Configuration`	Displays a table listing configuration information about each storage system port in real time. To display this report, click the following field in the `Port IO Rate Status` report: • Port Name

Port IO Rate Status (Real-Time Report)

Overview

The `Port IO Rate Status` report displays a table listing the average frequency of read and write operations of each storage system port in real time.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Avg I/O / sec	Average read and write frequency (times per second) for storage system ports
Port Name	Storage system port name
Port Number	Storage system port number

Drilldown Report (Report Level)

Report Name	Description
`Port Transfer Rate Status` (real-time report)	Displays a table listing the average read and write data transfer rate for the last 24 hours for each storage system port in real time.

Drilldown Report (Field Level)

Report Name	Description
`Port Configuration`	Displays a table listing configuration information about each storage system port in real time. To display this report, click the following field in the `Port IO Rate Status` report: • Port Name

Port Performance Details

Overview

The `Port Performance Details` report displays a table listing the frequency and data transfer rate of read and write operations of each storage system port for the last hour.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Avg I/O / sec	Storage system port average read and write frequency (times per second)
Avg Xfer / sec	Average data transfer rate for storage system port read and write operations (megabytes per second)
Max I/O / sec	Storage system port operation maximum read and write frequency (times per second)
Max Xfer / sec	Maximum data transfer rate for storage system port read and write operations (megabytes per second)
Min I/O / sec	Storage system port operation minimum read and write frequency (times per second)
Min Xfer / sec	Minimum data transfer rate for storage system port read and write operations (megabytes per second)
Port Name	Storage system port name
Port Number	Storage system port number

Drilldown Report (Field Level)

Report Name	Description
`Port Configuration`	Displays a table listing configuration information about each storage system port in real time. To display this report, click the following field in the `Port Performance Details` report: • Port Name

Port Performance Details(8.6)

Overview

The `Port Performance Details (8.6)` report displays a table showing the frequency and transfer rate of read and write operations to and from storage system ports over the past hour.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Avg I/O /sec	Average frequency of read and write operations to and from storage system ports (operations per second), summarized as a CHA value
Avg Xfer /sec	Average transfer rate of read and write operations to and from the storage system port (MB per second), summarized as a CHA value
CHA Name	CHA name of the storage system
Max I/O /sec	Maximum frequency of read and write operations to and from the storage system port (operations per second), summarized as a CHA value
Max Xfer /sec	Maximum transfer rate of read and write operations to and from the storage system port (MB per second), summarized as a CHA value
Min I/O /sec	Minimum frequency of read and write operations to and from the storage system port (operations per second), summarized as a CHA value
Min Xfer /sec	Minimum transfer rate of read and write operations to and from the storage system port (MB per second), summarized as a CHA value
Port Name	Port name of the storage system
Port Number	Port number of the storage system

Drilldown Reports (Field Level)

Report Name	Description
Port Configuration(8.6)	Displays a table that shows information about the configuration of storage system ports in real time. To display this report, click the following field in the Port Performance Details(8.6) report: • Port Name

Port Performance Details(8.8)

Overview

The Port Performance Details (8.8) report displays a table showing the frequency and transfer rate of read and write operations to and from storage system ports over the past hour.

Storage Location

Reports/RAID/Troubleshooting/Recent Past/

Record

Port Summary (PI_PTS)

Fields

Field Name	Description
Avg I/O /sec	Average frequency of read and write operations to and from storage system ports (operations per second), summarized as a CHA value
Avg Xfer /sec	Average transfer rate of read and write operations to and from the storage system port (MB per second), summarized as a CHA value
CHA Name	CHA name of the storage system
Initiator Avg I/O /sec	Average frequency of read and write operations to and from both Initiator and External ports (operations per second) when the port role is "Initiator" or "External"
Initiator Avg Xfer /sec	Average transfer rate of read and write operations to and from both Initiator and External ports (MB per second) when the port role is "Initiator" or "External"

Field Name	Description
Initiator Max I/O /sec	Maximum frequency of read and write operations to and from both Initiator and External ports (operations per second) when the port role is "Initiator" or "External", summarized as a CHA value
Initiator Max Xfer /sec	Maximum transfer rate of read and write operations to and from both Initiator and External ports (MB per second) when the port role is "Initiator" or "External", summarized as a CHA value
Initiator Min I/O /sec	Minimum frequency of read and write operations to and from both Initiator and External ports (operations per second) when the port role is "Initiator" or "External", summarized as a CHA value
Initiator Min Xfer /sec	Minimum transfer rate of read and write operations to and from both Initiator and External ports (MB per second) when the port role is "Initiator" or "External", summarized as a CHA value
Max I/O /sec	Maximum frequency of read and write operations to and from the storage system port (operations per second), summarized as a CHA value
Max Xfer /sec	Maximum transfer rate of read and write operations to and from the storage system port (MB per second), summarized as a CHA value
Min I/O /sec	Minimum frequency of read and write operations to and from the storage system port (operations per second), summarized as a CHA value
Min Xfer /sec	Minimum transfer rate of read and write operations to and from the storage system port (MB per second), summarized as a CHA value
Port Name	Port name of the storage system
Port Number	Port number of the storage system
Port Role	Role of storage system port

Drilldown Reports (Field Level)

Report Name	Description
Port Configuration(8.6)	Displays a table that shows information about the configuration of storage system ports in real time. To display this report, click the following field in the Port Performance Details(8.8) report:

Report Name	Description
	• Port Name

Port Performance Status(8.6) (Hourly Historical Report)

Overview

The `Port Performance Status(8.6)` report displays the average frequency and average transfer rate of read and write operations to and from storage system ports over the past 24 hours.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Avg I/O /sec	Average frequency of read and write operations to and from storage system ports (operations per second)
Avg Xfer /sec	Average transfer rate of read and write operations to and from the storage system port (MB per second)
CHA Name	CHA name of the storage system
Port Name	Port name of the storage system
Port Number	Port number of the storage system

Drilldown Reports (Field Level)

Report Name	Description
`Port Avg IO Rate Status(8.6)`	Displays a line graph showing the average frequency of read and write operations to and from storage system ports over the past 24 hours. To display this report, click the following field in the `Port Performance Status(8.6)` report: • Avg I/O / sec
`Port Avg Transfer Rate Status(8.6)`	Displays a line graph showing the average frequency of read and write operations to

Report Name	Description
	and from storage system ports over the past 24 hours. To display this report, click the following field in the `Port Performance Status(8.6)` report: • Avg Xfer / sec
`Port Configuration(8.6)`	Displays a table that shows information about the configuration of storage system ports in real time. To display this report, click the following field in the `Port Performance Status(8.6)` report: • Port Name

Port Performance Status(8.6) (Real-Time Report)

Overview

The `Port Performance Status(8.6)` report displays a table that shows the average frequency and data transfer rate of read and write operations of each storage system port in real time.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Avg I/O /sec	Average read and write frequency (times per second) of each storage system port
Avg Xfer /sec	Average read and write data transfer rate (megabytes per second) of each storage system port
CHA Name	CHA name of the storage system
Port Name	Port name of the storage system
Port Number	Port number of the storage system

Drilldown Reports (Field Level)

Report Name	Description
Port Configuration(8.6)	Displays a table that lists configuration information about each storage system port in real time. To display this report, click the following field in the Port Performance Status(8.6) report: • Port Name

Port Performance Status(8.8) (Hourly Historical Report)

Overview

The Port Performance Status(8.8) report displays the average frequency and average transfer rate of read and write operations to and from storage system ports over the past 24 hours.

Storage Location

Reports/RAID/Status Reporting/Daily Trend/

Record

Port Summary (PI_PTS)

Fields

Field Name	Description
Avg I/O /sec	Average frequency of read and write operations to and from storage system ports (operations per second)
Avg Xfer /sec	Average transfer rate of read and write operations to and from the storage system port (MB per second)
CHA Name	CHA name of the storage system
Initiator Avg I/O /sec	Average frequency of read and write operations to and from both Initiator and External ports (operations per second) when the port role is "Initiator" or "External"
Initiator Avg Xfer /sec	Average transfer rate of read and write operations to and from both Initiator and External ports (MB per second) when the port role is "Initiator" or "External"
Port Name	Port name of the storage system
Port Number	Port number of the storage system

Field Name	Description
Port Role	Role of storage system port

Drilldown Reports (Field Level)

Report Name	Description
Port Configuration(8.6)	Displays a table that shows information about the configuration of storage system ports in real time. To display this report, click the following field in the Port Performance Status(8.8) report: • Port Name
Port Avg IO Rate Status(8.6)	Displays a line graph showing the average frequency of read and write operations to and from storage system ports over the past 24 hours. To display this report, click the following field in the Port Performance Status(8.8) report: • Avg I/O / sec
Port Avg Transfer Rate Status(8.6)	Displays a line graph showing the average frequency of read and write operations to and from storage system ports over the past 24 hours. To display this report, click the following field in the Port Performance Status(8.8) report: • Avg Xfer / sec
Port Initiator Avg IO Rate Status(8.8)	Displays a line graph showing the average frequency of read and write operations to and from both Initiator and External ports of storage system over the past 24 hours. To display this report, click the following field in the Port Performance Status(8.8) report(8.8): • Initiator Avg I/O / sec
Port Initiator Avg Transfer Rate Status(8.8)	Displays a line graph showing the average transfer rate of read and write operations to and from both Initiator and External ports of storage system over the past 24 hours. To display this report, click the following field in the Port Performance Status(8.8) report(8.8): • Initiator Avg Xfer / sec

Port Performance Status(8.8) (Real-Time Report)

Overview

The `Port Performance Status(8.8)` report displays a table that shows the average frequency and data transfer rate of read and write operations of each storage system port in real time.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Avg I/O /sec	Average read and write frequency (times per second) of each storage system port
Avg Xfer /sec	Average read and write data transfer rate (megabytes per second) of each storage system port
CHA Name	CHA name of the storage system
Initiator Avg I/O /sec	Average frequency of read and write operations to and from both Initiator and External ports (operations per second) when the port role is "Initiator" or "External"
Initiator Avg Xfer /sec	Average transfer rate of read and write operations to and from both Initiator and External ports (MB per second) when the port role is "Initiator" or "External"
Port Name	Port name of the storage system
Port Number	Port number of the storage system
Port Role	Role of storage system port

Drilldown Reports (Field Level)

Report Name	Description
Port Configuration(8.6)	Displays a table that lists configuration information about each storage system port in real time. To display this report, click the following field in the Port Performance Status(8.8) report: • Port Name

Port Transfer Rate - Top 10

Overview

The `Port Transfer Rate - Top 10` report displays a table listing the ten storage system ports with the fastest data transfer rates of read and write operations in real time.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Avg Xfer / sec	Average data transfer rate for storage system port read and write operations (megabytes per second)
Port Name	Storage system port name
Port Number	Storage system port number

Drilldown Report (Report Level)

Report Name	Description
`Port IO Rate - Top 10`	Displays a table listing the ten storage system ports with the highest read and write frequencies in real time.

Drilldown Report (Field Level)

Report Name	Description
`Port Configuration`	Displays a table listing configuration information about each storage system port in real time. To display this report, click the following field in the `Port Transfer Rate - Top 10` report: • Port Name

Working with the Solution Set

Hitachi Tuning Manager Hardware Reports Reference

Port Transfer Rate Status (Hourly Historical Report)

Overview

The `Port Transfer Rate Status` report displays a table listing the average data transfer rate of read and write operations of each storage system port for the last 24 hours.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Avg Xfer / sec	Average data transfer rate for storage system port read and write operations (megabytes per second)
Port Name	Storage system port name
Port Number	Storage system port number

Drilldown Report (Report Level)

Report Name	Description
`Port IO Rate Status` (Hourly Historical Report)	Displays a table listing average read and write frequency for the last 24 hours for each storage system port.

Drilldown Reports (Field Level)

Report Name	Description
`Port Avg Transfer Rate Status`	Displays a line graph showing the average read and write data transfer rate for the last 24 hours for each storage system port. To display this report, click the following field in the `Port Transfer Rate Status` report: • Avg Xfer / sec
`Port Configuration`	Displays a table listing configuration information about each storage system port in real time. To display this report, click the following field in the `Port Transfer Rate Status` report: • Port Name

Port Transfer Rate Status (Real-Time Report)

Overview

The `Port Transfer Rate Status` report displays a table listing the average data transfer rate of read and write operations of each storage system port in real time.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Avg Xfer / sec	Average read and write data transfer rate (megabytes per second) for storage system ports
Port Name	Storage system port name
Port Number	Storage system port number

Drilldown Report (Report Level)

Report Name	Description
`Port IO Rate Status` (Real-Time Report)	Displays a table listing the average read and write data frequency for each storage system port in real time.

Drilldown Report (Field Level)

Report Name	Description
`Port Configuration`	Displays a table listing configuration information about each storage system port in real time. To display this report, click the following field in the `Port Transfer Rate Status` report: • Port Name

Processor Busy Rate - Top 10(6.0)

Overview

The `Processor Busy Rate – Top 10(6.0)` report displays a table listing the ten storage system processors with the highest usages in real time.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

Processor Summary (`PI_PRCS`)

Fields

Field Name	Description
Adaptor ID	Character string that identifies the disk controller, channel adapter, or MP Blade
Processor Busy %	Processor usage
Processor ID	Character string that identifies the processor
Processor Type	Character string that identifies the processor type

Processor Busy Rate - Top 10(8.6)

Overview

The `Processor Busy Rate - Top 10(8.6)` report displays a table that shows the ten processors with the highest utilization in real time.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

Processor Summary (`PI_PRCS`)

Fields

Field Name	Description
Adaptor ID	Character string that identifies the disk controller, channel adapter, or MP Blade
Buffer IO %	MP buffer utilization. Calculated as the percentage of I/O buffers in use relative to the maximum number of I/O buffers.
Buffer IO Count	Length of I/O buffers in the MP
Max Buffer IO Count	Number of I/O buffers in the MP. If the value is summarized to a greater unit, the maximum value is stored.

Field Name	Description
Max Buffer IO %	MP buffer utilization. If the value is summarized to a greater unit, the maximum value is stored.
Max Buffer Length	Maximum number of I/O buffers the MP can process
Processor Busy %	Processor utilization
Processor ID	Character string that identifies the processor
Processor Type	Character string that identifies the processor type

Processor Busy Rate 2 - Top 10(6.0)

Overview

The `Processor Busy Rate 2 - Top 10(6.0)` report displays a table listing the ten storage system processors with the highest usages in real time. If the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage system, this report displays a table listing the ten MP Blades with the highest usages out of the MP Blades in the storage system in real time.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

Processor Summary (`PI_PRCS`)

Fields

Field Name	Description
Adaptor ID	Character string that identifies the disk controller, channel adapter, or MP Blade
Processor Busy %	Processor usage
Processor ID	Character string that identifies the processor
Processor Type	Character string that identifies the processor type

Processor Busy Rate 2 - Top 10(8.6)

Overview

The `Processor Busy Rate 2 - Top 10(8.6)` report displays a table that shows, of the processors in a storage system, the ten processors with the highest utilization in real time.

Storage Location

`Reports/RAID/Troubleshooting/Real-Time/`

Record

Processor Summary (`PI_PRCS`)

Fields

Field Name	Description
Adaptor ID	Character string that identifies the disk controller, channel adapter, or MPB instance
Buffer IO %	MP buffer utilization. Calculated as the number of I/O buffers currently in use, relative to the maximum number of I/O buffers.
Buffer IO Count	Number of I/O buffers in the MP
Max Buffer IO %	MP buffer utilization. When summarized to a greater unit, the maximum value is stored.
Max Buffer IO Count	Number of I/O buffers in the MP. When summarized to a greater unit, the maximum value is stored.
Max Buffer Length	Maximum number of I/O buffers the MP can process
Processor Busy %	Processor utilization
Processor ID	Character string that identifies the processor instance
Processor Type	Character string that identifies the type of the processor instance

Processor Busy Rate Details(6.0)

Overview

The `Processor Busy Rate Details(6.0)` report displays a table listing the storage system processor usage for the last hour.

Storage Location

Reports/RAID/Troubleshooting/Recent Past/

Record

Processor Summary (PI_PRCS)

Fields

Field Name	Description
Adaptor ID	Character string that identifies the disk controller, channel adapter, or MP Blade
Processor Busy %	Processor usage
Processor ID	Character string that identifies the processor
Processor Type	Character string that identifies the processor type

Processor Busy Rate Details(8.6)

Overview

The Processor Busy Rate Details(8.6) report displays a table that shows the utilization of the processors in a storage system over the past hour.

Storage Location

Reports/RAID/Troubleshooting/Recent Past/

Record

Processor Summary (PI_PRCS)

Fields

Field Name	Description
Adaptor ID	Character string that identifies the disk controller, channel adapter, or MP Blade
Buffer IO %	MP buffer utilization. Calculated as the number of I/O buffers currently in use, relative to the maximum number of I/O buffers.
Buffer IO Count	Number of I/O buffers in the MP
Max Buffer IO %	MP buffer utilization. When summarized to a greater unit, the maximum value is stored.

Field Name	Description
Max Buffer IO Count	Number of I/O buffers in the MP. When summarized to a greater unit, the maximum value is stored.
Max Buffer Length	Maximum number of I/O buffers the MP can process.
Processor Busy %	Processor utilization
Processor ID	Character string that identifies the processor instance
Processor Type	Character string that identifies the type of the processor instance

Processor Busy Rate Status(6.0) (Hourly Historical Report)

Overview

The `Processor Busy Rate Status(6.0)` report displays a table listing the storage system processor usage for the last 24 hours.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/`

Record

Processor Summary (`PI_PRCS`)

Fields

Field Name	Description
Adaptor ID	Character string that identifies the disk controller, channel adapter, or MP Blade
Processor Busy %	Processor usage
Processor ID	Character string that identifies the processor
Processor Type	Character string that identifies the processor type

Processor Busy Rate Status(6.0) (Real-Time Report)

Overview

The `Processor Busy Rate Status(6.0)` report displays a table listing the storage system processor usage in real time.

Storage Location

Reports/RAID/Status Reporting/Real-Time/

Record

Processor Summary (PI_PRCS)

Fields

Field Name	Description
Adaptor ID	Character string that identifies the disk controller, channel adapter, or MP Blade
Processor Busy %	Processor usage
Processor ID	Character string that identifies the processor
Processor Type	Character string that identifies the processor type

Processor Busy Rate Status(8.6) (Hourly Historical Report)

Overview

The Processor Busy Rate Status(8.6) report shows the utilization of the processors in a storage system over the past 24 hours.

Storage Location

Reports/RAID/Status Reporting/Daily Trend/

Record

Processor Summary (PI_PRCS)

Fields

Field Name	Description
Adaptor ID	Character string that identifies the disk controller, channel adapter, or MP Blade
Buffer IO %	MP buffer utilization
Buffer IO Count	Number of I/O buffers in the MP
Max Buffer IO %	MP buffer utilization. When summarized to a greater unit, the maximum value is stored.
Max Buffer IO Count	Number of I/O buffers in the MP. When summarized to a greater unit, the maximum value is stored.

Field Name	Description
Max Buffer Length	Maximum number of I/O buffers the MP can process
Processor Busy %	Processor utilization
Processor ID	Character string that identifies the processor instance
Processor Type	Character string that identifies the type of the processor instance

Processor Busy Rate Status(8.6) (Real-Time Report)

Overview

The `Processor Busy Rate Status(8.6)` report displays storage system processor usages in real time.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Processor Summary (`PI_PRCS`)

Fields

Field Name	Description
Adaptor ID	Character string that identifies the disk controller, channel adaptor, or MP Blade
Buffer IO %	MP buffer usage.
Buffer IO Count	Number of the MP buffer IOs
Max Buffer IO %	MP buffer usage. Note that if this is summarized in the upper level category, the maximum value is stored.
Max Buffer IO Count	Number of the MP buffer IOs. Note that if this is summarized in the upper level category, the maximum value is stored.
Max Buffer Length	The maximum number of IO buffers that can be handled by the MP
Processor Busy %	Processor usage
Processor ID	Character string that identifies the processor instance
Processor Type	Character string that identifies the processor instance type

Processor Resource Utilization Details(8.6)

Overview

The `Processor Resource Utilization Details(8.6)` report displays a table showing the processors with the 20 highest percentages of resource utilization over the past hour.

Note that this report is not supported if the monitored storage system is a midrange storage system, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

Utilization Per MP Blade Summary (`PD_UMS`)

Fields

Field Name	Description
MP Blade ID	ID that uniquely identifies the MP Blade (or MP Unit for VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, or VSP 5000 series devices) to which the processor belongs within the storage system
Processing Type	Type of resource usage
Processor ID	Processor ID
Resource ID	Resource ID
Resource Type	Resource type
Resource Utilization	Resource utilization
Usage Ranking	Resource utilization ranking within the MP

Processor Resource Utilization Status(8.6) (Hourly Historical Report)

Overview

The `Processor Resource Utilization Status(8.6)` report displays a table showing the 20 highest resource utilization percentages per processor over the past 24 hours.

Note that this report is not supported if the monitored storage system is a midrange storage system, or Universal Storage Platform V/VM series storage system.

Working with the Solution Set

Hitachi Tuning Manager Hardware Reports Reference

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/`

Record

Utilization Per MP Blade Summary (`PD_UMS`)

Fields

Field Name	Description
MP Blade ID	ID that uniquely identifies the MP Blade (or MP Unit for VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, or VSP 5000 series devices) to which the processor belongs within the storage system
Processing Type	Type of resource usage
Processor ID	Processor ID
Resource ID	Resource ID
Resource Type	Resource type
Resource Utilization	Resource utilization
Usage Rank	Resource utilization ranking within the MP

Processor Resource Utilization Status(8.6) (Real-Time Report)

Overview

The `Processor Resource Utilization Status(8.6)` report displays a table that lists the twenty highest resource usages per processor in real time.

Note that this report is not supported if the monitored storage system is a midrange storage system, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Utilization Per MP Blade Summary (`PD_UMS`)

Fields

Field Name	Description
MP Blade ID	ID that identifies the MP Blade (MP Unit for VSP Gx00 models, VSP Fx00 models, VSP

Field Name	Description
	Nx00 models, HUS VM, or VSP 5000 series) in the storage system to which the processor belongs
Processing Type	Type of resource usage
Processor ID	Processor ID
Resource ID	Resource ID
Resource Type	Resource type
Resource Utilization	Resource usage
Usage Rank	Ranking of the resource usage in the MP

Subsystem Cache Memory Usage Details

Overview

The `Subsystem Cache Memory Usage Details` report displays a table and a line graph that show the amount of cache memory that has been used by a storage system for the last hour.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

Storage Summary (`PI`)

Field

Field Name	Description
Cache Memory Usage	Of the cache memory in the storage system, the amount that is being used (MB)

Subsystem Cache Memory Usage Details(6.0)

Overview

The `Subsystem Cache Memory Usage Details(6.0)` report displays a table that lists the amount of cache memory that has been used by a storage system for the last hour.

Note that the field value for the capacity used by the side file is invalid if the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500,

Virtual Storage Platform series, HUS100 series, or Hitachi
AMS2000/AMS/WMS/SMS series storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

Storage Summary (`PI`)

Fields

Field Name	Description
Cache Memory Capacity	Amount of cache memory in the storage system (MB)
Cache Memory Usage	Of the cache memory in the storage system, the amount that is being used (MB)
Cache Side File Usage	Amount of cache memory that is being used by the side file (MB)
Cache Side File Usage %	Percentage of cache memory that is being used by the side file
Cache Write Pending Usage	Amount of cache memory that is being used by write-pending data (MB)
Cache Write Pending Usage %	Percentage of cache memory that is being used by write-pending data

Subsystem Cache Memory Usage Details(7.2)

Overview

The `Subsystem Cache Memory Usage Details(7.2)` report displays a table
that lists the amount of cache memory that has been used by a storage
system for the last hour.

Note that the field value for the capacity used by the side file is invalid if the
monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP
Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500,
Virtual Storage Platform series, HUS100 series, or Hitachi
AMS2000/AMS/WMS/SMS series storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

Storage Summary (`PI`)

Fields

Field Name	Description
Cache Memory Capacity	Amount of cache memory in the storage system (MB)
Cache Memory Usage	Of the cache memory in the storage system, the amount that is being used (MB)
Cache Memory Usage %	Of the cache memory in the storage system, the percentage that is being used
Cache Side File Usage	Amount of cache memory that is being used by the side file (MB)
Cache Side File Usage %	Percentage of cache memory that is being used by the side file
Cache Write Pending Usage	Amount of cache memory that is being used by write-pending data (MB)
Cache Write Pending Usage %	Percentage of cache memory that is being used by write-pending data

Subsystem Cache Memory Usage Status (Hourly Historical Report)

Overview

The `Subsystem Cache Memory Usage Status` report displays a table and a line graph that show the amount of cache memory that has been used by a storage system in the last 24 hours.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/`

Record

Storage Summary (`PI`)

Field

Field Name	Description
Cache Memory Usage	Of the cache memory in the storage system, the amount that is being used (MB)

Subsystem Cache Memory Usage Status (Real-Time Report)

Overview

The `Subsystem Cache Memory Usage Status` report displays a table that lists, in real time, the amount of cache memory that is being used by a storage system.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Storage Summary (`PI`)

Field

Field Name	Description
Cache Memory Usage	Of the cache memory in the storage system, the amount that is being used (MB)

Subsystem Cache Memory Usage Status(7.2)

Overview

The `Subsystem Cache Memory Usage Status(7.2)` report displays a table that lists, in real time, the amount of cache memory that is being used by a storage system.

Note that the field value for the capacity used by the side file is invalid if the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, HUS100 series, or Hitachi AMS2000/AMS/WMS/SMS series storage system.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Storage Summary (`PI`)

Fields

Field Name	Description
Cache Memory Capacity	Amount of cache memory in the storage system (MB)
Cache Memory Usage	Of the cache memory in the storage system, the amount that is being used (MB)
Cache Memory Usage %	Of the cache memory in the storage system, the percentage that is being used
Cache Side File Usage	Amount of cache memory that is being used by the side file (MB)
Cache Side File Usage %	Percentage of cache memory that is being used by the side file
Cache Write Pending Usage	Amount of cache memory that is being used by write-pending data (MB)
Cache Write Pending Usage %	Percentage of cache memory that is being used by write-pending data

Subsystem Configuration

Overview

The `Subsystem Configuration` report displays a table listing configuration information about the storage system in real time.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Storage Detail (`PD`)

Fields

Field Name	Description
Cache Memory Capacity	Cache memory capacity of the storage system (megabytes)
DKC Name	Storage system product name
DKC Serial Number	Storage system serial number
Vendor ID	Storage system vendor name

Subsystem IO Rate Status (Hourly Historical Report)

Overview

The `Subsystem IO Rate Status` report displays a table listing the frequency of read and write operations for the last 24 hours for the entire storage system.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/`

Record

Logical Device Aggregation (`PI_LDA`)

Fields

Field Name	Description
Read I/O / sec	Logical device read frequency (times per second) summarized for the entire storage system
Write I/O / sec	Logical device write frequency (times per second) summarized for the entire storage system

Drilldown Report (Report Level)

Report Name	Description
`Subsystem Transfer Rate Status` (Hourly Historical Report)	Displays a table listing the read and write data transfer rate for the last 24 hours for the entire storage system

Subsystem IO Rate Status (Real-Time Report)

Overview

The `Subsystem IO Rate Status` report displays a table listing the frequency of read and write operations for the entire storage system in real time.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Logical Device Aggregation (`PI_LDA`)

Fields

Field Name	Description
Read I/O / sec	Read frequency for the logical device (times per second) summarized for the entire storage system
Write I/O / sec	Write frequency for the logical device (times per second) summarized for the entire storage system

Drilldown Report (Report Level)

Report Name	Description
Subsystem Transfer Rate Status (Real-Time Report)	Displays the read and write data transfer rate for the entire storage system in real time.

Subsystem Performance Details

Overview

The `Subsystem Performance Details` report displays a table listing the frequency, data transfer rate and cache hit rate of read and write operations for the last hour for the entire storage system.

Note that the field value for the cache hit rate of write operations is invalid if the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

Logical Device Aggregation (`PI_LDA`)

Fields

Field Name	Description
Read Hit %	Read cache hit rate for the logical device summarized for the entire storage system
Read I/O / sec	Read frequency for the logical device (times per second) summarized for the entire storage system
Read Xfer / sec	Read data transfer rate for the logical device (megabytes per second) summarized for the entire storage system

Field Name	Description
Write Hit %	Write cache hit rate for the logical device summarized for the entire storage system
Write I/O / sec	Write frequency for the logical device (times per second) summarized for the entire storage system
Write Xfer / sec	Write data transfer rate for the logical device (megabytes per second) summarized for the entire storage system

Subsystem Read IO Rate Trend

Overview

The `Subsystem Read IO Rate Trend` report displays a table and a line graph showing the read frequency for the last month for the entire storage system.

Storage Location

`Reports/RAID/Monthly Trend/`

Record

Logical Device Aggregation (`PI_LDA`)

Field

Field Name	Description
Read I/O / sec	Displays the logical device read frequency (times per second) summarized for the entire storage system.

Drilldown Reports (Report Level)

Report Name	Description
Subsystem Read Transfer Rate Trend	Displays a table and a line graph showing the read data transfer rate for the last month for the entire storage system.
Subsystem Write IO Rate Trend	Displays a table and a line graph showing the write frequency for the last month for the entire storage system.
Subsystem Write Transfer Rate Trend	Displays a table and a line graph showing the write data transfer rate for the last month for the entire storage system.

Subsystem Read Transfer Rate Trend

Overview

The `Subsystem Read Transfer Rate Trend` report displays a table and a line graph showing the data transfer rate of read operations for the last month for the entire storage system.

Storage Location

`Reports/RAID/Monthly Trend/`

Record

Logical Device Aggregation (`PI_LDA`)

Field

Field Name	Description
Read Xfer / sec	Displays the data transfer rate for logical device read operations (megabytes per second) summarized for the entire storage system.

Drilldown Reports (Report Level)

Report Name	Description
`Subsystem Read IO Rate Trend`	Displays a table and a line graph showing the read frequency for the last month for the entire storage system.
`Subsystem Write IO Rate Trend`	Displays a table and a line graph showing the write frequency for the last month for the entire storage system.
`Subsystem Write Transfer Rate Trend`	Displays a table and a line graph showing the write data transfer rate for the last month for the entire storage system.

Subsystem Transfer Rate Status (Hourly Historical Report)

Overview

The `Subsystem Transfer Rate Status` report displays a table listing the data transfer rate of read and write operations for the last 24 hours for the entire storage system.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/`

Working with the Solution Set

Record

Logical Device Aggregation (`PI_LDA`)

Fields

Field Name	Description
Read Xfer / sec	Data transfer rate for logical device read operations (megabytes per second) summarized for the entire storage system
Write Xfer / sec	Data transfer rate for logical device write operations (megabytes per second) summarized for the entire storage system

Drilldown Report (Report Level)

Report Name	Description
Subsystem IO Rate Status	Displays a table listing the read and write frequency for the last 24 hours for the entire storage system.

Subsystem Transfer Rate Status (Real-Time Report)

Overview

The `Subsystem Transfer Rate Status` report displays a table listing the data transfer rate of read and write operations for the entire storage system in real time.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Logical Device Aggregation (`PI_LDA`)

Fields

Field Name	Description
Read Xfer / sec	Read data transfer rate for the logical device (megabytes per second) summarized for the entire storage system
Write Xfer / sec	Write data transfer rate for the logical device (megabytes per second) summarized for the entire storage system

Drilldown Report (Report Level)

Report Name	Description
Subsystem IO Rate Status	Displays a table listing the read and write frequency for the entire storage system in real time.

Subsystem Write IO Rate Trend

Overview

The `Subsystem Write IO Rate Trend` report displays a table and a line graph showing the write frequency for the last month for the entire storage system.

Storage Location

`Reports/RAID/Monthly Trend/`

Record

Logical Device Aggregation (`PI_LDA`)

Field

Field Name	Description
Write I/O / sec	Displays the logical device write frequency (times per second) summarized for the entire storage system.

Drilldown Reports (Report Level)

Report Name	Description
Subsystem Read IO Rate Trend	Displays a table and a line graph showing the read frequency for the last month for the entire storage system.
Subsystem Read Transfer Rate Trend	Displays a table and a line graph showing the read data transfer rate for the last month for the entire storage system.
Subsystem Write Transfer Rate Trend	Displays a table and a line graph showing the write data transfer rate for the last month for the entire storage system.

Subsystem Write Transfer Rate Trend

Overview

The `Subsystem Write Transfer Rate Trend` report displays a table and a line graph showing the data transfer rate of write operations for the last month for the entire storage system.

Storage Location

`Reports/RAID/Monthly Trend/`

Record

Logical Device Aggregation (`PI_LDA`)

Field

Field Name	Description
Write Xfer / sec	Displays the data transfer rate for logical device write operations (megabytes per second) summarized for the entire storage system.

Drilldown Reports (Report Level)

Report Name	Description
`Subsystem Read IO Rate Trend`	Displays a table and a line graph showing the read frequency for the last month for the entire storage system.
`Subsystem Read Transfer Rate Trend`	Displays a table and a line graph showing the read data transfer rate for the last month for the entire storage system.
`Subsystem Write IO Rate Trend`	Displays a table and a line graph showing the write frequency for the last month for the entire storage system.

Virtual Volume Configuration(7.1)

Overview

The `Virtual Volume Configuration(7.1)` report displays a table listing capacity and configuration information about each Dynamic Provisioning V-VOL in real time. However, if no V-VOL for Dynamic Provisioning exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, or Hitachi AMS/WMS series storage system.

Storage Location

Reports/RAID/Status Reporting/Real-Time/

Record

Virtual Volume Configuration (PD_VVC)

Fields

Field Name	Description
Collection Time	Time (in GMT) when data is collected from the storage system
Free Capacity	Free capacity of the V-VOL (MB)
LDEV Number	Logical device number of the V-VOL
Pool Free Capacity %	The free capacity in the Dynamic Provisioning pool to which the V-VOL belongs, as a percentage of the free capacity in the V-VOL
Pool ID	Pool ID of the Dynamic Provisioning pool to which the logical device belongs
Threshold	Threshold value (%) set for the free capacity in the Dynamic Provisioning pool to which the V-VOL belongs, as a percentage of the free capacity in the V-VOL (the value of the Pool Free Capacity % field). This value is specified in Storage Navigator.
Usage %	Of the virtual capacity of the V-VOL, the percentage of the actual capacity used. Percentage of the used capacity of the V-VOL.
Used Capacity	Size of the actual used capacity of the V-VOL (MB)
Virtual Volume Capacity	Virtual capacity of the V-VOL (MB)

Drilldown Reports (Field Level)

Report Name	Description
Pool Usage Trend(7.1)	Displays a line graph showing the usage of each Dynamic Provisioning pool, and a table listing capacity and configuration information about each Dynamic Provisioning pool for the last month. To display this report, click the following field in the Virtual Volume Configuration(7.1) report: • Pool ID
Virtual Volume Usage Trend(7.1)	Displays a line graph showing the usage of each Dynamic Provisioning V-VOL, and a table listing capacity and configuration information about each Dynamic Provisioning V-VOL for the last month. To display this report, click the following field in the Virtual Volume Configuration(7.1) report:

Report Name	Description
	• LDEV Number

Virtual Volume Configuration(9.0)

Overview

The `Virtual Volume Configuration(9.0)` report displays a table listing capacity and configuration information about each Dynamic Provisioning V-VOL in real time. However, if no V-VOL for Dynamic Provisioning exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, or Hitachi AMS/WMS series storage system.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

Virtual Volume Configuration (`PD_VVC`)

Fields

Field Name	Description
Attribute	An attribute that indicates whether Full Allocation for the V-VOL is enabled or disabled and whether Data Direct Mapping is enabled or disabled
Collection Time	Time (in GMT) when data is collected from the storage system
Free Capacity	Free capacity of the V-VOL (MB)
LDEV Number	Logical device number of the V-VOL
Pool Free Capacity %	The free capacity in the Dynamic Provisioning pool to which the V-VOL belongs, as a percentage of the free capacity in the V-VOL
Pool ID	Pool ID of the Dynamic Provisioning pool to which the logical device belongs
Reserved Capacity	The capacity for the reserved pages of the V-VOL (MB)
Threshold	Threshold value (%) set for the free capacity in the Dynamic Provisioning pool to which the V-VOL belongs, as a percentage of the free capacity in the V-VOL (the value of the Pool Free Capacity % field). This value is specified in Storage Navigator.

Field Name	Description
Usage %	Of the virtual capacity of the V-VOL, the percentage of the actual capacity used. Percentage of the used capacity of the V-VOL.
Used Capacity	Size of the actual used capacity of the V-VOL (MB)
Virtual Volume Capacity	Virtual capacity of the V-VOL (MB)

Drilldown Reports (Field Level)

Report Name	Description
Pool Usage Trend(9.0)	Displays a line graph showing the usage of each Dynamic Provisioning pool, and a table listing capacity and configuration information about each Dynamic Provisioning pool for the last month. To display this report, click the following field in the `Virtual Volume Configuration(9.0)` report: • Pool ID
Virtual Volume Usage Trend(9.0)	Displays a line graph showing the usage of each Dynamic Provisioning V-VOL, and a table listing capacity and configuration information about each Dynamic Provisioning V-VOL for the last month. To display this report, click the following field in the `Virtual Volume Configuration(9.0)` report: • LDEV Number

Virtual Volume Frequency Distribution Rate Status(8.6)

Overview

The `Virtual Volume Frequency Distribution Rate Status(8.6)` report displays a table that lists the Page IO frequency for each type of tier over the last hour for Dynamic Provisioning V-VOLs that have tier management enabled.

However, if no Dynamic Provisioning V-VOLs that have tier management enabled exist in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

V-VOL Frequency Distribution (`PD_VVF`)

Fields

Field Name	Description
Avg Page I/O /sec	Frequency of read and write operations to and from tiers (operations per second)
Capacity	Total tier capacity
LDEV Number	LDEV number of the virtual volume
Monitor Collection End Time	Time when collection of the monitoring information ended on the storage system
Monitor Collection Start Time	Time when collection of the monitoring information began on the storage system
Partition Number	Partition number
Pool ID	ID of the pool

Virtual Volume Tier IO Rate Status(8.2)

Overview

The `Virtual Volume Tier IO Rate Status(8.2)` report displays a table showing the read and write processing rate for each type of tier over the last hour for Dynamic Provisioning V-VOLs that have tier management enabled.

However, if no Dynamic Provisioning V-VOLs that have tier management enabled exist in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a midrange storage system, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Troubleshooting/Recent Past/`

Record

V-VOL Tier Type I/O Information (`PI_VVTI`)

Fields

Field Name	Description
Avg I/O /sec	Read and write processing rate (number of times per second) for the tier
LDEV Number	Logical device number of the V-VOL
Pool ID	ID of the pool
Tier Number	Number of the tier
Tier Type	Type of the tier

Virtual Volume Tier Type Configuration(7.8)

Overview

The `Virtual Volume Tier Type Configuration(7.8)` report displays a table listing capacity and configuration information for each tier type of a Dynamic Provisioning V-VOL that has tier management enabled in real time.

However, if no Dynamic Provisioning V-VOL that has tier management enabled exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Status Reporting/Real-Time/`

Record

V-VOL Tier Type Configuration (`PD_VVTC`)

Fields

Field Name	Description
LDEV Number	Logical device number of the V-VOL
Pool ID	Pool ID of the Dynamic Provisioning pool to which the V-VOL belongs
Tier Number	Tier number
Tier Type	Tier type
Usage %	Of the virtual capacity of the V-VOL, the percentage of the actual capacity used by the tier (that is, the percentage of the used capacity of the V-VOL)
Used Capacity	Of the virtual capacity of the V-VOL, the size (in MB) of the actual capacity used by the tier

Drilldown Reports (Field Level)

Report Name	Description
`Pool Tier Type Usage Trend(7.8)`	Displays a table and stacked area graph showing the usage for each tier type of the Dynamic Provisioning pool that has tier management enabled for the last month. To display this report, click the following field in the `Virtual Volume Tier Type Configuration(7.8)` report: • Pool ID

Report Name	Description
`Virtual Volume Tier Type Usage Trend(7.8)`	Displays a table and stacked area graph showing the usage for each tier type of the Dynamic Provisioning V-VOL that has tier management enabled for the last month. To display this report, click the following field in the `Virtual Volume Tier Type Configuration(7.8)` report: • LDEV Number

Virtual Volume Tier Type IO Rate Trend(8.2)

Overview

The `Virtual Volume Tier Type IO Rate Trend(8.2)` report displays a table and line graph showing the read and write processing rate for each type of tier over the past 24 hours for Dynamic Provisioning V-VOLs that have tier management enabled. Note that this report displays only information that satisfies the specified Avg I/O /sec, Pool ID, and Tier Type conditions.

However, if no Dynamic Provisioning pools that have tier management enabled exist in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a midrange storage system, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Status Reporting/Daily Trend/Drilldown Only/`

Record

V-VOL Tier Type I/O Information (`PI_VVTI`)

Fields

Field Name	Description
Avg I/O /sec	Read and write processing rate (number of times per second) for the tier
LDEV Number	Logical device number of the V-VOL
Pool ID	ID of the pool
Tier Number	Number of the tier
Tier Type	Type of the tier

Virtual Volume Tier Type Usage Trend(7.8)

Overview

The `Virtual Volume Tier Type Usage Trend(7.8)` report displays a table and stacked area graph showing the usage for the last month for each tier type of a Dynamic Provisioning V-VOL that has tier management enabled.

However, if no Dynamic Provisioning V-VOL that has tier management enabled exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Monthly Trend/Drilldown Only/`

Record

V-VOL Tier Type Configuration (`PD_VVTC`)

Fields

Field Name	Description
LDEV Number	Logical device number of the V-VOL
Pool ID	Pool ID of the Dynamic Provisioning pool to which the V-VOL belongs
Tier Number	Tier number
Tier Type	Tier type
Usage %	Of the virtual capacity of the V-VOL, the percentage of the actual capacity used by the tier (that is, the percentage of the used capacity of the V-VOL)

Virtual Volume Tier Type Used Capacity Trend(8.0)

Overview

The `Virtual Volume Tier Type Used Capacity Trend(8.0)` report displays a table and line graph showing the size of the used capacity and the usage rate for the last month for each tier type of a Dynamic Provisioning V-VOL that has tier management enabled. Note that only the information that matches the display conditions specified for Pool ID, Tier Type, and Used Capacity is displayed.

However, if no Dynamic Provisioning V-VOL that has tier management enabled exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, Hitachi AMS2000 series, Hitachi AMS/WMS series, or Universal Storage Platform V/VM series storage system.

Storage Location

`Reports/RAID/Monthly Trend/Drilldown Only/`

Record

V-VOL Tier Type Configuration (`PD_VVTC`)

Fields

Field Name	Description
LDEV Number	Logical device number of the V-VOL
Pool ID	ID of the pool
Tier Number	Tier number
Tier Type	Tier type
Usage %	Of the virtual capacity of the V-VOL, the percentage of the actual capacity used by the tier
Used Capacity	Of the virtual capacity of the V-VOL, the capacity actually used by the tier (MB)

Virtual Volume Usage Trend(7.1)

Overview

The `Virtual Volume Usage Trend(7.1)` report displays a line graph showing the usage of each Dynamic Provisioning V-VOL, and a table listing capacity and configuration information about each Dynamic Provisioning V-VOL for the last month.

However, if no V-VOL for Dynamic Provisioning exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, or Hitachi AMS/WMS series storage system.

Storage Location

`Reports/RAID/Monthly Trend/Drilldown Only/`

Record

Virtual Volume Configuration (`PD_VVC`)

Fields

Field Name	Description
Collection Time	Time (in GMT) when data is collected from the storage system
Free Capacity	Free capacity of the V-VOL (MB)
LDEV Number	Logical device number of the V-VOL
Pool Free Capacity %	The free capacity in the Dynamic Provisioning pool to which the V-VOL belongs, as a percentage of the free capacity in the V-VOL
Pool ID	Pool ID of the Dynamic Provisioning pool to which the V-VOL belongs
Threshold	Threshold value (%) set for the free capacity in the Dynamic Provisioning pool to which the V-VOL belongs, as a percentage of the free capacity in the V-VOL (the value of the Pool Free Capacity % field). This value is specified in Storage Navigator.
Usage %	Of the virtual capacity of the V-VOL, the percentage of the actual capacity used. Percentage of the used capacity of the V-VOL.
Used Capacity	Size of the actual used capacity of the V-VOL (MB)
Virtual Volume Capacity	Virtual capacity of the V-VOL (MB)

Virtual Volume Usage Trend(9.0)

Overview

The `Virtual Volume Usage Trend(9.0)` report displays a line graph showing the usage of each Dynamic Provisioning V-VOL, and a table listing capacity and configuration information about each Dynamic Provisioning V-VOL for the last month.

However, if no V-VOL for Dynamic Provisioning exists in the monitored storage system, this report cannot be used.

This report cannot be used if the monitored storage system is a Hitachi SMS series, or Hitachi AMS/WMS series storage system.

Storage Location

`Reports/RAID/Monthly Trend/Drilldown Only/`

Record

Virtual Volume Configuration (`PD_VVC`)

Fields

Field Name	Description
Attribute	An attribute that indicates whether Full Allocation for the V-VOL is enabled or disabled and whether Data Direct Mapping is enabled or disabled
Collection Time	Time (in GMT) when data is collected from the storage system
Free Capacity	Free capacity of the V-VOL (MB)
LDEV Number	Logical device number of the V-VOL
Pool Free Capacity %	The free capacity in the Dynamic Provisioning pool to which the V-VOL belongs, as a percentage of the free capacity in the V-VOL
Pool ID	Pool ID of the Dynamic Provisioning pool to which the V-VOL belongs
Reserved Capacity	The capacity for the reserved pages of the V-VOL (MB)
Threshold	Threshold value (%) set for the free capacity in the Dynamic Provisioning pool to which the V-VOL belongs, as a percentage of the free capacity in the V-VOL (the value of the Pool Free Capacity % field). This value is specified in Storage Navigator.
Usage %	Of the virtual capacity of the V-VOL, the percentage of the actual capacity used. Percentage of the used capacity of the V-VOL.
Used Capacity	Size of the actual used capacity of the V-VOL (MB)
Virtual Volume Capacity	Virtual capacity of the V-VOL (MB)

Agent for RAID Reports (Storage Resources folder)

This section describes the reports defined in the solution set and stored in the `Storage Resources` folder. For details about Agent for RAID reports stored in other folders, see .

The following describes the subordinate folders in the Storage Resources folder.

HUS100/AMS2000/1. Cache folder

The following table lists and describes the reports stored in the `HUS100/AMS2000/1. Cache` folder.

Table 1-32 Agent for RAID Report (Storage Resources - HUS100/AMS2000 - 1. Cache)

Report Name	Displayed Information
Cache Read Hit % (HUS100/AMS2000 - 1. Cache)	Read cache hit rate for the entire storage system
Cache Usage % (HUS100/AMS2000 - 1. Cache)	Usage rate of cache memory allocated for the CLPR
Max Write Pending Usage % (HUS100/AMS2000 - 1. Cache)	Of the cache memory allocated for the CLPR, the maximum percentage that is being used by write-pending data
Write Pending Usage % (HUS100/ AMS2000 - 1. Cache)	Of the cache memory allocated for the CLPR in the last 24 hours, the percentage that is being used by write-pending data for the last 24 hours

Cache Read Hit % (HUS100/AMS2000 - 1. Cache)

Overview

This report displays a table and line graph showing the read cache hit rate for the entire storage system.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/1. Cache/

Record

Logical Device Aggregation(PI_LDA)

Fields

Field Name	Description
Read Hit %	Read cache hit rate for the logical device summarized for the entire storage system

Cache Usage % (HUS100/AMS2000 - 1. Cache)

Overview

This report displays a table and line graph showing the usage rate of cache memory allocated for the CLPR.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/1. Cache/

Record

CLPR Summary(PI_CLPS)

Fields

Field Name	Description
Cache Memory Usage %	Amount of cache memory allocated for this CLPR that is being used

Max Write Pending Usage % (HUS100/AMS2000 - 1. Cache)

Overview

This report displays a table and line graph showing the maximum percentage of cache memory allocated for the CLPR and used by write-pending data.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/1. Cache/

Record

CLPR Summary(PI_CLPS)

Fields

Field Name	Description
Max Cache Write Pending Usage %	Of the cache memory allocated for this CLPR, the percentage that is being used by write-pending data. Note: If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.

Write Pending Usage % (HUS100/AMS2000 - 1. Cache)

Overview

This report displays a table and line graph showing the percentage of cache memory allocated for the CLPR and used by write-pending data in the last 24 hours.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/1. Cache/

Record

CLPR Summary(PI_CLPS)

Fields

Field Name	Description
CLPR Number	CLPR number
Cache Write Pending Usage %	Of the cache memory allocated for this CLPR, the percentage that is being used by write-pending data
Max Cache Write Pending Usage %	Of the cache memory allocated for this CLPR, the percentage that is being used by write-pending data. Note: If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.

HUS100/AMS2000/2. Front End Port folder

The following table lists and describes the reports stored in the `HUS100/AMS2000/2. Front End Port` folder.

Table 1-33 Agent for RAID Report (Storage Resources - HUS100/AMS2000 - 2. Front End Port)

Report Name	Displayed Information
Port Avg IOPS (HUS100/AMS2000 - 2. Front End Port)	Average frequency of read and write operations for storage system ports
Port Avg Transfer (HUS100/AMS2000 - 2. Front End Port)	Average data transfer rate of read and write operations for storage system ports

Report Name	Displayed Information
Port Configuration (Tabular) (HUS100/AMS2000 - 2. Front End Port)	Configuration information for storage system ports
Port Max IOPS (HUS100/AMS2000 - 2. Front End Port)	Maximum frequency of read and write operations for storage system ports
Port Max Transfer (HUS100/AMS2000 - 2. Front End Port)	Maximum data transfer rate of read and write operations for storage system ports

Port Avg IOPS (HUS100/AMS2000 - 2. Front End Port)

Overview

This report displays a line graph showing the average frequency of read and write operations for storage system ports, and displays a table showing the average and maximum frequency of read and write operations.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/2. Front End Port/

Record

Port Summary(PI_PTS)

Fields

Field Name	Description
Port Name	Port name of the storage system
Max I/O /sec	Storage system port operation maximum read and write frequency (times per second)
Avg I/O /sec	Average read and write frequency (times per second) for storage system ports

Filter

Item	Description	Usage
Field	Avg I/O /sec, Port Name	-
Condition expression	(Port Name = "*" OR Port Name = "x" OR Port Name = "x"	A maximum of four records for the specified port name are displayed. Be sure to use the condition expressions in the

Item	Description	Usage
	OR Port Name = "*x*")	order shown on the left to specify a port name.
	AND Port Name >= "*. Enter first port name here.*" AND Port Name <= "*z Enter last port name here.*"	Records for the specified range of port names are displayed.
	AND Avg I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

Port Avg Transfer (HUS100/AMS2000 - 2. Front End Port)

Overview

This report displays a line graph showing the average data transfer rate of read and write operations for storage system ports. This report also displays a table showing the maximum frequency, average data transfer rate, and maximum data transfer rate of read and write operations.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/2. Front End Port/

Record

Port Summary(PI_PTS)

Fields

Field Name	Description
Port Name	Port name of the storage system
Max I/O /sec	Storage system port operation maximum read and write frequency (times per second)
Max Xfer /sec	Maximum data transfer rate for storage system port read and write operations (megabytes per second)
Avg Xfer /sec	Average read and write data transfer rate (megabytes per second) for storage system ports

Working with the Solution Set

Filter

Item	Description	Usage
Field	Avg Xfer /sec, Port Name	-
Condition expression	(Port Name = "*" OR Port Name = "*x*" OR Port Name = "*x*" OR Port Name = "*x*")	A maximum of four records for the specified port name are displayed. Be sure to use the condition expressions in the order shown on the left to specify a port name.
	AND Port Name >= "*. Enter first port name here.*" AND Port Name <= "*z Enter last port name here.*"	Records for the specified range of port names are displayed.
	AND Avg Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

Port Configuration (Tabular) (HUS100/AMS2000 - 2. Front End Port)

Overview

This report displays a table showing the configuration information for a storage system port.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/2. Front End Port/

Record

Port Configuration(PD_PTC)

Fields

Field Name	Description
Port Name	Port name of the storage system
Port Number	Port number of the storage system
Port WWN	WWN of the storage system port

Port Max IOPS (HUS100/AMS2000 - 2. Front End Port)

Overview

This report displays a line graph showing the maximum frequency of read and write operations for storage system ports, and displays a table showing the maximum and average frequency of read and write operations.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/2. Front End Port/

Record

Port Summary(PI_PTS)

Fields

Field Name	Description
Port Name	Port name of the storage system
Max I/O /sec	Storage system port operation maximum read and write frequency (times per second)
Avg I/O /sec	Average read and write frequency (times per second) for storage system ports

Filter

Item	Description	Usage
Field	Max I/O /sec, Port Name	-
Condition expression	(Port Name = "*" OR Port Name = "*x*" OR Port Name = "*x*" OR Port Name = "*x*")	A maximum of four records for the specified port name are displayed. Be sure to use the condition expressions in the order shown on the left to specify a port name.
	AND Port Name >= ". *Enter first port name here.*" AND Port Name <= "z *Enter last port name here.*"	Records for the specified range of port names are displayed.
	AND Max I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

Port Max Transfer (HUS100/AMS2000 - 2. Front End Port)

Overview

This report displays a line graph showing the maximum data transfer rate of read and write operations for storage system ports. This report also displays a table showing the maximum frequency, average data transfer rate, and maximum data transfer rate of read and write operations.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/2. Front End Port/

Record

Port Summary(PI_PTS)

Fields

Field Name	Description
Port Name	Port name of the storage system
Max I/O /sec	Storage system port operation maximum read and write frequency (times per second)
Max Xfer /sec	Maximum data transfer rate for storage system port read and write operations (megabytes per second)
Avg Xfer /sec	Average read and write data transfer rate (megabytes per second) for storage system ports

Filter

Item	Description	Usage
Field	Max Xfer /sec, Port Name	-
Condition expression	(Port Name = "*" OR Port Name = "*x*" OR Port Name = "*x*" OR Port Name = "*x*")	A maximum of four records for the specified port name are displayed. Be sure to use the condition expressions in the order shown on the left to specify a port name.
	AND Port Name >= "*. Enter first port name here.*" AND Port Name <= "*z Enter last port name here.*"	Records for the specified range of port names are displayed.

Item	Description	Usage
	AND Max Xfer /sec > -1.000	Records with a performance value greater than the specified value are displayed.

HUS100/AMS2000/3. Controller Busy folder

The following table lists and describes the reports stored in the `HUS100/AMS2000/3. Controller Busy` folder.

Table 1-34 Agent for RAID Report (Storage Resources - HUS100/AMS2000 - 3. Controller Busy)

Report Name	Displayed Information
Controller Busy	Maximum usage rate of a processor installed in the storage system for the last week

Controller Busy

Overview

This report displays a line graph showing the maximum usage rate for the last week of a processor installed in the storage system, and displays a table showing the maximum usage rate of the processor and the usage rate of the processor.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/3. Controller/

Record

Processor Summary(PI_PRCS)

Fields

Field Name	Description
Processor ID	Character string that identifies the processor
Processor Busy %	Processor utilization
Max Processor Busy %	Usage rate of the processor. Note: If the values of a smaller unit (e.g., minutes) are summarized to a greater unit

Field Name	Description
	(e.g., hours), the maximum value is stored rather than the average value.

Filter

Item	Description	Usage
Field	Max Processor Busy %	-
Condition expression	Max Processor Busy % >= -1.000	This item cannot be specified.

HUS100/AMS2000/4. Parity Group folder

The following table lists and describes the reports stored in the `HUS100/AMS2000/4. Parity Group` folder.

Table 1-35 Agent for RAID Report (Storage Resources - HUS100/AMS2000 - 4. Parity Group)

Report Name	Displayed Information
PG Random Read IOPS (HUS100/AMS2000 - 4. Parity Group)	Frequency of random read operations for parity groups
PG Random Read Transfer (HUS100/AMS2000 - 4. Parity Group)	Data transfer rate of random read operations for parity groups
PG Random Write IOPS (HUS100/AMS2000 - 4. Parity Group)	Frequency of random write operations for parity groups
PG Random Write Transfer (HUS100/AMS2000 - 4. Parity Group)	Data transfer rate of random write operations for parity groups
PG Read Hit % (HUS100/AMS2000 - 4. Parity Group)	Cache hit rate of read operations for parity groups
PG Sequential Read IOPS (HUS100/AMS2000 - 4. Parity Group)	Frequency of sequential read operations for parity groups
PG Sequential Read Transfer (HUS100/AMS2000 - 4. Parity Group)	Data transfer rate of sequential read operations for parity groups
PG Sequential Write IOPS (HUS100/AMS2000 - 4. Parity Group)	Frequency of sequential write operations for parity groups
PG Sequential Write Transfer (HUS100/AMS2000 - 4. Parity Group)	Data transfer rate of sequential write operations for parity groups
Parity Group Configuration (Tabular) (HUS100/AMS2000 - 4. Parity Group)	Parity group configuration information
Physical Device Busy %	Maximum usage rate of a drive installed in the storage system for the last 24 hours

PG Random Read IOPS (HUS100/AMS2000 - 4. Parity Group)

Overview

This report displays a table and line graph showing the frequency of random read operations for parity groups.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/4. Parity Group/

Record

RAID Group Summary(PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Random Read I/O /sec	Frequency of random read operations (times per second)

Filter

Item	Description	Usage
Field	Random Read I/O /sec, RAID Group Number	-
Condition expression	(RAID Group Number = "*" OR RAID Group Number = "x" OR RAID Group Number = "x" OR RAID Group Number = "x")	A maximum of four records for the specified parity group number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a parity group number.
	AND RAID Group Number >= ". Enter first parity group here." AND RAID Group Number <= "z Enter last parity group here."	Records for the specified range of parity group numbers are displayed.
	AND Random Read I/O /sec > -1.000	Records with a performance value greater than the specified value are displayed.

PG Random Read Transfer (HUS100/AMS2000 - 4. Parity Group)

Overview

This report displays a table and line graph showing the data transfer rate of random read operations for parity groups.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/4. Parity Group/

Record

RAID Group Summary(PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)

Filter

Item	Description	Usage
Field	Random Read Xfer /sec, RAID Group Number	-
Condition expression	(RAID Group Number = "*" OR RAID Group Number = "*x*" OR RAID Group Number = "*x*" OR RAID Group Number = "*x*")	A maximum of four records for the specified parity group number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a parity group number.
	AND RAID Group Number >= ".*Enter first parity group here.*" AND RAID Group Number <= "*z Enter last parity group here.*"	Records for the specified range of parity group numbers are displayed.
	AND Random Read Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

PG Random Write IOPS (HUS100/AMS2000 - 4. Parity Group)

Overview

This report displays a table and line graph showing the frequency of random write operations for parity groups.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/4. Parity Group/

Record

RAID Group Summary(PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Random Write I/O /sec	Frequency of random write operations (times per second)

Filter

Item	Description	Usage
Field	Random Write I/O /sec, RAID Group Number	-
Condition expression	(RAID Group Number = "*" OR RAID Group Number = "x" OR RAID Group Number = "x" OR RAID Group Number = "x")	A maximum of four records for the specified parity group number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a parity group number.
	AND RAID Group Number >= ". *Enter first parity group here.*" AND RAID Group Number <= "z *Enter last parity group here.*"	Records for the specified range of parity group numbers are displayed.
	AND Random Write I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

Hitachi Tuning Manager Hardware Reports Reference

PG Random Write Transfer (HUS100/AMS2000 - 4. Parity Group)

Overview

This report displays a table and line graph showing the data transfer rate of random write operations for parity groups.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/4. Parity Group/

Record

RAID Group Summary(PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)

Filter

Item	Description	Usage
Field	Random Write Xfer /sec, RAID Group Number	-
Condition expression	(RAID Group Number = "*" OR RAID Group Number = "x" OR RAID Group Number = "x" OR RAID Group Number = "x")	A maximum of four records for the specified parity group number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a parity group number.
	AND RAID Group Number >= ". *Enter first parity group here.*" AND RAID Group Number <= "z *Enter last parity group here.*"	Records for the specified range of parity group numbers are displayed.
	AND Random Write Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

PG Read Hit % (HUS100/AMS2000 - 4. Parity Group)

Overview

This report displays a table and line graph showing the cache hit rate of read operations for parity groups.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/4. Parity Group/

Record

RAID Group Summary(PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Read Hit %	Cache hit rate of read operations

Filter

Item	Description	Usage
Field	Read Hit %, RAID Group Number	-
Condition expression	(RAID Group Number = "*" OR RAID Group Number = "x" OR RAID Group Number = "x" OR RAID Group Number = "x")	A maximum of four records for the specified parity group number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a parity group number.
	AND RAID Group Number >= ". _Enter first parity group here._" AND RAID Group Number <= "z _Enter last parity group here._"	Records for the specified range of parity group numbers are displayed.
	AND Read Hit % > -1.000	Records with a performance value greater than the specified value are displayed.

PG Sequential Read IOPS (HUS100/AMS2000 - 4. Parity Group)

Overview

This report displays a table and line graph showing the frequency of sequential read operations for parity groups.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/4. Parity Group/

Record

RAID Group Summary(PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)

Filter

Item	Description	Usage
Field	Sequential Read I/O /sec, RAID Group Number	-
Condition expression	(RAID Group Number = "*" OR RAID Group Number = "x" OR RAID Group Number = "x" OR RAID Group Number = "x")	A maximum of four records for the specified parity group number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a parity group number.
	AND RAID Group Number >= ". *Enter first parity group here.*" AND RAID Group Number <= "z *Enter last parity group here.*"	Records for the specified range of parity group numbers are displayed.
	AND Sequential Read I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

PG Sequential Read Transfer (HUS100/AMS2000 - 4. Parity Group)

Overview

This report displays a table and line graph showing the data transfer rate of sequential read operations for parity groups.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/4. Parity Group/

Record

RAID Group Summary(PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)

Filter

Item	Description	Usage
Field	Sequential Read Xfer /sec, RAID Group Number	-
Condition expression	(RAID Group Number = "*" OR RAID Group Number = "x" OR RAID Group Number = "x" OR RAID Group Number = "x")	A maximum of four records for the specified parity group number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a parity group number.
	AND RAID Group Number >= ".*Enter first parity group here.*" AND RAID Group Number <= "*z Enter last parity group here.*"	Records for the specified range of parity group numbers are displayed.
	AND Sequential Read Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

PG Sequential Write IOPS (HUS100/AMS2000 - 4. Parity Group)

Overview

This report displays a table and line graph showing the frequency of sequential write operations for parity groups.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/4. Parity Group/

Record

RAID Group Summary(PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)

Filter

Item	Description	Usage
Field	Sequential Write I/O /sec, RAID Group Number	-
Condition expression	(RAID Group Number = "*" OR RAID Group Number = "*x*" OR RAID Group Number = "*x*" OR RAID Group Number = "*x*")	A maximum of four records for the specified parity group number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a parity group number.
	AND RAID Group Number >= ".*Enter first parity group here.*" AND RAID Group Number <= "*z Enter last parity group here.*"	Records for the specified range of parity group numbers are displayed.
	AND Sequential Write I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

PG Sequential Write Transfer (HUS100/AMS2000 - 4. Parity Group)

Overview

This report displays a table and line graph showing the data transfer rate of sequential write operations for parity groups.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/4. Parity Group/

Record

RAID Group Summary(PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)

Filter

Item	Description	Usage
Field	Sequential Write Xfer /sec, RAID Group Number	-
Condition expression	(RAID Group Number = "*" OR RAID Group Number = "x" OR RAID Group Number = "x" OR RAID Group Number = "x")	A maximum of four records for the specified parity group number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a parity group number.
	AND RAID Group Number >= ". *Enter first parity group here.*" AND RAID Group Number <= "z *Enter last parity group here.*"	Records for the specified range of parity group numbers are displayed.
	AND Sequential Write Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

Working with the Solution Set

Hitachi Tuning Manager Hardware Reports Reference

Parity Group Configuration (Tabular) (HUS100/AMS2000 - 4. Parity Group)

Overview

This report displays a table showing the parity group configuration information.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/4. Parity Group/

Record

RAID Group Configuration(PD_RGC)

Fields

Field Name	Description
RAID Group Number	Parity group number
RAID Level	RAID level
RAID Type	RAID level and HDU combination Example: RAID5(3D+1P)

Physical Device Busy %

Overview

This report displays a line graph showing the maximum usage rate for the last 24 hours of a drive installed in the storage system. This report also displays a table showing the following information:

- Controller number, unit number, HDU number, and parity group number
- Average and maximum number of commands accumulated in the command queue
- Maximum usage rate of the drive

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/4. Parity Group/

Record

Physical Device Operation Status(PI_PDOS)

Fields

Field Name	Description
Controller	Controller number
Unit Number	Unit number of the drive
HDU Number	HDU number of the drive
RAID Group Number	Number of the parity group to which the drive belongs
Max Tag Count	Maximum number of commands accumulated in the command queue of the drive over the last minute
Avg Tag Count	Average number of commands accumulated in the command queue of the drive
Max Busy %	Usage rate of the drive. **Note:** If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.

Filter

Item	Description	Usage
Field	Max Busy %, RAID Group Number	-
Condition expression	(RAID Group Number = "*" OR RAID Group Number = "x" OR RAID Group Number = "x" OR RAID Group Number = "x")	A maximum of four records for the specified parity group number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a parity group number.
	AND RAID Group Number >= ".*Enter first parity group here.*" AND RAID Group Number <= "*z Enter last parity group here.*"	Records for the specified range of parity group numbers are displayed.
	AND Max Busy % > *-1.000*	Records with a performance value greater than the specified value are displayed.

HUS100/AMS2000/5. LDEV folder

The following table lists and describes the reports stored in the `HUS100/ AMS2000/5. LDEV` folder.

Table 1-36 Agent for RAID Report (Storage Resources - HUS100/AMS2000 - 5. LDEV)

Report Name	Displayed Information
Daily IOPS for LDEV	The following information for logical devices for the last month: • Frequency of random read and write operations • Frequency of sequential read and write operations
Daily Transfer for LDEV	The following information for logical devices for the last month: • Data transfer rate of random read and write operations • Data transfer rate of sequential read and write operations
LDEV Configuration (Tabular)	Logical device configuration information
LDEV Performance Summary Report	The following information for logical devices for the last 24 hours: • Frequency, data transfer rate, and cache hit rate of read and write operations • Average processing time per read and write request • Frequency and data transfer rate of random operations • Frequency and data transfer rate of sequential operations
LDEV Random IOPS	Frequency of random read and write operations for logical devices
LDEV Random Transfer	Data transfer rate of random read and write operations for logical devices
LDEV Read Hit %	Cache hit rate of read operations for logical devices
LDEV Read IOPS	Frequency of read operations for logical devices
LDEV Read Response Time	Processing time per read request for logical devices
LDEV Read Transfer	Data transfer rate of read operations for logical devices
LDEV Sequential IOPS	Frequency of sequential read and write operations for logical devices
LDEV Sequential Transfer	Data transfer rate of sequential read and write operations for logical devices
LDEV Total Response Time	Processing time per read and write request for logical devices
LDEV Write IOPS	Frequency of write operations for logical devices

Report Name	Displayed Information
LDEV Write Response Time	Processing time per write request for logical devices
LDEV Write Transfer	Data transfer rate of write operations for logical devices
Up to 20 LDEV Bars for Yesterday's IOPS	The following information for logical devices for the last 24 hours (a maximum of 20 records) • Frequency of random read and write operations • Frequency of sequential read and write operations
Up to 20 LDEV Bars for Yesterday's Transfer	The following information for logical devices for the last 24 hours (a maximum of 20 records) • Data transfer rate of random read and write operations • Data transfer rate of sequential read and write operations

Daily IOPS for LDEV

Overview

This report displays a stacked column graph and table showing the following information for logical devices for the last month:

• Frequency of random read and write operations
• Frequency of sequential read and write operations

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/5. LDEV/

Record

LDEV Summary - Extended(PI_LDE)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Read I/O /sec	Frequency of random read operations (times per second)
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)

Field Name	Description
Random Write I/O /sec	Frequency of random write operations (times per second)
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)

Filter

Item	Description	Usage
Field	Random Read I/O /sec, Random Write I/O /sec, Sequential Read I/O /sec, Sequential Write I/O /sec, LDEV Number	-
Condition expression	(Random Read I/O /sec > *1.000* OR Random Write I/O /sec > *1.000* OR Sequential Read I/O /sec > *1.000* OR Sequential Write I/O /sec > *1.000*)	Records with a performance value greater than the specified value are displayed.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

Daily Transfer for LDEV

Overview

This report displays a stacked column graph and table showing the following information for logical devices for the last month:

- Data transfer rate of random read and write operations
- Data transfer rate of sequential read and write operations

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/5. LDEV/

Record

LDEV Summary - Extended(PI_LDE)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)

Filter

Item	Description	Usage
Field	Random Read Xfer /sec, Random Write Xfer /sec, Sequential Read Xfer /sec, Sequential Write Xfer /sec, LDEV Number	-
Condition expression	(Random Read Xfer /sec > *1.000* OR Random Write Xfer /sec > *1.000* OR Sequential Read Xfer /sec > *1.000* OR Sequential Write Xfer /sec > *1.000*)	Records with a performance value greater than the specified value are displayed.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

LDEV Configuration (Tabular)

Overview

This report displays a table showing the logical device configuration information.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/5. LDEV/

Working with the Solution Set

Record

Logical Device Configuration(PD_LDC)

Fields

Field Name	Description
LDEV Number	Logical device number
RAID Group Number	Parity group number
RAID Level	RAID level of logical device
RAID Type	Combination of the RAID level and HDU of the logical device. *Example:* RAID5(3D+1P)
LDEV Location	Information indicating whether the logical device is an externally connected LDEV: • Internal • External
LUSE Volume	Information indicating whether the logical device is part of a LUSE: • LUSE
Pool ID	Pool ID of the Dynamic Provisioning pool to which the logical device belongs
Volume Type	Information indicating whether the logical device is a V-VOL or pool volume for Dynamic Provisioning: • V-VOL • POOL
CLPR Number	CLPR number of the CLPR to which the logical device is allocated

LDEV Performance Summary Report

Overview

This report displays a table showing the following information for logical devices for the last 24 hours:

• Frequency, data transfer rate, and cache hit rate of read and write operations

• Average processing time per read and write request

• Frequency and data transfer rate of random operations

• Frequency and data transfer rate of sequential operations

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O /sec	Read frequency (times per second)
Write I/O /sec	Frequency of write operations (times per second)
Read Response Rate	Average processing time (in microseconds) per read request
Write Response Rate	Average processing time per write request (microseconds)
Total Response Rate	Average processing time per read and write request (microseconds)
Read Hit %	Cache hit rate of read operations
Write Hit %	Cache hit rate of write operations
Read Xfer /sec	Data transfer rate of read operations (megabytes per second)
Write Xfer /sec	Data transfer rate of write operations (megabytes per second)
Sequential Total I/O /sec	Frequency of sequential operations (times per second)
Sequential Total Xfer /sec	Data transfer rate of sequential operations (megabytes per second)
Random Total I/O /sec	Frequency of random operations (times per second)
Random Total Xfer /sec	Data transfer rate of random operations (megabytes per second)

Filter

Item	Description	Usage
Field	LDEV Number	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions

Item	Description	Usage
		in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". *Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

LDEV Random IOPS

Overview

This report displays a line graph and table showing the frequency of random read and write operations for logical devices.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Total I/O /sec	Frequency of random operations (times per second)

Filter

Item	Description	Usage
Field	Random Total I/O /sec, LDEV Number	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". *Enter first LDEV here.*"	Records for the specified range of logical device numbers are displayed.

Item	Description	Usage
	AND LDEV Number <= "z *Enter last LDEV here.*"	
	AND Random Total I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

LDEV Random Transfer

Overview

This report displays a line graph and table showing the data transfer rate of random read and write operations for logical devices.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Total Xfer /sec	Data transfer rate of random operations (megabytes per second)

Filter

Item	Description	Usage
Field	Random Total Xfer /sec, LDEV Number	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "z *Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

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Item	Description	Usage
	AND Random Total Xfer /sec > -1.000	Records with a performance value greater than the specified value are displayed.

LDEV Read Hit %

Overview

This report displays a line graph and table showing the cache hit rate of read operations for logical devices.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Hit %	Cache hit rate of read operations

Filter

Item	Description	Usage
Field	Read Hit %, LDEV Number	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "x" OR LDEV Number = "x" OR LDEV Number = "x")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". Enter first LDEV here." AND LDEV Number <= "z Enter last LDEV here."	Records for the specified range of logical device numbers are displayed.
	AND Read Hit % > -1.000	Records with a performance value greater than the specified value are displayed.

LDEV Read IOPS

Overview

This report displays a line graph and table showing the frequency of read operations for logical devices.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O /sec	Read frequency (times per second)

Filter

Item	Description	Usage
Field	Read I/O /sec, LDEV Number	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Read I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

LDEV Read Response Time

Overview

This report displays a line graph and table showing the processing time per read request for logical devices.

Working with the Solution Set

Hitachi Tuning Manager Hardware Reports Reference

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Response Rate	Average processing time (in microseconds) per read request

Filter

Item	Description	Usage
Field	Read Response Rate, LDEV Number	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "x" OR LDEV Number = "x" OR LDEV Number = "x")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". Enter first LDEV here." AND LDEV Number <= "z Enter last LDEV here."	Records for the specified range of logical device numbers are displayed.
	AND Read Response Rate > -1.000	Records with a performance value greater than the specified value are displayed.

LDEV Read Transfer

Overview

This report displays a line graph and table showing the data transfer rate of read operations for logical devices.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Xfer /sec	Data transfer rate of read operations (megabytes per second)

Filter

Item	Description	Usage
Field	Read Xfer /sec, LDEV Number	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "x" OR LDEV Number = "x" OR LDEV Number = "x")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". *Enter first LDEV here.*" AND LDEV Number <= "z *Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Read Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

LDEV Sequential IOPS

Overview

This report displays a line graph and table showing the frequency of sequential read and write operations for logical devices.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/5. LDEV/

Working with the Solution Set

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Sequential Total I/O /sec	Frequency of sequential operations (times per second)

Filter

Item	Description	Usage
Field	Sequential Total I/O /sec, LDEV Number	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Sequential Total I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

LDEV Sequential Transfer

Overview

This report displays a line graph and table showing the data transfer rate of sequential read and write operations for logical devices.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Sequential Total Xfer /sec	Data transfer rate of sequential operations (megabytes per second)

Filter

Item	Description	Usage
Field	Sequential Total Xfer /sec, LDEV Number	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". *Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Sequential Total Xfer /sec *> -1.000*	Records with a performance value greater than the specified value are displayed.

LDEV Total Response Time

Overview

This report displays a line graph and table showing the average processing time per read and write request for logical devices.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Total Response Rate	Average processing time per read and write request (microseconds)

Filter

Item	Description	Usage
Field	Total Response Rate, LDEV Number	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "z *Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Total Response Rate > -1.000	Records with a performance value greater than the specified value are displayed.

LDEV Write IOPS

Overview

This report displays a line graph and table showing the frequency of write operations for logical devices.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Write I/O /sec	Frequency of write operations (times per second)

Filter

Item	Description	Usage
Field	Write I/O /sec, LDEV Number	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Write I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

LDEV Write Response Time

Overview

This report displays a line graph and table showing the processing time per write request for logical devices.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number

Field Name	Description
Write Response Rate	Average processing time per write request (microseconds)

Filter

Item	Description	Usage
Field	Write Response Rate, LDEV Number	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Write Response Rate > *-1.000*	Records with a performance value greater than the specified value are displayed.

LDEV Write Transfer

Overview

This report displays a line graph and table showing the data transfer rate of write operations for logical devices.

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number

Field Name	Description
Write Xfer /sec	Data transfer rate of write operations (megabytes per second)

Filter

Item	Description	Usage
Field	Write Xfer /sec, LDEV Number	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". *Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Write Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

Up to 20 LDEV Bars for Yesterday's IOPS

Overview

This report displays a maximum of 20 records, each of which has a stacked column graph and table showing the following information for logical devices for the last 24 hours:

- Frequency of random read and write operations
- Frequency of sequential read and write operations

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/5. LDEV/

Record

LDEV Summary - Extended(PI_LDE)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Read I/O /sec	Frequency of random read operations (times per second)
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)
Random Write I/O /sec	Frequency of random write operations (times per second)
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)

Filter

Item	Description	Usage
Field	Random Read I/O /sec, Random Write I/O /sec, Sequential Read I/O /sec, Sequential Write I/O /sec, LDEV Number	-
Condition expression	(Random Read I/O /sec > *1.000* OR Random Write I/O /sec > *1.000* OR Sequential Read I/O /sec > *1.000* OR Sequential Write I/O /sec > *1.000*)	Records with a performance value greater than the specified value are displayed.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

Up to 20 LDEV Bars for Yesterday's Transfer

Overview

This report displays a maximum of 20 records, each of which has a stacked column graph and table showing the following information for logical devices for the last 24 hours:

- Data transfer rate of random read and write operations
- Data transfer rate of sequential read and write operations

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/5. LDEV/

Record

LDEV Summary - Extended(PI_LDE)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)

Filter

Item	Description	Usage
Field	Random Read Xfer /sec, Random Write Xfer /sec, Sequential Read Xfer /sec, Sequential Write Xfer /sec, LDEV Number	-
Condition expression	(Random Read Xfer /sec > *1.000* OR Random Write Xfer /sec > *1.000* OR Sequential Read Xfer /sec > *1.000* OR Sequential Write Xfer /sec > *1.000*)	Records with a performance value greater than the specified value are displayed.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

HUS100/AMS2000/6. Subsystem folder

The following table lists and describes the reports stored in the `HUS100/AMS2000/6. Subsystem` folder.

Table 1-37 Agent for RAID Report (Storage Resources - HUS100/AMS2000 - 6. Subsystem)

Report Name	Displayed Information
Total Read/Write IOPS (Line) (HUS100/AMS2000 - 6. Subsystem)	Frequency of read and write operations for logical devices for the last 24 hours
Total Read/Write IOPS (Stacked) (HUS100/AMS2000 - 6. Subsystem)	Frequency of read and write operations for logical devices for the last 24 hours
Total Read/Write Transfer (Line) (HUS100/AMS2000 - 6. Subsystem)	Data transfer rate of read and write operations for logical devices for the last 24 hours
Total Read/Write Transfer (Stacked) (HUS100/AMS2000 - 6. Subsystem)	Data transfer rate of read and write operations for logical devices for the last 24 hours

Total Read/Write IOPS (Line) (HUS100/AMS2000 - 6. Subsystem)

Overview

This report displays a line graph showing the frequency of read and write operations for logical devices for the last 24 hours, and displays a table showing the following information:

- Frequency and data transfer rate of read and write operations
- Read cache hit rate

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/6. Subsystem/

Record

Logical Device Aggregation(PI_LDA)

Fields

Field Name	Description
Read Xfer /sec	Data transfer rate for logical device read operations (megabytes per second) summarized for the entire storage system
Read I/O /sec	Read frequency for the logical device (times per second) summarized for the entire storage system
Read Hit %	Read cache hit rate for the logical device summarized for the entire storage system

Field Name	Description
Write Xfer /sec	Data transfer rate for logical device write operations (megabytes per second) summarized for the entire storage system
Write I/O /sec	Write frequency for the logical device (times per second) summarized for the entire storage system

Total Read/Write IOPS (Stacked) (HUS100/AMS2000 - 6. Subsystem)

Overview

This report displays a stacked area graph showing the frequency of read and write operations for logical devices for the last 24 hours, and displays a table showing the following information:

- Frequency and data transfer rate of read and write operations
- Read cache hit rate

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/6. Subsystem/

Record

Logical Device Aggregation(PI_LDA)

Fields

Field Name	Description
Read Xfer /sec	Data transfer rate for logical device read operations (megabytes per second) summarized for the entire storage system
Read I/O /sec	Read frequency for the logical device (times per second) summarized for the entire storage system
Read Hit %	Read cache hit rate for the logical device summarized for the entire storage system
Write Xfer /sec	Data transfer rate for logical device write operations (megabytes per second) summarized for the entire storage system
Write I/O /sec	Write frequency for the logical device (times per second) summarized for the entire storage system

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Total Read/Write Transfer (Line) (HUS100/AMS2000 - 6. Subsystem)

Overview

This report displays a line graph showing the data transfer rate of read and write operations for logical devices for the last 24 hours, and displays a table showing the following information:

- Frequency and data transfer rate of read and write operations
- Read cache hit rate

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/6. Subsystem/

Record

Logical Device Aggregation(PI_LDA)

Fields

Field Name	Description
Read Xfer /sec	Data transfer rate for logical device read operations (megabytes per second) summarized for the entire storage system
Read I/O /sec	Read frequency for the logical device (times per second) summarized for the entire storage system
Read Hit %	Read cache hit rate for the logical device summarized for the entire storage system
Write Xfer /sec	Data transfer rate for logical device write operations (megabytes per second) summarized for the entire storage system
Write I/O /sec	Write frequency for the logical device (times per second) summarized for the entire storage system

Total Read/Write Transfer (Stacked) (HUS100/AMS2000 - 6. Subsystem)

Overview

This report displays a stacked area graph showing the data transfer rate of read and write operations for logical devices for the last 24 hours, and displays a table showing the following information:

- Frequency and data transfer rate of read and write operations
- Read cache hit rate

This report cannot be used if the monitored storage system is an enterprise storage system.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/6. Subsystem/

Record

Logical Device Aggregation(PI_LDA)

Fields

Field Name	Description
Read Xfer /sec	Data transfer rate for logical device read operations (megabytes per second) summarized for the entire storage system
Read I/O /sec	Read frequency for the logical device (times per second) summarized for the entire storage system
Read Hit %	Read cache hit rate for the logical device summarized for the entire storage system
Write Xfer /sec	Data transfer rate for logical device write operations (megabytes per second) summarized for the entire storage system
Write I/O /sec	Write frequency for the logical device (times per second) summarized for the entire storage system

HUS100/AMS2000/7. HDP folder

The following table lists and describes the reports stored in the `HUS100/ AMS2000/7. HDP` folder.

Reports with a name beginning with `Pool` can be used only when the monitored storage system contains a Dynamic Provisioning pool. Reports with a name beginning with `Tier` can be used only when the monitored storage system contains a Dynamic Provisioning pool that has tier management enabled.

Table 1-38 Agent for RAID Report (Storage Resources - HUS100/AMS2000 - 7. HDP)

Report Name	Displayed Information
Pool Read IOPS(HUS100/AMS2000 - 7. HDP)	Frequency of read operations for Dynamic Provisioning pools for the last 24 hours
Pool Read Response Times(HUS100/ AMS2000 - 7. HDP)	Average processing time per read request for Dynamic Provisioning pools for the last 24 hours

Report Name	Displayed Information
Pool Space Usage % (HUS100/AMS2000 - 7. HDP)	Usage rate of the Dynamic Provisioning pool capacity for the last month
Pool Write IOPS(HUS100/AMS2000 - 7. HDP)	Frequency of write operations for Dynamic Provisioning pools for the last 24 hours
Pool Write Response Times(HUS100/AMS2000 - 7. HDP)	Average processing time per write request for Dynamic Provisioning pools for the last 24 hours
Tier IOPS Usage % from Monitor(HUS100/AMS2000 - 7. HDP)	Activity rate for the last month for each tier type of a Dynamic Provisioning pool that has tier management enabled
Tier Pages Demoted(HUS100/AMS2000 - 7. HDP)	Number of pages that have been moved from a tier to a lower tier in the last month for Dynamic Provisioning pools that have tier management enabled
Tier Pages Promoted(HUS100/AMS2000 - 7. HDP)	Number of pages that have been moved from a tier to a higher tier in the last month for Dynamic Provisioning pools that have tier management enabled
Tier Pages Relocation Status(HUS100/AMS2000 - 7. HDP)	Number of pages that have been moved by tier relocation in the last month for Dynamic Provisioning pools that have tier management enabled
Tier Space Usage %(HUS100/AMS2000 - 7. HDP)	Space usage for the last month for each tier type of a Dynamic Provisioning pool that has tier management enabled
Tier Space Usage % by DP-VOL(HUS100/AMS2000 - 7. HDP)	Space usage for each tier type of a Dynamic Provisioning V-VOL that has tier management enabled

Pool Read IOPS (HUS100/AMS2000 - 7. HDP)

Overview

This report displays a table and line graph showing the frequency of read operations for Dynamic Provisioning pools for the last 24 hours.

Note that this report is not supported if the monitored storage system is a Hitachi SMS series, Hitachi AMS/WMS series storage system, or enterprise storage systems.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/7. HDP/

Record

Pool Summary(PI_PLS)

Fields

Field Name	Description
Pool ID	ID of the pool
Read I/O /sec	Read frequency of the virtual volumes mapped to the Dynamic Provisioning pool (times per second)
Read Response Rate	Average processing time (in microseconds) per read request for the V-VOLs mapped to the Dynamic Provisioning pool
Write I/O /sec	Write frequency of the virtual volumes mapped to the Dynamic Provisioning pool (times per second)
Write Response Rate	Average processing time (in microseconds) per write request for the V-VOLs mapped to the Dynamic Provisioning pool

Filter

Item	Description	Usage
Field	Pool ID, Read I/O /sec	-
Condition expression	(Pool ID = "*" OR Pool ID = "x" OR Pool ID = "x" OR Pool ID = "x")	A maximum of four records for the specified pool ID are displayed. Be sure to use the condition expressions in the order shown on the left to specify a pool ID.
	AND Pool ID >= ". Enter first pool ID here." AND Pool ID <= "z Enter last pool ID here."	Records for the specified range of pool IDs are displayed.
	AND Read I/O /sec > -1.000	Records with a performance value greater than the specified value are displayed.

Pool Read Response Times (HUS100/AMS2000 - 7. HDP)

Overview

This report displays a line graph showing the average processing time per read request for Dynamic Provisioning pools for the last 24 hours. This report also displays a table showing the average processing time per read and write request for pools.

Note that this report is not supported if the monitored storage system is a Hitachi SMS series, Hitachi AMS/WMS series storage system, or enterprise storage systems.

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Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/7. HDP/

Record

Pool Summary(PI_PLS)

Fields

Field Name	Description
Pool ID	ID of the pool
Read I/O /sec	Read frequency of the virtual volumes mapped to the Dynamic Provisioning pool (times per second)
Read Response Rate	Average processing time (in microseconds) per read request for the V-VOLs mapped to the Dynamic Provisioning pool
Write I/O /sec	Write frequency of the virtual volumes mapped to the Dynamic Provisioning pool (times per second)
Write Response Rate	Average processing time (in microseconds) per write request for the V-VOLs mapped to the Dynamic Provisioning pool

Filter

Item	Description	Usage
Field	Pool ID, Read Response Rate	-
Condition expression	(Pool ID = "*" OR Pool ID = "x" OR Pool ID = "x" OR Pool ID = "x")	A maximum of four records for the specified pool ID are displayed. Be sure to use the condition expressions in the order shown on the left to specify a pool ID.
	AND Pool ID >= ". Enter first pool ID here." AND Pool ID <= "z Enter last pool ID here."	Records for the specified range of pool IDs are displayed.
	AND Read Response Rate > -1.000	Records with a performance value greater than the specified value are displayed.

Pool Space Usage % (HUS100/AMS2000 - 7. HDP)

Overview

This report displays a line graph showing the usage rate of the Dynamic Provisioning pool capacity for the last month, and displays a table showing pool capacity and configuration information.

Note that this report is not supported if the monitored storage system is a Hitachi SMS series, Hitachi AMS/WMS series storage system, or enterprise storage systems.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/7. HDP/

Record

Pool Configuration(PD_PLC)

Fields

Field Name	Description
Pool ID	ID of the pool
Free Capacity	The amount of unused capacity in the pool (GB)
Used Capacity	Size of the used capacity of the pool (GB)
Total Actual Capacity	Actual capacity of the pool (GB)
Usage %	Usage rate of the pool capacity
Total Managed Capacity	Virtual capacity of all Dynamic Provisioning V-VOLs mapped to the pool (GB)
Virtual Volume Count	Number of Dynamic Provisioning V-VOLs mapped to the pool
Pool Volume Count	Number of parity groups that make up the pool

Filter

Item	Description	Usage
Field	Pool ID, Usage %	-
Condition expression	(Pool ID = "*" OR Pool ID = "*x*" OR Pool ID = "*x*" OR Pool ID = "*x*")	A maximum of four records for the specified pool ID are displayed. Be sure to use the condition expressions in the order shown on the left to specify a pool ID.

Item	Description	Usage
	AND Pool ID >= ". *Enter first Pool ID here.*" AND Pool ID <= "z *Enter last Pool ID here.*"	Records for the specified range of pool IDs are displayed.
	AND Usage % > *-1.000*	Records with a performance value greater than the specified value are displayed.

Pool Write IOPS (HUS100/AMS2000 - 7. HDP)

Overview

This report displays a table and line graph showing the frequency of write operations for Dynamic Provisioning pools for the last 24 hours.

Note that this report is not supported if the monitored storage system is a Hitachi SMS series, Hitachi AMS/WMS series storage system, or enterprise storage systems.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/7. HDP/

Record

Pool Summary(PI_PLS)

Fields

Field Name	Description
Pool ID	ID of the pool
Read I/O /sec	Read frequency of the virtual volumes mapped to the Dynamic Provisioning pool (times per second)
Read Response Rate	Average processing time (in microseconds) per read request for the V-VOLs mapped to the Dynamic Provisioning pool
Write I/O /sec	Write frequency of the virtual volumes mapped to the Dynamic Provisioning pool (times per second)
Write Response Rate	Average processing time (in microseconds) per write request for the V-VOLs mapped to the Dynamic Provisioning pool

Filter

Item	Description	Usage
Field	Pool ID, Write I/O /sec	-
Condition expression	(Pool ID = "*" OR Pool ID = "*x*" OR Pool ID = "*x*" OR Pool ID = "*x*")	A maximum of four records for the specified pool ID are displayed. Be sure to use the condition expressions in the order shown on the left to specify a pool ID.
	AND Pool ID >= ". *Enter first pool ID here.*" AND Pool ID <= "*z Enter last pool ID here.*"	Records for the specified range of pool IDs are displayed.
	AND Write I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

Pool Write Response Times (HUS100/AMS2000 - 7. HDP)

Overview

This report displays a line graph showing the average processing time per write request for Dynamic Provisioning pools for the last 24 hours, and displays a table showing the average processing time per read and write request for pools.

Note that this report is not supported if the monitored storage system is a Hitachi SMS series, Hitachi AMS/WMS series storage system, or enterprise storage systems.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/7. HDP/

Record

Pool Summary(PI_PLS)

Fields

Field Name	Description
Pool ID	ID of the pool
Read I/O /sec	Read frequency of the virtual volumes mapped to the Dynamic Provisioning pool (times per second)
Read Response Rate	Average processing time (in microseconds) per read request for the V-VOLs mapped to the Dynamic Provisioning pool

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Field Name	Description
Write I/O /sec	Write frequency of the virtual volumes mapped to the Dynamic Provisioning pool (times per second)
Write Response Rate	Average processing time (in microseconds) per write request for the V-VOLs mapped to the Dynamic Provisioning pool

Filter

Item	Description	Usage
Field	Pool ID, Write Response Rate	-
Condition expression	(Pool ID = "*" OR Pool ID = "x" OR Pool ID = "x" OR Pool ID = "x")	A maximum of four records for the specified pool ID are displayed. Be sure to use the condition expressions in the order shown on the left to specify a pool ID.
	AND Pool ID >= "*. Enter first pool ID here." AND Pool ID <= "z Enter last pool ID here."	Records for the specified range of pool IDs are displayed.
	AND Write Response Rate > -1.000	Records with a performance value greater than the specified value are displayed.

Tier IOPS Usage % from Monitor (HUS100/AMS2000 - 7. HDP)

Overview

This report displays a table and line graph showing the activity rate by tier type for the last month for Dynamic Provisioning pools that have tier management enabled.

Note that this report is not supported if the monitored storage system is a Hitachi SMS series, a Hitachi AMS2000 series, Hitachi AMS/WMS series storage system, or enterprise storage systems.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/7. HDP/

Record

Pool Tier Type Operation Status(PD_PLTS)

Fields

Field Name	Description
Pool ID	ID of the pool
Tier Number	Number of the tier
Tier Type	Tier type
Avg IOPS Utilization %	Tier activity rate (%)

Filter

Item	Description	Usage
Field	Pool ID, Tier Number, Avg IOPS Utilization %	-
Condition expression	(Pool ID = "*" OR Pool ID = "*x*" OR Pool ID = "*x*" OR Pool ID = "*x*")	A maximum of four records for the specified pool ID are displayed. Be sure to use the condition expressions in the order shown on the left to specify a pool ID.
	AND Pool ID >= "*. Enter first pool ID here.*" AND Pool ID <= "*z Enter last pool ID here.*"	Records for the specified range of pool IDs are displayed.
	AND Tier Number = "*"	Records for the specified tier number are displayed.
	AND Avg IOPS Utilization % > *-1.000*	Records with a performance value greater than the specified value are displayed.

Tier Pages Demoted (HUS100/AMS2000 - 7. HDP)

Overview

This report displays a line graph and table showing the number of pages moved from tiers to lower-level tiers in the last month in Dynamic Provisioning pools that have tier management enabled.

Note that this report is not supported if the monitored storage system is a Hitachi SMS series, a Hitachi AMS2000 series, Hitachi AMS/WMS series storage system, or enterprise storage systems.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/7. HDP/

Record

Pool Tier Page Relocation(PD_PLTR)

Fields

Field Name	Description
Pool ID	ID of the pool
Tier Number	Number of the tier
Tier Type	Type of the tier
Demoted Pages	Number of pages moved to lower-level tiers
Promoted Pages	Number of pages moved to higher-level tiers

Filter

Item	Description	Usage
Field	Pool ID, Tier Number, Demoted Pages	-
Condition expression	(Pool ID = "*" OR Pool ID = "x" OR Pool ID = "x" OR Pool ID = "x")	A maximum of four records for the specified pool ID are displayed. Be sure to use the condition expressions in the order shown on the left to specify a pool ID.
	AND Pool ID >= "*. *Enter first pool ID here.*" AND Pool ID <= "*z Enter last pool ID here.*"	Records for the specified range of pool IDs are displayed.
	AND Tier Number = "*"	Records for the specified tier number are displayed.
	AND Demoted Pages >= *0*	Records with a performance value greater than or equal to the specified value are displayed.

Tier Pages Promoted (HUS100/AMS2000 - 7. HDP)

Overview

This report displays a line graph and table showing the number of pages moved from tiers to higher-level tiers in the last month in Dynamic Provisioning pools that have tier management enabled.

Note that this report is not supported if the monitored storage system is a Hitachi SMS series, a Hitachi AMS2000 series, Hitachi AMS/WMS series storage system, or enterprise storage systems.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/7. HDP/

Record

Pool Tier Page Relocation(PD_PLTR)

Fields

Field Name	Description
Pool ID	ID of the pool
Tier Number	Number of the tier
Tier Type	Type of the tier
Demoted Pages	Number of pages moved to lower-level tiers
Promoted Pages	Number of pages moved to higher-level tiers

Filter

Item	Description	Usage
Field	Pool ID, Tier Number, Promoted Pages	-
Condition expression	(Pool ID = "*" OR Pool ID = "x" OR Pool ID = "x" OR Pool ID = "x")	A maximum of four records for the specified pool ID are displayed. Be sure to use the condition expressions in the order shown on the left to specify a pool ID.
	AND Pool ID >= ". Enter first pool ID here." AND Pool ID <= "z Enter last pool ID here."	Records for the specified range of pool IDs are displayed.
	AND Tier Number = "*"	Records for the specified tier number are displayed.
	AND Promoted Pages >= 0	Records with a performance value greater than or equal to the specified value are displayed.

Tier Pages Relocation Status (HUS100/AMS2000 - 7. HDP)

Overview

This report displays a line graph and table showing the number of pages moved by tier relocation in the last month in Dynamic Provisioning pools that have tier management enabled.

Note that this report is not supported if the monitored storage system is a Hitachi SMS series, a Hitachi AMS2000 series, Hitachi AMS/WMS series storage system, or enterprise storage systems.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/7. HDP/

Record

Pool Page Relocation(PD_PLR)

Fields

Field Name	Description
Pool ID	ID of the pool
Progress %	Progress of tier relocation (%)
Moved Pages	Number of pages moved by tier relocation

Filter

Item	Description	Usage
Field	Pool ID, Moved Pages	-
Condition expression	(Pool ID = "*" OR Pool ID = "*x*" OR Pool ID = "*x*" OR Pool ID = "*x*")	A maximum of four records for the specified pool ID are displayed. Be sure to use the condition expressions in the order shown on the left to specify a pool ID.
	AND Pool ID >= ". *Enter first pool ID here.*" AND Pool ID <= "z *Enter last pool ID here.*"	Records for the specified range of pool IDs are displayed.
	AND Moved Pages >= *0*	Records with a performance value greater than or equal to the specified value are displayed.

Tier Space Usage % (HUS100/AMS2000 - 7. HDP)

Overview

For Dynamic Provisioning pools that have tier management enabled, this report displays a line graph showing the usage rate of the pool capacity by tier type for the last month. This report also displays a table showing the pool capacity and configuration information by tier type.

Note that this report is not supported if the monitored storage system is a Hitachi SMS series, a Hitachi AMS2000 series, Hitachi AMS/WMS series storage system, or enterprise storage systems.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/7. HDP/

Record

Pool Tier Type Configuration(PD_PLTC)

Fields

Field Name	Description
Pool ID	ID of the pool
Tier Number	Number of the tier
Tier Type	Type of the tier
Free Capacity	The amount of unused capacity in the tier (GB)
Used Capacity	Size of the used capacity of the tier (GB)
Total Capacity	Actual capacity of the tier (GB)
Usage % in Pool	Of the total actual capacity of a Dynamic Provisioning pool that has tier management enabled, the percentage of capacity used by the tier
Usage % in Tier	Of the total actual capacity of the tier, the percentage of used capacity

Filter

Item	Description	Usage
Field	Pool ID, Tier Number, Usage % in Tier	-
Condition expression	(Pool ID = "*" OR Pool ID = "x" OR Pool ID = "x"	A maximum of four records for the specified pool ID are displayed. Be sure to use the condition expressions in the

Item	Description	Usage
	OR Pool ID = "*x*")	order shown on the left to specify a pool ID.
	AND Pool ID >= ". *Enter first pool ID here.*" AND Pool ID <= "*z Enter last pool ID here.*"	Records for the specified range of pool IDs are displayed.
	AND Tier Number = "***"	Records for the specified tier number are displayed.
	AND Usage % in Tier > *-1.000*	Records with a performance value greater than the specified value are displayed.

Tier Space Usage % by DP-VOL (HUS100/AMS2000 - 7. HDP)

Overview

For Dynamic Provisioning V-VOLs that have tier management enabled, this report displays a line graph showing the usage rate of the V-VOL capacity by tier type for the last month. This report also displays a table showing the size and percentage of the used capacity of the V-VOL by tier type.

Note that this report is not supported if the monitored storage system is a Hitachi SMS series, a Hitachi AMS2000 series, Hitachi AMS/WMS series storage system, or enterprise storage systems.

Storage Location

Reports/RAID/Storage Resources/HUS100/AMS2000/7. HDP/

Record

V-VOL Tier Type Configuration(PD_VVTC)

Fields

Field Name	Description
LDEV Number	Logical device number of the V-VOL
Pool ID	ID of the pool
Tier Number	Number of the tier
Tier Type	Type of the tier
Used Capacity	Of the virtual capacity of the V-VOL, the size (in MB) of the actual capacity used by the tier
Usage %	Of the virtual capacity of the V-VOL, the percentage of the actual capacity used by

Field Name	Description
	the tier (that is, the percentage of the used capacity of the V-VOL)

Filter

Item	Description	Usage
Field	LDEV Number, Tier Number, Usage %	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV Number here.*" AND LDEV Number <= "*z Enter last LDEV Number here.*"	Records for the specified range of logical device numbers are displayed.
	AND Tier Number = "*"	Records for the specified tier number are displayed.
	AND Usage % > -1.000	Records with a performance value greater than the specified value are displayed.

VSP G1000/VSP/HUS VM folder

This folder remains when you perform a version upgrade installation where the version before the upgrade is v8.0.1 or later and earlier than v8.1.3. The individual reports stored in the VSP G1000/VSP/HUS VM folder are the same as those stored in the VSP G1000/VSP/VSP Gx00 Fx00 folder.

For details about the individual reports stored in the VSP G1000/VSP/HUS VM folder, see the detailed information for each report stored in the VSP G1000/VSP/VSP Gx00 Fx00 folder. The following table shows the reference for each report.

Table 1-39 Names of corresponding folders after a version upgrade installation

Folder existing from v8.0.1 to earlier than v8.1.3	Folder created in v8.4 or later	
VSP G1000/VSP/HUS VM/1. Cache	VSP G1000/VSP/VSP Gx00 Fx00/1. Cache	VSP G1000/VSP/VSP Gx00 Fx00/1. Cache folder on page 1-381

Folder existing from v8.0.1 to earlier than v8.1.3	Folder created in v8.4 or later	
VSP G1000/VSP/HUS VM/2. Front End Port	VSP G1000/VSP/VSP Gx00 Fx00/2. Front End Port	VSP G1000/VSP/VSP Gx00 Fx00/2. Front End Port folder on page 1-384
VSP G1000/VSP/HUS VM/3. Processor	VSP G1000/VSP/VSP Gx00 Fx00/3. Processor	VSP G1000/VSP/VSP Gx00 Fx00/3. Processor folder on page 1-390
VSP G1000/VSP/HUS VM/4. Parity Group	VSP G1000/VSP/VSP Gx00 Fx00/4. Parity Group	VSP G1000/VSP/VSP Gx00 Fx00/4. Parity Group folder on page 1-394
VSP G1000/VSP/HUS VM/5. LDEV	VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV	VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV folder on page 1-406
VSP G1000/VSP/HUS VM/5. LDEV/CU 40-7F	VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F	VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F folder on page 1-426
VSP G1000/VSP/HUS VM/5. LDEV/CU 80-BF	VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF	VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF folder on page 1-447
VSP G1000/VSP/HUS VM/5. LDEV/CU C0-FF	VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF	VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF folder on page 1-468
VSP G1000/VSP/HUS VM/6. Subsystem	VSP G1000/VSP/VSP Gx00 Fx00/6. Subsystem	VSP G1000/VSP/VSP Gx00 Fx00/6. Subsystem folder on page 1-489
VSP G1000/VSP/HUS VM/7. HDP/HDT	VSP G1000/VSP/VSP Gx00 Fx00/7. HDP/HDT	VSP G1000/VSP/VSP Gx00 Fx00/7. HDP/HDT folder on page 1-494

Folder existing from v8.0.1 to earlier than v8.1.3	Folder created in v8.4 or later	
VSP G1000/VSP/HUS VM/8. TC/HUR	VSP G1000/VSP/VSP Gx00 Fx00/8. TC/HUR	VSP G1000/VSP/VSP Gx00 Fx00/8. TC/HUR folder on page 1-511

VSP G1000/VSP/VSP Gx00 folder

This folder remains when you perform a version upgrade installation where the version before the upgrade is v8.1.3 or later and earlier than v8.4 The individual reports stored in the VSP G1000/VSP/VSP Gx00 folder are the same as those stored in the VSP G1000/VSP/VSP Gx00 Fx00 folder.

For details about the individual reports stored in the VSP G1000/VSP/VSP Gx00 folder, see the detailed information for each report stored in the VSP G1000/VSP/VSP Gx00 Fx00 folder. The following table shows the reference for each report.

Table 1-40 Names of corresponding folders after a version upgrade installation

Folder existing from v8.1.3 to earlier than v8.4	Folder created in v8.4 or later	
VSP G1000/VSP/VSP Gx00/1. Cache	VSP G1000/VSP/VSP Gx00 Fx00/1. Cache	VSP G1000/VSP/VSP Gx00 Fx00/1. Cache folder on page 1-381
VSP G1000/VSP/VSP Gx00/2. Front End Port	VSP G1000/VSP/VSP Gx00 Fx00/2. Front End Port	VSP G1000/VSP/VSP Gx00 Fx00/2. Front End Port folder on page 1-384
VSP G1000/VSP/VSP Gx00/3. Processor	VSP G1000/VSP/VSP Gx00 Fx00/3. Processor	VSP G1000/VSP/VSP Gx00 Fx00/3. Processor folder on page 1-390
VSP G1000/VSP/VSP Gx00/4. Parity Group	VSP G1000/VSP/VSP Gx00 Fx00/4. Parity Group	VSP G1000/VSP/VSP Gx00 Fx00/4. Parity Group folder on page 1-394
VSP G1000/VSP/VSP Gx00/5. LDEV	VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV	VSP G1000/VSP/VSP Gx00 Fx00/5.

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Folder existing from v8.1.3 to earlier than v8.4	Folder created in v8.4 or later	
		LDEV folder on page 1-406
VSP G1000/VSP/VSP Gx00/5. LDEV/CU 40-7F	VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F	VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F folder on page 1-426
VSP G1000/VSP/VSP Gx00/5. LDEV/CU 80-BF	VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF	VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF folder on page 1-447
VSP G1000/VSP/VSP Gx00/5. LDEV/CU C0-FF	VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF	VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF folder on page 1-468
VSP G1000/VSP/VSP Gx00/6. Subsystem	VSP G1000/VSP/VSP Gx00 Fx00/6. Subsystem	VSP G1000/VSP/VSP Gx00 Fx00/6. Subsystem folder on page 1-489
VSP G1000/VSP/VSP Gx00/7. HDP/HDT	VSP G1000/VSP/VSP Gx00 Fx00/7. HDP/HDT	VSP G1000/VSP/VSP Gx00 Fx00/7. HDP/HDT folder on page 1-494
VSP G1000/VSP/VSP Gx00/8. TC/HUR	VSP G1000/VSP/VSP Gx00 Fx00/8. TC/HUR	VSP G1000/VSP/VSP Gx00 Fx00/8. TC/HUR folder on page 1-511

VSP G1000/VSP/VSP Gx00 Fx00/1. Cache folder

The following table lists and describes the reports stored in the `VSP G1000/VSP/VSP Gx00 Fx00/1. Cache` folder.

Table 1-41 Agent for RAID Report (Storage Resources - VSP G1000/VSP/VSP Gx00 Fx00 - 1. Cache)

Report Name	Displayed Information
Cache Read Hit % (VSP G1000/VSP/VSP Gx00 Fx00 - 1. Cache)	Read cache hit rate for the entire storage system

Report Name	Displayed Information
Cache Usage % (VSP G1000/VSP/VSP Gx00 Fx00 - 1. Cache)	Usage rate of cache memory allocated for the CLPR
Max Write Pending Usage % (VSP G1000/VSP/VSP Gx00 Fx00 - 1. Cache)	Of the cache memory allocated for the CLPR, the maximum percentage that is being used by write-pending data
Write Pending Usage % (VSP G1000/VSP/VSP Gx00 Fx00 - 1. Cache)	Of the cache memory allocated for the CLPR in the last 24 hours, the percentage that is being used by write-pending data for the last 24 hours

Cache Read Hit % (VSP G1000/VSP/VSP Gx00 Fx00 - 1. Cache)

Overview

This report displays a table and line graph showing the read cache hit rate for the entire storage system.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/1. Cache/

Record

Logical Device Aggregation(PI_LDA)

Fields

Field Name	Description
Read Hit %	Read cache hit rate for the logical device summarized for the entire storage system

Cache Usage % (VSP G1000/VSP/VSP Gx00 Fx00 - 1. Cache)

Overview

This report displays a table and line graph showing the usage rate of cache memory allocated for the CLPR.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/1. Cache/

Record

CLPR Summary(PI_CLPS)

Fields

Field Name	Description
Cache Memory Usage %	Amount of cache memory allocated for this CLPR that is being used

Max Write Pending Usage % (VSP G1000/VSP/VSP Gx00 Fx00 - 1. Cache)

Overview

This report displays a table and line graph showing the maximum percentage of cache memory allocated for the CLPR and being used by write-pending data,

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/1. Cache/

Record

CLPR Summary(PI_CLPS)

Fields

Field Name	Description
Max Cache Write Pending Usage %	Of the cache memory allocated for this CLPR, the percentage that is being used by write-pending data. Note: If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.

Write Pending Usage % (VSP G1000/VSP/VSP Gx00 Fx00 - 1. Cache)

Overview

This report displays a table and line graph showing the percentage of cache memory allocated for the CLPR in the last 24 hours and being used by write-pending data.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/1. Cache/

Record

CLPR Summary(PI_CLPS)

Fields

Field Name	Description
CLPR Number	CLPR number
Cache Write Pending Usage %	Of the cache memory allocated for this CLPR, the percentage that is being used by write-pending data
Cache Side File Usage %	Of the cache memory allocated for this CLPR, the percentage that is being used by the side file
Max Cache Write Pending Usage %	Of the cache memory allocated for this CLPR, the percentage that is being used by write-pending data. Note: If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.
Max Cache Side File Usage %	Of the cache memory allocated for this CLPR, the percentage that is being used by the side file. Note: If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.

VSP G1000/VSP/VSP Gx00 Fx00/2. Front End Port folder

The following table lists and describes the reports stored in the `VSP G1000/VSP/VSP Gx00 Fx00/2. Front End Port` folder.

Table 1-42 Agent for RAID Report (Storage Resources - VSP G1000/VSP/VSP Gx00 Fx00 - 2. Front End Port)

Report Name	Displayed Information
Port Avg IOPS (VSP G1000/VSP/VSP Gx00 Fx00 - 2. Front End Port)	Average frequency of read and write operations for storage system ports
Port Avg Transfer (VSP G1000/VSP/VSP Gx00 Fx00 - 2. Front End Port)	Average data transfer rate of read and write operations for storage system ports

Report Name	Displayed Information
Port Configuration (Tabular) (VSP G1000/VSP/VSP Gx00 Fx00 - 2. Front End Port)	Configuration information for storage system ports
Port Max IOPS (VSP G1000/VSP/VSP Gx00 Fx00 - 2. Front End Port)	Maximum frequency of read and write operations for storage system ports
Port Max Transfer (VSP G1000/VSP/VSP Gx00 Fx00 - 2. Front End Port)	Maximum data transfer rate of read and write operations for storage system ports

Port Avg IOPS (VSP G1000/VSP/VSP Gx00 Fx00 - 2. Front End Port)

Overview

This report displays a line graph showing the average frequency of read and write operations for storage system ports, and displays a table showing the average and maximum frequency of read and write operations.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/2. Front End Port/

Record

Port Summary(PI_PTS)

Fields

Field Name	Description
Port Name	Port name of the storage system
Max I/O /sec	Storage system port operation maximum read and write frequency (times per second)
Avg I/O /sec	Average read and write frequency (times per second) for storage system ports

Filter

Item	Description	Usage
Field	Port Name, Avg I/O /sec	-
Condition expression	(Port Name = "*" OR Port Name = "x"	A maximum of four records for the specified port name are

Item	Description	Usage
	OR Port Name = "*x*" OR Port Name = "*x*")	displayed. Be sure to use the condition expressions in the order shown on the left to specify a port name.
	AND Port Name >= ".*Enter first port name here.*" AND Port Name <= "*z Enter last port name here.*"	Records for the specified range of port names are displayed.
	AND Avg I/O /sec > -1.000	Records with a performance value greater than the specified value are displayed.

Port Avg Transfer (VSP G1000/VSP/VSP Gx00 Fx00 - 2. Front End Port)

Overview

This report displays a line graph showing the average data transfer rate of read and write operations for storage system ports. This report also displays a table showing the maximum frequency, average data transfer rate, and maximum data transfer rate of read and write operations.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/2. Front End Port/

Record

Port Summary(PI_PTS)

Fields

Field Name	Description
Port Name	Port name of the storage system
Max I/O /sec	Storage system port operation maximum read and write frequency (times per second)
Max Xfer /sec	Maximum data transfer rate for storage system port read and write operations (megabytes per second)
Avg Xfer /sec	Average read and write data transfer rate (megabytes per second) for storage system ports

Filter

Item	Description	Usage
Field	Port Name, Avg Xfer /sec	-
Condition expression	(Port Name = "*" OR Port Name = "*x*" OR Port Name = "*x*" OR Port Name = "*x*")	A maximum of four records for the specified port name are displayed. Be sure to use the condition expressions in the order shown on the left to specify a port name.
	AND Port Name >= "*. Enter first port name here.*" AND Port Name <= "*z Enter last port name here.*"	Records for the specified range of port names are displayed.
	AND Avg Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

Port Configuration (Tabular) (VSP G1000/VSP/VSP Gx00 Fx00 - 2. Front End Port)

Overview

This report displays a table showing the configuration information for storage system ports.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/2. Front End Port/

Record

Port Configuration(PD_PTC)

Fields

Field Name	Description
Port Name	Port name of the storage system
Port Number	Port number of the storage system
Port Role	Role assigned to the storage system port
Port WWN	WWN of the storage system port

Port Max IOPS (VSP G1000/VSP/VSP Gx00 Fx00 - 2. Front End Port)

Overview

This report displays a line graph showing the maximum frequency of read and write operations for storage system ports, and displays a table showing the average and maximum frequency of read and write operations.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/2. Front End Port/

Record

Port Summary(PI_PTS)

Fields

Field Name	Description
Port Name	Port name of the storage system
Max I/O /sec	Storage system port operation maximum read and write frequency (times per second)
Avg I/O /sec	Average read and write frequency (times per second) for storage system ports

Filter

Item	Description	Usage
Field	Port Name, Max I/O /sec	-
Condition expression	(Port Name = "*" OR Port Name = "x" OR Port Name = "x" OR Port Name = "x")	A maximum of four records for the specified port name are displayed. Be sure to use the condition expressions in the order shown on the left to specify a port name.
	AND Port Name >= "*. *Enter first port name here.*" AND Port Name <= "z *Enter last port name here.*"	Records for the specified range of port names are displayed.
	AND Max I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

Port Max Transfer (VSP G1000/VSP/VSP Gx00 Fx00 - 2. Front End Port)

Overview

This report displays a line graph showing the maximum data transfer rate of read and write operations for storage system ports. This report also displays a table showing the maximum frequency, average data transfer rate, and maximum data transfer rate of read and write operations.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/2. Front End Port/

Record

Port Summary(PI_PTS)

Fields

Field Name	Description
Port Name	Port name of the storage system
Max I/O /sec	Storage system port operation maximum read and write frequency (times per second)
Max Xfer /sec	Maximum data transfer rate for storage system port read and write operations (megabytes per second)
Avg Xfer /sec	Average read and write data transfer rate (megabytes per second) for storage system ports

Filter

Item	Description	Usage
Field	Port Name, Max Xfer /sec	-
Condition expression	(Port Name = "*" OR Port Name = "*x*" OR Port Name = "*x*" OR Port Name = "*x*")	A maximum of four records for the specified port name are displayed. Be sure to use the condition expressions in the order shown on the left to specify a port name.
	AND Port Name >= "*. Enter first port name here.*"	Records for the specified range of port names are displayed.

Item	Description	Usage
	AND Port Name <= "*z Enter last port name here.*"	
	AND Max Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

VSP G1000/VSP/VSP Gx00 Fx00/3. Processor folder

The following table lists and describes the reports stored in the `VSP G1000/VSP/VSP Gx00 Fx00/3. Processor` folder.

Table 1-43 Agent for RAID Report (Storage Resources - VSP G1000/VSP/VSP Gx00 Fx00 - 3. Processor)

Report Name	Displayed Information
USP(V) BE Processor Busy %	Maximum usage rate in the last 24 hours of a processor (DKP) installed in the storage system
USP(V) FE Processor Busy %	Maximum usage rate in the last 24 hours of a processor (CHP) installed in the storage system
VSD Busy % by MPB	Maximum usage rate in the last 24 hours of a processor (MP Blade) installed in the storage system
VSD Busy % by Processor ID	Maximum usage rate in the last 24 hours of a processor installed in the storage system

USP(V) BE Processor Busy %

Overview

This report displays a line graph showing the maximum usage rate of a processor installed in the storage system for the last 24 hours. This report also displays a table showing the usage rate of the processor and the maximum usage rate of the processor.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/3. Processor/

Record

Processor Summary(PI_PRCS)

Fields

Field Name	Description
Adaptor ID	Character string that identifies the disk controller, channel adapter, or MP Blade
Processor ID	Character string that identifies the processor
Processor Busy %	Processor utilization
Max Processor Busy %	Usage rate of the processor. Note: If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.

Filter

Item	Description	Usage
Field	Processor Type, Max Processor Busy %, Processor ID, Adaptor ID	-
Condition expression	Processor Type = "DKP"	This item cannot be specified.
	AND Max Processor Busy % > *-1.000*	Records with a performance value greater than the specified value are displayed.
	AND Processor ID = "*"	Records for the specified processor ID are displayed.
	AND Adaptor ID = "*"	Records for the specified adapter ID are displayed.

USP(V) FE Processor Busy %

Overview

This report displays a line graph showing the maximum usage rate of a processor installed in the storage system for the last 24 hours. This report also displays a table showing the usage rate of the processor and the maximum usage rate of the processor.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/3. Processor/

Record

Processor Summary(PI_PRCS)

Fields

Field Name	Description
Adaptor ID	Character string that identifies the disk controller, channel adapter, or MP Blade
Processor ID	Character string that identifies the processor
Processor Busy %	Processor utilization
Max Processor Busy %	Usage rate of the processor. Note: If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.

Filter

Item	Description	Usage
Field	Processor Type, Max Processor Busy %, Processor ID, Adaptor ID	-
Condition expression	Processor Type = "CHP"	This item cannot be specified.
	AND Max Processor Busy % > -1.000	Records with a performance value greater than the specified value are displayed.
	AND Processor ID = "*"	Records for the specified processor ID are displayed.
	AND Adaptor ID = "*"	Records for the specified adapter ID are displayed.

VSD Busy % by MPB

Overview

This report displays a line graph showing the maximum usage rate of a processor installed in the storage system for the last 24 hours. This report also displays a table showing the usage rate of the processor and the maximum usage rate of the processor.

This report cannot be used if the monitored storage system is a midrange storage system.

Working with the Solution Set

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/3. Processor/

Record

Processor Summary(PI_PRCS)

Fields

Field Name	Description
Adaptor ID	Character string that identifies the disk controller, channel adapter, or MP Blade
Processor ID	Character string that identifies the processor
Processor Type	Character string that identifies the processor type
Max Processor Busy %	Usage rate of the processor. Note: If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.

Filter

Item	Description	Usage
Field	Max Processor Busy %, Adaptor ID, Processor ID	-
Condition expression	Max Processor Busy % >= -1.000	Records with a performance value greater than or equal to the specified value are displayed.
	AND Adaptor ID = "*"	Records for the specified adapter ID are displayed.
	AND Processor ID = "_Total"	This item cannot be specified.

VSD Busy % by Processor ID

Overview

This report displays a line graph showing the maximum usage rate of a processor installed in the storage system for the last 24 hours. This report also displays a table showing the usage rate of the processor and the maximum usage rate of the processor.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/3. Processor/

Record

Processor Summary(PI_PRCS)

Fields

Field Name	Description
Adaptor ID	Character string that identifies the disk controller, channel adapter, or MP Blade
Processor ID	Character string that identifies the processor
Processor Type	Character string that identifies the processor type
Max Processor Busy %	Usage rate of the processor. Note: If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.

Filter

Item	Description	Usage
Field	Max Processor Busy %, Processor ID, Adaptor ID, Processor ID	-
Condition expression	Max Processor Busy % >= -1.000	Records with a performance value greater than or equal to the specified value are displayed.
	AND Processor ID <> "_Total"	This item cannot be specified.
	AND Adaptor ID = "*"	Records for the specified adapter ID are displayed.
	AND Processor ID = "*"	Records for the specified processor ID are displayed.

VSP G1000/VSP/VSP Gx00 Fx00/4. Parity Group folder

The following table lists and describes the reports stored in the `VSP G1000/VSP/VSP Gx00 Fx00/4. Parity Group` folder.

Report Name	Displayed Information
PG Busy %	Maximum usage rate of parity groups
PG Random Read IOPS (VSP G1000/VSP/VSP Gx00 Fx00 - 4. Parity Group)	Frequency of random read operations for parity groups
PG Random Read Transfer (VSP G1000/VSP/VSP Gx00 Fx00 - 4. Parity Group)	Data transfer rate of random read operations for parity groups
PG Random Write IOPS (VSP G1000/VSP/VSP Gx00 Fx00 - 4. Parity Group)	Frequency of random write operations for parity groups
PG Random Write Transfer (VSP G1000/VSP/VSP Gx00 Fx00 - 4. Parity Group)	Data transfer rate of random write operations for parity groups
PG Read Hit % (VSP G1000/VSP/VSP Gx00 Fx00 - 4. Parity Group)	Cache hit rate of read operations for parity groups
PG Sequential Read IOPS (VSP G1000/VSP/VSP Gx00 Fx00 - 4. Parity Group)	Frequency of sequential read operations for parity groups
PG Sequential Read Transfer (VSP G1000/VSP/VSP Gx00 Fx00 - 4. Parity Group)	Data transfer rate of sequential read operations for parity groups
PG Sequential Write IOPS (VSP G1000/VSP/VSP Gx00 Fx00 - 4. Parity Group)	Frequency of sequential write operations for parity groups
PG Sequential Write Transfer (VSP G1000/VSP/VSP Gx00 Fx00 - 4. Parity Group)	Data transfer rate of sequential write operations for parity groups
Parity Group Configuration (Tabular) (VSP G1000/VSP/VSP Gx00 Fx00 - 4. Parity Group)	Parity group configuration information

PG Busy %

Overview

This report displays a line graph and table showing the maximum usage rate of parity groups.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/4. Parity Group/

Record

RAID Group Summary(PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Max Busy %	Usage rate of the parity group. Note: If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.

Filter

Item	Description	Usage
Field	RAID Group Number, Max Busy %	-
Condition expression	(RAID Group Number = "*" OR RAID Group Number = "x" OR RAID Group Number = "x" OR RAID Group Number = "x")	A maximum of four records for the specified parity group number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a parity group number.
	AND RAID Group Number >= ". Enter first parity group here." AND RAID Group Number <= "z Enter last parity group here."	Records for the specified range of parity group numbers are displayed.
	AND Max Busy % > -1.000	Records with a performance value greater than the specified value are displayed.

PG Random Read IOPS (VSP G1000/VSP/VSP Gx00 Fx00 - 4. Parity Group)

Overview

This report displays a line graph and table showing the frequency of random read operations for parity groups.

Working with the Solution Set

Hitachi Tuning Manager Hardware Reports Reference

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/4. Parity Group/

Record

RAID Group Summary(PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Random Read I/O /sec	Frequency of random read operations (times per second)

Filter

Item	Description	Usage
Field	RAID Group Number, Random Read I/O /sec	-
Condition expression	(RAID Group Number = "*" OR RAID Group Number = "x" OR RAID Group Number = "x" OR RAID Group Number = "x")	A maximum of four records for the specified parity group number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a parity group number.
	AND RAID Group Number >= ". *Enter first parity group here.*" AND RAID Group Number <= "z *Enter last parity group here.*"	Records for the specified range of parity group numbers are displayed.
	AND Random Read I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

PG Random Read Transfer (VSP G1000/VSP/VSP Gx00 Fx00 - 4. Parity Group)

Overview

This report displays a line graph and table showing the data transfer rate of random read operations for parity groups.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/4. Parity Group/

Record

RAID Group Summary(PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)

Filter

Item	Description	Usage
Field	RAID Group Number, Random Read Xfer /sec	-
Condition expression	(RAID Group Number = "*" OR RAID Group Number = "*x*" OR RAID Group Number = "*x*" OR RAID Group Number = "*x*")	A maximum of four records for the specified parity group number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a parity group number.
	AND RAID Group Number >= ".*Enter first parity group here.*" AND RAID Group Number <= "*z Enter last parity group here.*"	Records for the specified range of parity group numbers are displayed.
	AND Random Read Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

PG Random Write IOPS (VSP G1000/VSP/VSP Gx00 Fx00 - 4. Parity Group)

Overview

This report displays a line graph and table showing the frequency of random write operations for parity groups.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/4. Parity Group/

Record

RAID Group Summary(PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Random Write I/O /sec	Frequency of random write operations (times per second)

Filter

Item	Description	Usage
Field	RAID Group Number, Random Write I/O /sec	-
Condition expression	(RAID Group Number = "*" OR RAID Group Number = "x" OR RAID Group Number = "x" OR RAID Group Number = "x")	A maximum of four records for the specified parity group number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a parity group number.
	AND RAID Group Number >= ".*Enter first parity group here.*" AND RAID Group Number <= "*z Enter last parity group here.*"	Records for the specified range of parity group numbers are displayed.
	AND Random Write I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

PG Random Write Transfer (VSP G1000/VSP/VSP Gx00 Fx00 - 4. Parity Group)

Overview

This report displays a line graph and table showing the data transfer rate of random write operations for parity groups.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/4. Parity Group/

Record

RAID Group Summary(PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)

Filter

Item	Description	Usage
Field	RAID Group Number, Random Write Xfer /sec	-
Condition expression	(RAID Group Number = "*" OR RAID Group Number = "*x*" OR RAID Group Number = "*x*" OR RAID Group Number = "*x*")	A maximum of four records for the specified parity group number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a parity group number.
	AND RAID Group Number >= "*. Enter first parity group here.*" AND RAID Group Number <= "*z Enter last parity group here.*"	Records for the specified range of parity group numbers are displayed.
	AND Random Write Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

PG Read Hit % (VSP G1000/VSP/VSP Gx00 Fx00 - 4. Parity Group)

Overview

This report displays a line graph and table showing the cache hit rate of read operations for parity groups.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/4. Parity Group/

Record

RAID Group Summary(PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Read Hit %	Cache hit rate of read operations

Filter

Item	Description	Usage
Field	RAID Group Number, Read Hit %	-
Condition expression	(RAID Group Number = "*" OR RAID Group Number = "*x*" OR RAID Group Number = "*x*" OR RAID Group Number = "*x*")	A maximum of four records for the specified parity group number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a parity group number.
	AND RAID Group Number >= ". *Enter first parity group here.*" AND RAID Group Number <= "*z* *Enter last parity group here.*"	Records for the specified range of parity group numbers are displayed.
	AND Read Hit % > *-1.000*	Records with a performance value greater than the specified value are displayed.

PG Sequential Read IOPS (VSP G1000/VSP/VSP Gx00 Fx00 - 4. Parity Group)

Overview

This report displays a line graph and table showing the frequency of sequential read operations for parity groups.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/4. Parity Group/

Record

RAID Group Summary(PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)

Filter

Item	Description	Usage
Field	RAID Group Number, Sequential Read I/O /sec	-
Condition expression	(RAID Group Number = "*" OR RAID Group Number = "*x*" OR RAID Group Number = "*x*" OR RAID Group Number = "*x*")	A maximum of four records for the specified parity group number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a parity group number.
	AND RAID Group Number >= "*.* *Enter first parity group here.*" AND RAID Group Number <= "*z* *Enter last parity group here.*"	Records for the specified range of parity group numbers are displayed.
	AND Sequential Read I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

PG Sequential Read Transfer (VSP G1000/VSP/VSP Gx00 Fx00 - 4. Parity Group)

Overview

This report displays a line graph and table showing the data transfer rate of sequential read operations for parity groups.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/4. Parity Group/

Record

RAID Group Summary(PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)

Filter

Item	Description	Usage
Field	RAID Group Number, Sequential Read Xfer /sec	-
Condition expression	(RAID Group Number = "*" OR RAID Group Number = "*x*" OR RAID Group Number = "*x*" OR RAID Group Number = "*x*")	A maximum of four records for the specified parity group number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a parity group number.
	AND RAID Group Number >= ".*Enter first parity group here.*" AND RAID Group Number <= "*z Enter last parity group here.*"	Records for the specified range of parity group numbers are displayed.
	AND Sequential Read Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

PG Sequential Write IOPS (VSP G1000/VSP/VSP Gx00 Fx00 - 4. Parity Group)

Overview

This report displays a line graph and table showing the frequency of sequential write operations for parity groups.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/4. Parity Group/

Record

RAID Group Summary(PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)

Filter

Item	Description	Usage
Field	RAID Group Number, Sequential Write I/O /sec	-
Condition expression	(RAID Group Number = "*" OR RAID Group Number = "*x*" OR RAID Group Number = "*x*" OR RAID Group Number = "*x*")	A maximum of four records for the specified parity group number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a parity group number.
	AND RAID Group Number >= ".*Enter first parity group here.*" AND RAID Group Number <= "z *Enter last parity group here.*"	Records for the specified range of parity group numbers are displayed.
	AND Sequential Write I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

PG Sequential Write Transfer (VSP G1000/VSP/VSP Gx00 Fx00 - 4. Parity Group)

Overview

This report displays a line graph and table showing the data transfer rate of sequential write operations for parity groups.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/4. Parity Group/

Record

RAID Group Summary(PI_RGS)

Fields

Field Name	Description
RAID Group Number	Parity group number
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)

Filter

Item	Description	Usage
Field	RAID Group Number, Sequential Write Xfer /sec	-
Condition expression	(RAID Group Number = "*" OR RAID Group Number = "*x*" OR RAID Group Number = "*x*" OR RAID Group Number = "*x*")	A maximum of four records for the specified parity group number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a parity group number.
	AND RAID Group Number >= ".*Enter first parity group here.*" AND RAID Group Number <= "*z Enter last parity group here.*"	Records for the specified range of parity group numbers are displayed.
	AND Sequential Write Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

Parity Group Configuration (Tabular) (VSP G1000/VSP/VSP Gx00 Fx00 - 4. Parity Group)

Overview

This report displays a table showing parity group configuration information.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/4. Parity Group/

Record

RAID Group Configuration(PD_RGC)

Field Name	Description
RAID Group Number	Parity group number
RAID Level	RAID level
RAID Type	RAID level and HDU combination *Example:* RAID5(3D+1P)
CLPR Number	Number of the CLPR to which the parity group has been assigned

VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV folder

The following table lists and describes the reports stored in the `VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV` folder.

Table 1-45 Agent for RAID Report (Storage Resources - VSP G1000/VSP/VSP Gx00 Fx00 - 5. LDEV)

Report Name	Displayed Information
CU 00-3F Daily IOPS for LDEV	The following information for logical devices for the last month • Frequency of random read and write operations • Frequency of sequential read and write operations
CU 00-3F Daily Transfer for LDEV	The following information for logical devices for the last month • Data transfer rate of random read and write operations • Data transfer rate of sequential read and write operations
CU 00-3F LDEV Configuration (Tabular)	Logical device configuration information
CU 00-3F LDEV Performance Summary Report	The following information for logical devices for the last 24 hours: • Frequency and data transfer rate of read and write operations • Cache hit rate of read operations • Average processing time per read and write request • Frequency and data transfer rate of random operations • Frequency and data transfer rate of sequential operations
CU 00-3F LDEV Random IOPS	Frequency of random read and write operations for logical devices

Report Name	Displayed Information
CU 00-3F LDEV Random Transfer	Data transfer rate of random read and write operations for logical devices
CU 00-3F LDEV Read Hit %	Cache hit rate of read operations for logical devices
CU 00-3F LDEV Read IOPS	Frequency of read operations for logical devices
CU 00-3F LDEV Read Response Time	Average processing time per read request for logical devices
CU 00-3F LDEV Read Transfer	Data transfer rate of read operations for logical devices
CU 00-3F LDEV Sequential IOPS	Frequency of sequential read and write operations for logical devices
CU 00-3F LDEV Sequential Transfer	Data transfer rate of sequential read and write operations for logical devices
CU 00-3F LDEV Total Response Time	Average processing time per read and write request for logical devices
CU 00-3F LDEV Write IOPS	Frequency of write operations for logical devices
CU 00-3F LDEV Write Response Time	Average processing time per write request for logical devices
CU 00-3F LDEV Write Transfer	Data transfer rate of write operations for logical devices
CU 00-3F Up to 20 LDEV Bars for Yesterday's IOPS	The following information for logical devices for the last 24 hours (a maximum of 20 records) • Frequency of random read and write operations • Frequency of sequential read and write operations
CU 00-3F Up to 20 LDEV Bars for Yesterday's Transfer	The following information for logical devices for the last 24 hours (a maximum of 20 records) • Data transfer rate of random read and write operations • Data transfer rate of sequential read and write operations

CU 00-3F Daily IOPS for LDEV

Overview

This report displays a stacked column graph and table showing the following information for the last month for logical devices whose logical device number is in the range from 00:00:00 to 00:3F:FF:

• Frequency of random read and write operations
• Frequency of sequential read and write operations

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/

Record

LDEV Summary - Extended(PI_LDE)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Read I/O /sec	Frequency of random read operations (times per second)
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)
Random Write I/O /sec	Frequency of random write operations (times per second)
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)

Filter

Item	Description	Usage
Field	Random Read I/O /sec, Random Write I/O /sec, Sequential Read I/O /sec, Sequential Write I/O /sec, LDEV Number	-
Condition expression	(Random Read I/O /sec > *1.000* OR Random Write I/O /sec > *1.000* OR Sequential Read I/O /sec > *1.000* OR Sequential Write I/O /sec > *1.000*)	Records with a performance value greater than the specified value are displayed.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

CU 00-3F Daily Transfer for LDEV

Overview

This report displays a stacked column graph and table showing the following information for the last month for logical devices whose logical device number is in the range from 00:00:00 to 00:3F:FF:

- Data transfer rate of random read and write operations
- Data transfer rate of sequential read and write operations

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/

Record

LDEV Summary - Extended(PI_LDE)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)

Filter

Item	Description	Usage
Field	Random Read Xfer /sec, Random Write Xfer /sec, Sequential Read Xfer /sec, Sequential Write Xfer /sec, LDEV Number	-
Condition expression	(Random Read Xfer /sec > *1.000* OR Random Write Xfer /sec > *1.000*	Records with a performance value greater than the specified value are displayed.

Item	Description	Usage
	OR Sequential Read Xfer /sec > *1.000*	
	OR Sequential Write Xfer /sec > *1.000*)	
	AND LDEV Number >= ".* Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

CU 00-3F LDEV Configuration (Tabular)

Overview

This report displays a table showing the configuration information for logical devices whose logical device number is in the range from 00:00:00 to 00:3F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/

Record

Logical Device Configuration(PD_LDC)

Fields

Field Name	Description
LDEV Number	Logical device number
RAID Group Number	Parity group number
RAID Level	RAID level of logical device
RAID Type	Combination of the RAID level and HDU of the logical device. *Example:* RAID5(3D+1P)
LDEV Location	Information indicating whether the logical device is an externally connected LDEV: • Internal • External
LUSE Volume	Information indicating whether the logical device is part of a LUSE: • LUSE

Field Name	Description
Pool ID	Pool ID of the Dynamic Provisioning pool to which the logical device belongs
Volume Type	Information indicating whether the logical device is a V-VOL or pool volume for Dynamic Provisioning: • V-VOL • POOL
CLPR Number	CLPR number of the CLPR to which the logical device is allocated

CU 00-3F LDEV Performance Summary Report

Overview

This report displays a table showing the following information for the last 24 hours for logical devices whose logical device number is in the range from 00:00:00 to 00:3F:FF:

- Frequency and data transfer rate of read and write operations
- Cache hit rate of read operations
- Average processing time per read and write request
- Frequency and data transfer rate of random operations
- Frequency and data transfer rate of sequential operations

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O /sec	Read frequency (times per second)
Write I/O /sec	Frequency of write operations (times per second)
Read Response Rate	Average processing time (in microseconds) per read request

Field Name	Description
Write Response Rate	Average processing time per write request (microseconds)
Total Response Rate	Average processing time per read and write request (microseconds)
Read Hit %	Cache hit rate of read operations
Read Xfer /sec	Data transfer rate of read operations (megabytes per second)
Write Xfer /sec	Data transfer rate of write operations (megabytes per second)
Sequential Total I/O /sec	Frequency of sequential operations (times per second)
Sequential Total Xfer /sec	Data transfer rate of sequential operations (megabytes per second)
Random Total I/O /sec	Frequency of random operations (times per second)
Random Total Xfer /sec	Data transfer rate of random operations (megabytes per second)

Filter

Item	Description	Usage
Field	LDEV Number	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "x" OR LDEV Number = "x" OR LDEV Number = "x")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". Enter first LDEV here." AND LDEV Number <= "z Enter last LDEV here."	Records for the specified range of logical device numbers are displayed.

CU 00-3F LDEV Random IOPS

Overview

This report displays a line graph and table showing the frequency of random read and write operations for logical devices whose logical device number is in the range from 00:00:00 to 00:3F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Total I/O /sec	Frequency of random operations (times per second)

Filter

Item	Description	Usage
Field	LDEV Number, Random Total I/O /sec	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "x" OR LDEV Number = "x" OR LDEV Number = "x")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". Enter first LDEV here." AND LDEV Number <= "z Enter last LDEV here."	Records for the specified range of logical device numbers are displayed.
	AND Random Total I/O /sec > -1.000	Records with a performance value greater than the specified value are displayed.

CU 00-3F LDEV Random Transfer

Overview

This report displays a line graph and table showing the data transfer rate of random read and write operations for logical devices whose logical device number is in the range from 00:00:00 to 00:3F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Total Xfer /sec	Data transfer rate of random operations (megabytes per second)

Filter

Item	Description	Usage
Field	LDEV Number, Random Total Xfer /sec	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". *Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Random Total Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 00-3F LDEV Read Hit %

Overview

This report displays a line graph and table showing the cache hit rate of read operations for logical devices whose logical device number is in the range from 00:00:00 to 00:3F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Hit %	Cache hit rate of read operations

Filter

Item	Description	Usage
Field	LDEV Number, Read Hit %	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Read Hit % > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 00-3F LDEV Read IOPS

Overview

This report displays a line graph and table showing the frequency of read operations for logical devices whose logical device number is in the range from 00:00:00 to 00:3F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number

Field Name	Description
Read I/O /sec	Read frequency (times per second)

Filter

Item	Description	Usage
Field	LDEV Number, Read I/O /sec	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". *Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Read I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 00-3F LDEV Read Response Time

Overview

This report displays a line graph and table showing the average processing time per read request for logical devices whose logical device number is in the range from 00:00:00 to 00:3F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Response Rate	Average processing time (in microseconds) per read request

Filter

Item	Description	Usage
Field	LDEV Number, Read Response Rate	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". *Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Read Response Rate > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 00-3F LDEV Read Transfer

Overview

This report displays a line graph and table showing the data transfer rate of read operations for logical devices whose logical device number is in the range from 00:00:00 to 00:3F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Xfer /sec	Data transfer rate of read operations (megabytes per second)

Filter

Item	Description	Usage
Field	LDEV Number, Read Xfer /sec	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". *Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Read Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 00-3F LDEV Sequential IOPS

Overview

This report displays a line graph and table showing the frequency of sequential read and write operations for logical devices whose logical device number is in the range from 00:00:00 to 00:3F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Sequential Total I/O /sec	Frequency of sequential operations (times per second)

Filter

Item	Description	Usage
Field	LDEV Number, Sequential Total I/O /sec	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "x" OR LDEV Number = "x" OR LDEV Number = "x")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". Enter first LDEV here." AND LDEV Number <= "z Enter last LDEV here."	Records for the specified range of logical device numbers are displayed.
	AND Sequential Total I/O /sec > -1.000	Records with a performance value greater than the specified value are displayed.

CU 00-3F LDEV Sequential Transfer

Overview

This report displays a line graph and table showing the data transfer rate of sequential read and write operations for logical devices whose logical device number is in the range from 00:00:00 to 00:3F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Sequential Total Xfer /sec	Data transfer rate of sequential operations (megabytes per second)

Filter

Item	Description	Usage
Field	LDEV Number, Sequential Total Xfer /sec	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". *Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Sequential Total Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 00-3F LDEV Total Response Time

Overview

This report displays a line graph and table showing the average processing time per read and write request for logical devices whose logical device number is in the range from 00:00:00 to 00:3F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Total Response Rate	Average processing time per read and write request (microseconds)

Filter

Item	Description	Usage
Field	LDEV Number, Total Response Rate	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "x" OR LDEV Number = "x" OR LDEV Number = "x")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here." AND LDEV Number <= "z Enter last LDEV here."	Records for the specified range of logical device numbers are displayed.
	AND Total Response Rate > -1.000	Records with a performance value greater than the specified value are displayed.

CU 00-3F LDEV Write IOPS

Overview

This report displays a line graph and table showing the frequency of write operations for logical devices whose logical device number is in the range from 00:00:00 to 00:3F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Write I/O /sec	Frequency of write operations (times per second)

Filter

Item	Description	Usage
Field	LDEV Number, Write I/O /sec	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". *Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Write I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 00-3F LDEV Write Response Time

Overview

This report displays a line graph and table showing the average processing time per write request for logical devices whose logical device number is in the range from 00:00:00 to 00:3F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Write Response Rate	Average processing time per write request (microseconds)

Filter

Item	Description	Usage
Field	LDEV Number, Write Response Rate	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Write Response Rate > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 00-3F LDEV Write Transfer

Overview

This report displays a line graph and table showing the data transfer rate of write operations for logical devices whose logical device number is in the range from 00:00:00 to 00:3F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/

Record

Logical Device Summary(PI_LDS)

Fields

Field Name	Description
LDEV Number	Logical device number
Write Xfer /sec	Data transfer rate of write operations (megabytes per second)

Filter

Item	Description	Usage
Field	LDEV Number, Write Xfer /sec	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Write Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 00-3F Up to 20 LDEV Bars for Yesterday's IOPS

Overview

This report displays a maximum of 20 records, each of which has a stacked column graph and table showing the following information for the last 24 hours for logical devices whose logical device number is in the range from 00:00:00 to 00:3F:FF:

- Frequency of random read and write operations
- Frequency of sequential read and write operations

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/

Record

LDEV Summary - Extended(PI_LDE)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Read I/O /sec	Frequency of random read operations (times per second)

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Field Name	Description
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)
Random Write I/O /sec	Frequency of random write operations (times per second)
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)

Filter

Item	Description	Usage
Field	Random Read I/O /sec, Random Write I/O /sec, Sequential Read I/O /sec, Sequential Write I/O /sec, LDEV Number	-
Condition expression	(Random Read I/O /sec > *1.000* OR Random Write I/O /sec > *1.000* OR Sequential Read I/O /sec > *1.000* OR Sequential Write I/O /sec > *1.000*)	Records with a performance value greater than the specified value are displayed.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

CU 00-3F Up to 20 LDEV Bars for Yesterday's Transfer

Overview

This report displays a maximum of 20 records, each of which has a stacked column graph and table showing the following information for the last 24 hours for logical devices whose logical device number is in the range from 00:00:00 to 00:3F:FF:

- Data transfer rate of random read and write operations
- Data transfer rate of sequential read and write operations

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/

Record

LDEV Summary - Extended(PI_LDE)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)

Filter

Item	Description	Usage
Field	Random Read Xfer, Random Write Xfer /sec, Sequential Read Xfer /sec, Sequential Write Xfer /sec, LDEV Number	-
Condition expression	(Random Read Xfer /sec > *1.000* OR Random Write Xfer /sec > *1.000* OR Sequential Read Xfer /sec > *1.000* OR Sequential Write Xfer /sec > *1.000*)	Records with a performance value greater than the specified value are displayed.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F folder

The following table lists and describes the reports stored in the `VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F` folder.

Table 1-46 Agent for RAID Report (Storage Resources - VSP G1000/VSP/VSP Gx00 Fx00 - 5. LDEV - CU 40-7F)

Report Name	Displayed Information
CU 40-7F Daily IOPS for LDEV	The following information for logical devices for the last month • Frequency of random read and write operations • Frequency of sequential read and write operations
CU 40-7F Daily Transfer for LDEV	The following information for logical devices for the last month • Data transfer rate of random read and write operations • Data transfer rate of sequential read and write operations
CU 40-7F LDEV Configuration (Tabular)	Logical device configuration information
CU 40-7F LDEV Performance Summary Report	The following information for logical devices for the last 24 hours: • Frequency and data transfer rate of read and write operations • Cache hit rate of read operations • Average processing time per read and write request • Frequency and data transfer rate of random operations • Frequency and data transfer rate of sequential operations
CU 40-7F LDEV Random IOPS	Frequency of random read and write operations for logical devices
CU 40-7F LDEV Random Transfer	Data transfer rate of random read and write operations for logical devices
CU 40-7F LDEV Read Hit %	Cache hit rate of read operations for logical devices
CU 40-7F LDEV Read IOPS	Frequency of read operations for logical devices
CU 40-7F LDEV Read Response Time	Average processing time per read request for logical devices
CU 40-7F LDEV Read Transfer	Data transfer rate of read operations for logical devices
CU 40-7F LDEV Sequential IOPS	Frequency of sequential read and write operations for logical devices
CU 40-7F LDEV Sequential Transfer	Data transfer rate of sequential read and write operations for logical devices
CU 40-7F LDEV Total Response Time	Average processing time per read and write request for logical devices

Report Name	Displayed Information
CU 40-7F LDEV Write IOPS	Frequency of write operations for logical devices
CU 40-7F LDEV Write Response Time	Average processing time per write request for logical devices
CU 40-7F LDEV Write Transfer	Data transfer rate of write operations for logical devices
CU 40-7F Up to 20 LDEV Bars for Yesterday's IOPS	The following information for logical devices for the last 24 hours (a maximum of 20 records) • Frequency of random read and write operations • Frequency of sequential read and write operations
CU 40-7F Up to 20 LDEV Bars for Yesterday's Transfer	The following information for logical devices for the last 24 hours (a maximum of 20 records) • Data transfer rate of random read and write operations • Data transfer rate of sequential read and write operations

CU 40-7F Daily IOPS for LDEV

Overview

This report displays a stacked column graph and table showing the following information for the last month for logical devices whose logical device number is in the range from 00:40:00 to 00:7F:FF:

- Frequency of random read and write operations
- Frequency of sequential read and write operations

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F/

Record

LDEV Summary 1 - Extended(PI_LDE1)

Fields

Field Name	Description
LDEV Number	Logical device number

Field Name	Description
Random Read I/O /sec	Frequency of random read operations (times per second)
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)
Random Write I/O /sec	Frequency of random write operations (times per second)
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)

Filter

Item	Description	Usage
Field	Random Read I/O /sec, Random Write I/O /sec, Sequential Read I/O /sec, Sequential Write I/O /sec, LDEV Number	-
Condition expression	(Random Read I/O /sec > *1.000* OR Random Write I/O /sec > *1.000* OR Sequential Read I/O /sec > *1.000* OR Sequential Write I/O /sec > *1.000*)	Records with a performance value greater than the specified value are displayed.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

CU 40-7F Daily Transfer for LDEV

Overview

This report displays a stacked column graph and table showing the following information for the last month for logical devices whose logical device number is in the range from 00:40:00 to 00:7F:FF:

- Data transfer rate of random read and write operations
- Data transfer rate of sequential read and write operations

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F/

Record

LDEV Summary 1 - Extended(PI_LDE1)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)

Filter

Item	Description	Usage
Field	Random Read Xfer /sec, Random Write Xfer /sec, Sequential Read Xfer /sec, Sequential Write Xfer /sec, LDEV Number	-
Condition expression	(Random Read Xfer /sec > *1.000* OR Random Write Xfer /sec > *1.000* OR Sequential Read Xfer /sec > *1.000* OR Sequential Write Xfer /sec > *1.000*)	Records with a performance value greater than the specified value are displayed.
	AND LDEV Number >= ".*Enter first LDEV here.*" AND LDEV Number <= "z *Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

CU 40-7F LDEV Configuration (Tabular)

Overview

This report displays a table showing the configuration information for logical devices whose logical device number is in the range from 00:40:00 to 00:7F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5.
LDEV/CU 40-7F/

Record

Logical Device Configuration(PD_LDC)

Fields

Field Name	Description
LDEV Number	Logical device number
RAID Group Number	Parity group number
RAID Level	RAID level of logical device
RAID Type	Combination of the RAID level and HDU of the logical device. *Example:* RAID5(3D+1P)
LDEV Location	Information indicating whether the logical device is an externally connected LDEV: • Internal • External
LUSE Volume	Information indicating whether the logical device is part of a LUSE: • LUSE
Pool ID	Pool ID of the Dynamic Provisioning pool to which the logical device belongs
Volume Type	Information indicating whether the logical device is a V-VOL or pool volume for Dynamic Provisioning: • V-VOL • POOL
CLPR Number	CLPR number of the CLPR to which the logical device is allocated

CU 40-7F LDEV Performance Summary Report

Overview

This report displays a table showing the following information for the last 24 hours for logical devices whose logical device number is in the range from 00:40:00 to 00:7F:FF:

- Frequency and data transfer rate of read and write operations
- Cache hit rate of read operations
- Average processing time per read and write request

- Frequency and data transfer rate of random operations
- Frequency and data transfer rate of sequential operations

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F/

Record

Logical Device Summary 1(PI_LDS1)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O /sec	Read frequency (times per second)
Write I/O /sec	Frequency of write operations (times per second)
Read Response Rate	Average processing time (in microseconds) per read request
Write Response Rate	Average processing time per write request (microseconds)
Total Response Rate	Average processing time per read and write request (microseconds)
Read Hit %	Cache hit rate of read operations
Read Xfer /sec	Data transfer rate of read operations (megabytes per second)
Write Xfer /sec	Data transfer rate of write operations (megabytes per second)
Sequential Total I/O /sec	Frequency of sequential operations (times per second)
Sequential Total Xfer /sec	Data transfer rate of sequential operations (megabytes per second)
Random Total I/O /sec	Frequency of random operations (times per second)
Random Total Xfer /sec	Data transfer rate of random operations (megabytes per second)

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Filter

Item	Description	Usage
Field	LDEV Number	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "x" OR LDEV Number = "x" OR LDEV Number = "x")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". *Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

CU 40-7F LDEV Random IOPS

Overview

This report displays a line graph and table showing the frequency of random read and write operations for logical devices whose logical device number is in the range from 00:40:00 to 00:7F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F/

Record

Logical Device Summary 1(PI_LDS1)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Total I/O /sec	Frequency of random operations (times per second)

Filter

Item	Description	Usage
Field	LDEV Number, Random Total I/O /sec	-

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Random Total I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 40-7F LDEV Random Transfer

Overview

This report displays a line graph and table showing the data transfer rate of random read and write operations for logical devices whose logical device number is in the range from 00:40:00 to 00:7F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F/

Record

Logical Device Summary 1(PI_LDS1)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Total Xfer /sec	Data transfer rate of random operations (megabytes per second)

Filter

Item	Description	Usage
Field	LDEV Number, Random Total Xfer /sec	-

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Random Total Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 40-7F LDEV Read Hit %

Overview

This report displays a line graph and table showing the cache hit rate of read operations for logical devices whose logical device number is in the range from 00:40:00 to 00:7F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F/

Record

Logical Device Summary 1(PI_LDS1)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Hit %	Cache hit rate of read operations

Filter

Item	Description	Usage
Field	LDEV Number, Read Hit %	-

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". *Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Read Hit % > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 40-7F LDEV Read IOPS

Overview

This report displays a line graph and table showing the frequency of read operations for logical devices whose logical device number is in the range from 00:40:00 to 00:7F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F/

Record

Logical Device Summary 1(PI_LDS1)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O /sec	Read frequency (times per second)

Filter

Item	Description	Usage
Field	LDEV Number, Read I/O /sec	-

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Read I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 40-7F LDEV Read Response Time

Overview

This report displays a line graph and table showing the average processing time per read request for logical devices whose logical device number is in the range from 00:40:00 to 00:7F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F/

Record

Logical Device Summary 1(PI_LDS1)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Response Rate	Average processing time (in microseconds) per read request

Filter

Item	Description	Usage
Field	LDEV Number, Read Response Rate	-

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "x" OR LDEV Number = "x" OR LDEV Number = "x")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". *Enter first LDEV here.*" AND LDEV Number <= "z *Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Read Response Rate > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 40-7F LDEV Read Transfer

Overview

This report displays a line graph and table showing the data transfer rate of read operations for logical devices whose logical device number is in the range from 00:40:00 to 00:7F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F/

Record

Logical Device Summary 1(PI_LDS1)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Xfer /sec	Data transfer rate of read operations (megabytes per second)

Filter

Item	Description	Usage
Field	LDEV Number, Read Xfer /sec	-

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Read Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 40-7F LDEV Sequential IOPS

Overview

This report displays a line graph and table showing the frequency of sequential read and write operations for logical devices whose logical device number is in the range from 00:40:00 to 00:7F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F/

Record

Logical Device Summary 1(PI_LDS1)

Fields

Field Name	Description
LDEV Number	Logical device number
Sequential Total I/O /sec	Frequency of sequential operations (times per second)

Filter

Item	Description	Usage
Field	LDEV Number, Sequential Total I/O /sec	-

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Sequential Total I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 40-7F LDEV Sequential Transfer

Overview

This report displays a line graph and table showing the data transfer rate of sequential read and write operations for logical devices whose logical device number is in the range from 00:40:00 to 00:7F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F/

Record

Logical Device Summary 1(PI_LDS1)

Fields

Field Name	Description
LDEV Number	Logical device number
Sequential Total Xfer /sec	Data transfer rate of sequential operations (megabytes per second)

Filter

Item	Description	Usage
Field	LDEV Number, Sequential Total Xfer /sec	-

Working with the Solution Set

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ".* Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Sequential Total Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 40-7F LDEV Total Response Time

Overview

This report displays a line graph and table showing the average processing time per read and write request for logical devices whose logical device number is in the range from 00:40:00 to 00:7F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F/

Record

Logical Device Summary 1(PI_LDS1)

Fields

Field Name	Description
LDEV Number	Logical device number
Total Response Rate	Average processing time per read and write request (microseconds)

Filter

Item	Description	Usage
Field	LDEV Number, Total Response Rate	-

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Total Response Rate > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 40-7F LDEV Write IOPS

Overview

This report displays a line graph and table showing the frequency of write operations for logical devices whose logical device number is in the range from 00:40:00 to 00:7F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F/

Record

Logical Device Summary 1(PI_LDS1)

Fields

Field Name	Description
LDEV Number	Logical device number
Write I/O /sec	Frequency of write operations (times per second)

Filter

Item	Description	Usage
Field	LDEV Number, Write I/O /sec	-

Working with the Solution Set

Hitachi Tuning Manager Hardware Reports Reference

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". *Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Write I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 40-7F LDEV Write Response Time

Overview

This report displays a line graph and table showing the average processing time per write request for logical devices whose logical device number is in the range from 00:40:00 to 00:7F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F/

Record

Logical Device Summary 1(PI_LDS1)

Fields

Field Name	Description
LDEV Number	Logical device number
Write Response Rate	Average processing time per write request (microseconds)

Filter

Item	Description	Usage
Field	LDEV Number, Write Response Rate	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". *Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Write Response Rate > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 40-7F LDEV Write Transfer

Overview

This report displays a line graph and table showing the data transfer rate of write operations for logical devices whose logical device number is in the range from 00:40:00 to 00:7F:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F/

Record

Logical Device Summary 1(PI_LDS1)

Fields

Field Name	Description
LDEV Number	Logical device number
Write Xfer /sec	Data transfer rate of write operations (megabytes per second)

Filter

Item	Description	Usage
Field	LDEV Number, Write Xfer /sec	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Write Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 40-7F Up to 20 LDEV Bars for Yesterday's IOPS

Overview

This report displays a maximum of 20 records, each of which has a stacked column graph and table showing the following information for the last 24 hours for logical devices whose logical device number is in the range from 00:40:00 to 00:7F:FF:

- Frequency of random read and write operations
- Frequency of sequential read and write operations

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F/

Record

LDEV Summary 1 - Extended(PI_LDE1)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Read I/O /sec	Frequency of random read operations (times per second)

Field Name	Description
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)
Random Write I/O /sec	Frequency of random write operations (times per second)
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)

Filter

Item	Description	Usage
Field	Random Read I/O /sec, Random Write I/O /sec, Sequential Read I/O /sec, Sequential Write I/O / sec, LDEV Number	-
Condition expression	(Random Read I/O /sec > *1.000* OR Random Write I/O /sec > *1.000* OR Sequential Read I/O /sec > *1.000* OR Sequential Write I/O /sec > *1.000*)	Records with a performance value greater than the specified value are displayed.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

CU 40-7F Up to 20 LDEV Bars for Yesterday's Transfer

Overview

This report displays a maximum of 20 records, each of which has a stacked column graph and table showing the following information for the last 24 hours for logical devices whose logical device number is in the range from 00:40:00 to 00:7F:FF:

- Data transfer rate of random read and write operations
- Data transfer rate of sequential read and write operations

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 40-7F/

Record

LDEV Summary 1 - Extended(PI_LDE1)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)

Filter

Item	Description	Usage
Field	Random Read Xfer, Random Write Xfer /sec, Sequential Read Xfer /sec, Sequential Write Xfer /sec, LDEV Number	-
Condition expression	(Random Read Xfer /sec > *1.000* OR Random Write Xfer /sec > *1.000* OR Sequential Read Xfer /sec > *1.000* OR Sequential Write Xfer /sec > *1.000*)	Records with a performance value greater than the specified value are displayed.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF folder

The following table lists and describes the reports stored in the `VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF` folder.

Table 1-47 Agent for RAID Report (Storage Resources - VSP G1000/VSP/VSP Gx00 Fx00 - 5. LDEV - CU 80-BF)

Report Name	Displayed Information
CU 80-BF Daily IOPS for LDEV	The following information for logical devices for the last month • Frequency of random read and write operations • Frequency of sequential read and write operations
CU 80-BF Daily Transfer for LDEV	The following information for logical devices for the last month • Data transfer rate of random read and write operations • Data transfer rate of sequential read and write operations
CU 80-BF LDEV Configuration (Tabular)	Logical device configuration information
CU 80-BF LDEV Performance Summary Report	The following information for logical devices for the last 24 hours: • Frequency and data transfer rate of read and write operations • Cache hit rate of read operations • Average processing time per read and write request • Frequency and data transfer rate of random operations • Frequency and data transfer rate of sequential operations
CU 80-BF LDEV Random IOPS	Frequency of random read and write operations for logical devices
CU 80-BF LDEV Random Transfer	Data transfer rate of random read and write operations for logical devices
CU 80-BF LDEV Read Hit %	Cache hit rate of read operations for logical devices
CU 80-BF LDEV Read IOPS	Frequency of read operations for logical devices
CU 80-BF LDEV Read Response Time	Average processing time per read request for logical devices
CU 80-BF LDEV Read Transfer	Data transfer rate of read operations for logical devices
CU 80-BF LDEV Sequential IOPS	Frequency of sequential read and write operations for logical devices
CU 80-BF LDEV Sequential Transfer	Data transfer rate of sequential read and write operations for logical devices
CU 80-BF LDEV Total Response Time	Average processing time per read and write request for logical devices

Working with the Solution Set

Hitachi Tuning Manager Hardware Reports Reference

Report Name	Displayed Information
CU 80-BF LDEV Write IOPS	Frequency of write operations for logical devices
CU 80-BF LDEV Write Response Time	Average processing time per write request for logical devices
CU 80-BF LDEV Write Transfer	Data transfer rate of write operations for logical devices
CU 80-BF Up to 20 LDEV Bars for Yesterday's IOPS	The following information for logical devices for the last 24 hours (a maximum of 20 records) • Frequency of random read and write operations • Frequency of sequential read and write operations
CU 80-BF Up to 20 LDEV Bars for Yesterday's Transfer	The following information for logical devices for the last 24 hours (a maximum of 20 records) • Data transfer rate of random read and write operations • Data transfer rate of sequential read and write operations

CU 80-BF Daily IOPS for LDEV

Overview

This report displays a stacked column graph and table showing the following information for the last month for logical devices whose logical device number is in the range from 00:80:00 to 00:BF:FF:

• Frequency of random read and write operations
• Frequency of sequential read and write operations

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF/

Record

LDEV Summary 2 - Extended(PI_LDE2)

Fields

Field Name	Description
LDEV Number	Logical device number

Field Name	Description
Random Read I/O /sec	Frequency of random read operations (times per second)
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)
Random Write I/O /sec	Frequency of random write operations (times per second)
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)

Filter

Item	Description	Usage
Field	Random Read I/O /sec, Random Write I/O /sec, Sequential Read I/O /sec, Sequential Write I/O / sec, LDEV Number	-
Condition expression	(Random Read I/O /sec > *1.000* OR Random Write I/O /sec > *1.000* OR Sequential Read I/O /sec > *1.000* OR Sequential Write I/O /sec > *1.000*)	Records with a performance value greater than the specified value are displayed.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

CU 80-BF Daily Transfer for LDEV

Overview

This report displays a stacked column graph and table showing the following information for the last month for logical devices whose logical device number is in the range from 00:80:00 to 00:BF:FF:

- Data transfer rate of random read and write operations
- Data transfer rate of sequential read and write operations

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF/

Record

LDEV Summary 2 - Extended(PI_LDE2)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)

Filter

Item	Description	Usage
Field	Random Read Xfer /sec, Random Write Xfer /sec, Sequential Read Xfer /sec, Sequential Write Xfer /sec, LDEV Number	-
Condition expression	(Random Read Xfer /sec > *1.000* OR Random Write Xfer /sec > *1.000* OR Sequential Read Xfer /sec > *1.000* OR Sequential Write Xfer /sec > *1.000*)	Records with a performance value greater than the specified value are displayed.
	AND LDEV Number >= ".* Enter first LDEV here.*" AND LDEV Number <= "z *Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

CU 80-BF LDEV Configuration (Tabular)

Overview

This report displays a table showing the configuration information for logical devices whose logical device number is in the range from 00:80:00 to 00:BF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF/

Record

Logical Device Configuration(PD_LDC)

Fields

Field Name	Description
LDEV Number	Logical device number
RAID Group Number	Parity group number
RAID Level	RAID level of logical device
RAID Type	Combination of the RAID level and HDU of the logical device. Example: RAID5(3D+1P)
LDEV Location	Information indicating whether the logical device is an externally connected LDEV: • Internal • External
LUSE Volume	Information indicating whether the logical device is part of a LUSE • LUSE
Pool ID	Pool ID of the Dynamic Provisioning pool to which the logical device belongs
Volume Type	Information indicating whether the logical device is a V-VOL or pool volume for Dynamic Provisioning: • V-VOL • POOL
CLPR Number	CLPR number of the CLPR to which the logical device is allocated

CU 80-BF LDEV Performance Summary Report

Overview

This report displays a table showing the following information for the last 24 hours for logical devices whose logical device number is in the range from 00:80:00 to 00:BF:FF:

- Frequency and data transfer rate of read and write operations
- Cache hit rate of read operations
- Average processing time per read and write request

- Frequency and data transfer rate of random operations
- Frequency and data transfer rate of sequential operations

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF/

Record

Logical Device Summary 2(PI_LDS2)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O /sec	Read frequency (times per second)
Write I/O /sec	Frequency of write operations (times per second)
Read Response Rate	Average processing time (in microseconds) per read request
Write Response Rate	Average processing time per write request (microseconds)
Total Response Rate	Average processing time per read and write request (microseconds)
Read Hit %	Cache hit rate of read operations
Read Xfer /sec	Data transfer rate of read operations (megabytes per second)
Write Xfer /sec	Data transfer rate of write operations (megabytes per second)
Sequential Total I/O /sec	Frequency of sequential operations (times per second)
Sequential Total Xfer /sec	Data transfer rate of sequential operations (megabytes per second)
Random Total I/O /sec	Frequency of random operations (times per second)
Random Total Xfer /sec	Data transfer rate of random operations (megabytes per second)

Filter

Item	Description	Usage
Field	LDEV Number	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

CU 80-BF LDEV Random IOPS

Overview

This report displays a line graph and table showing the frequency of random read and write operations for logical devices whose logical device number is in the range from 00:80:00 to 00:BF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF/

Record

Logical Device Summary 2(PI_LDS2)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Total I/O /sec	Frequency of random operations (times per second)

Filter

Item	Description	Usage
Field	LDEV Number, Random Total I/O /sec	-

Working with the Solution Set

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "x" OR LDEV Number = "x" OR LDEV Number = "x")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here." AND LDEV Number <= "z Enter last LDEV here."	Records for the specified range of logical device numbers are displayed.
	AND Random Total I/O /sec > -1.000	Records with a performance value greater than the specified value are displayed.

CU 80-BF LDEV Random Transfer

Overview

This report displays a line graph and table showing the data transfer rate of random read and write operations for logical devices whose logical device number is in the range from 00:80:00 to 00:BF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF/

Record

Logical Device Summary 2(PI_LDS2)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Total Xfer /sec	Data transfer rate of random operations (megabytes per second)

Filter

Item	Description	Usage
Field	LDEV Number, Random Total Xfer /sec	-

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "x" OR LDEV Number = "x" OR LDEV Number = "x")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". *Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Random Total Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 80-BF LDEV Read Hit %

Overview

This report displays a line graph and table showing the cache hit rate of read operations for logical devices whose logical device number is in the range from 00:80:00 to 00:BF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF/

Record

Logical Device Summary 2(PI_LDS2)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Hit %	Cache hit rate of read operations

Filter

Item	Description	Usage
Field	LDEV Number, Read Hit %	-

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". *Enter first LDEV here.*" AND LDEV Number <= "z *Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Read Hit % > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 80-BF LDEV Read IOPS

Overview

This report displays a line graph and table showing the frequency of read operations for logical devices whose logical device number is in the range from 00:80:00 to 00:BF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF/

Record

Logical Device Summary 2(PI_LDS2)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O /sec	Read frequency (times per second)

Filter

Item	Description	Usage
Field	LDEV Number, Read I/O /sec	-

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Read I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 80-BF LDEV Read Response Time

Overview

This report displays a line graph and table showing the average processing time per read request for logical devices whose logical device number is in the range from 00:80:00 to 00:BF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF/

Record

Logical Device Summary 2(PI_LDS2)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Response Rate	Average processing time (in microseconds) per read request

Filter

Item	Description	Usage
Field	LDEV Number, Read Response Rate	-

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Read Response Rate > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 80-BF LDEV Read Transfer

Overview

This report displays a line graph and table showing the data transfer rate of read operations for logical devices whose logical device number is in the range from 00:80:00 to 00:BF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF/

Record

Logical Device Summary 2(PI_LDS2)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Xfer /sec	Data transfer rate of read operations (megabytes per second)

Filter

Item	Description	Usage
Field	LDEV Number, Read Xfer /sec	-

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Read Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 80-BF LDEV Sequential IOPS

Overview

This report displays a line graph and table showing the frequency of sequential read and write operations for logical devices whose logical device number is in the range from 00:80:00 to 00:BF:FF:

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF/

Record

Logical Device Summary 2(PI_LDS2)

Fields

Field Name	Description
LDEV Number	Logical device number
Sequential Total I/O /sec	Frequency of sequential operations (times per second)

Filter

Item	Description	Usage
Field	LDEV Number, Sequential Total I/O /sec	-

Working with the Solution Set

Hitachi Tuning Manager Hardware Reports Reference

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Sequential Total I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 80-BF LDEV Sequential Transfer

Overview

This report displays a line graph and table showing the data transfer rate of sequential read and write operations for logical devices whose logical device number is in the range from 00:80:00 to 00:BF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF/

Record

Logical Device Summary 2(PI_LDS2)

Fields

Field Name	Description
LDEV Number	Logical device number
Sequential Total Xfer /sec	Data transfer rate of sequential operations (megabytes per second)

Filter

Item	Description	Usage
Field	LDEV Number, Sequential Total Xfer /sec	-

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". *Enter first LDEV here.*" AND LDEV Number <= "*z* *Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Sequential Total Xfer /sec *> -1.000*	Records with a performance value greater than the specified value are displayed.

CU 80-BF LDEV Total Response Time

Overview

This report displays a line graph and table showing the average processing time per read and write request for logical devices whose logical device number is in the range from 00:80:00 to 00:BF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF/

Record

Logical Device Summary 2(PI_LDS2)

Fields

Field Name	Description
LDEV Number	Logical device number
Total Response Rate	Average processing time per read and write request (microseconds)

Filter

Item	Description	Usage
Field	LDEV Number, Total Response Rate	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Total Response Rate > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 80-BF LDEV Write IOPS

Overview

This report displays a line graph and table showing the frequency of write operations for logical devices whose logical device number is in the range from 00:80:00 to 00:BF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF/

Record

Logical Device Summary 2(PI_LDS2)

Fields

Field Name	Description
LDEV Number	Logical device number
Write I/O /sec	Frequency of write operations (times per second)

Filter

Item	Description	Usage
Field	LDEV Number, Write I/O /sec	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". *Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Write I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 80-BF LDEV Write Response Time

Overview

This report displays a line graph and table showing the average processing time per write request for logical devices whose logical device number is in the range from 00:80:00 to 00:BF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF/

Record

Logical Device Summary 2(PI_LDS2)

Fields

Field Name	Description
LDEV Number	Logical device number
Write Response Rate	Average processing time per write request (microseconds)

Filter

Item	Description	Usage
Field	LDEV Number, Write Response Rate	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "x" OR LDEV Number = "x" OR LDEV Number = "x")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here." AND LDEV Number <= "z Enter last LDEV here."	Records for the specified range of logical device numbers are displayed.
	AND Write Response Rate > -1.000	Records with a performance value greater than the specified value are displayed.

CU 80-BF LDEV Write Transfer

Overview

This report displays a line graph and table showing the data transfer rate of write operations for logical devices whose logical device number is in the range from 00:80:00 to 00:BF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF/

Record

Logical Device Summary 2(PI_LDS2)

Fields

Field Name	Description
LDEV Number	Logical device number
Write Xfer /sec	Data transfer rate of write operations (megabytes per second)

Filter

Item	Description	Usage
Field	LDEV Number, Write Xfer /sec	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". *Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Write Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU 80-BF Up to 20 LDEV Bars for Yesterday's IOPS

Overview

This report displays a maximum of 20 records, each of which has a stacked column graph and table showing the following information for the last 24 hours for logical devices whose logical device number is in the range from 00:80:00 to 00:BF:FF:

- Frequency of random read and write operations
- Frequency of sequential read and write operations

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF/

Record

LDEV Summary 2 - Extended(PI_LDE2)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Read I/O /sec	Frequency of random read operations (times per second)

Working with the Solution Set

Hitachi Tuning Manager Hardware Reports Reference

Field Name	Description
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)
Random Write I/O /sec	Frequency of random write operations (times per second)
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)

Filter

Item	Item	Usage
Field	Random Read I/O /sec, Random Write I/O /sec, Sequential Read I/O /sec, Sequential Write I/O /sec, LDEV Number	-
Condition expression	(Random Read I/O /sec > *1.000* OR Random Write I/O /sec > *1.000* OR Sequential Read I/O /sec > *1.000* OR Sequential Write I/O /sec > *1.000*)	Records with a performance value greater than the specified value are displayed.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

CU 80-BF Up to 20 LDEV Bars for Yesterday's Transfer

Overview

This report displays a maximum of 20 records, each of which has a stacked column graph and table showing the following information for the last 24 hours for logical devices whose logical device number is in the range from 00:80:00 to 00:BF:FF:

- Data transfer rate of random read and write operations
- Data transfer rate of sequential read and write operations

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU 80-BF/

Record

LDEV Summary 2 - Extended(PI_LDE2)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)

Filter

Item	Description	Usage
Field	Random Read Xfer, Random Write Xfer /sec, Sequential Read Xfer /sec, Sequential Write Xfer /sec, LDEV Number	-
Condition expression	(Random Read Xfer /sec > 1.000 OR Random Write Xfer /sec > 1.000 OR Sequential Read Xfer /sec > 1.000 OR Sequential Write Xfer /sec > 1.000)	Records with a performance value greater than the specified value are displayed.
	AND LDEV Number >= ". Enter first LDEV here." AND LDEV Number <= "z Enter last LDEV here."	Records for the specified range of logical device numbers are displayed.

VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF folder

The following table lists and describes the reports stored in the `VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF` folder.

Table 1-48 Agent for RAID Report (Storage Resources - VSP G1000/VSP/VSP Gx00 Fx00 - 5. LDEV - CU C0-FF)

Report Name	Displayed Information
CU C0-FF Daily IOPS for LDEV	The following information for logical devices for the last month • Frequency of random read and write operations • Frequency of sequential read and write operations
CU C0-FF Daily Transfer for LDEV	The following information for logical devices for the last month • Data transfer rate of random read and write operations • Data transfer rate of sequential read and write operations
CU C0-FF LDEV Configuration (Tabular)	Logical device configuration information
CU C0-FF LDEV Performance Summary Report	The following information for logical devices for the last 24 hours: • Frequency and data transfer rate of read and write operations • Cache hit rate of read operations • Average processing time per read and write request • Frequency and data transfer rate of random operations • Frequency and data transfer rate of sequential operations
CU C0-FF LDEV Random IOPS	Frequency of random read and write operations for logical devices
CU C0-FF LDEV Random Transfer	Data transfer rate of random read and write operations for logical devices
CU C0-FF LDEV Read Hit %	Cache hit rate of read operations for logical devices
CU C0-FF LDEV Read IOPS	Frequency of read operations for logical devices
CU C0-FF LDEV Read Response Time	Average processing time per read request for logical devices
CU C0-FF LDEV Read Transfer	Data transfer rate of read operations for logical devices
CU C0-FF LDEV Sequential IOPS	Frequency of sequential read and write operations for logical devices
CU C0-FF LDEV Sequential Transfer	Data transfer rate of sequential read and write operations for logical devices
CU C0-FF LDEV Total Response Time	Average processing time per read and write request for logical devices

Report Name	Displayed Information
CU C0-FF LDEV Write IOPS	Frequency of write operations for logical devices
CU C0-FF LDEV Write Response Time	Average processing time per write request for logical devices
CU C0-FF LDEV Write Transfer	Data transfer rate of write operations for logical devices
CU C0-FF Up to 20 LDEV Bars for Yesterday's IOPS	The following information for logical devices for the last 24 hours (a maximum of 20 records) • Frequency of random read and write operations • Frequency of sequential read and write operations
CU C0-FF Up to 20 LDEV Bars for Yesterday's Transfer	The following information for logical devices for the last 24 hours (a maximum of 20 records) • Data transfer rate of random read and write operations • Data transfer rate of sequential read and write operations

CU C0-FF Daily IOPS for LDEV

Overview

This report displays a stacked column graph and table showing the following information for the last month for logical devices whose logical device number is in the range from 00:C0:00 to 00:FF:FF:

• Frequency of random read and write operations
• Frequency of sequential read and write operations

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF/

Record

LDEV Summary 3 - Extended(PI_LDE3)

Fields

Field Name	Description
LDEV Number	Logical device number

Field Name	Description
Random Read I/O /sec	Frequency of random read operations (times per second)
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)
Random Write I/O /sec	Frequency of random write operations (times per second)
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)

Filter

Item	Description	Usage
Field	Random Read I/O /sec, Random Write I/O /sec, Sequential Read I/O /sec, Sequential Write I/O /sec, LDEV Number	-
Condition expression	(Random Read I/O /sec > *1.000* OR Random Write I/O /sec > *1.000* OR Sequential Read I/O /sec > *1.000* OR Sequential Write I/O /sec > *1.000*)	Records with a performance value greater than the specified value are displayed.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

CU C0-FF Daily Transfer for LDEV

Overview

This report displays a stacked column graph and table showing the following information for the last month for logical devices whose logical device number is in the range from 00:C0:00 to 00:FF:FF:

- Data transfer rate of random read and write operations
- Data transfer rate of sequential read and write operations

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF/

Record

LDEV Summary 3 - Extended(PI_LDE3)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)

Filter

Item	Description	Usage
Field	Random Read Xfer /sec, Random Write Xfer /sec, Sequential Read Xfer /sec, Sequential Write Xfer /sec, LDEV Number	-
Condition expression	(Random Read Xfer /sec > *1.000* OR Random Write Xfer /sec > *1.000* OR Sequential Read Xfer /sec > *1.000* OR Sequential Write Xfer /sec > *1.000*)	Records with a performance value greater than the specified value are displayed.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

CU C0-FF LDEV Configuration (Tabular)

Overview

This report displays a table showing the configuration information for logical devices whose logical device number is in the range from 00:C0:00 to 00:FF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF/

Record

Logical Device Configuration(PD_LDC)

Fields

Field Name	Description
LDEV Number	Logical device number
RAID Group Number	Parity group number
RAID Level	RAID level of logical device
RAID Type	Combination of the RAID level and HDU of the logical device. Example: RAID5(3D+1P)
LDEV Location	Information indicating whether the logical device is an externally connected LDEV: • Internal • External
LUSE Volume	Information indicating whether the logical device is part of a LUSE • LUSE
Pool ID	Pool ID of the Dynamic Provisioning pool to which the logical device belongs
Volume Type	Information indicating whether the logical device is a V-VOL or pool volume for Dynamic Provisioning: • V-VOL • POOL
CLPR Number	CLPR number of the CLPR to which the logical device is allocated

CU C0-FF LDEV Performance Summary Report

Overview

This report displays a table showing the following information for the last 24 hours for logical devices whose logical device number is in the range from 00:C0:00 to 00:FF:FF:

- Frequency and data transfer rate of read and write operations
- Cache hit rate of read operations
- Average processing time per read and write request

- Frequency and data transfer rate of random operations
- Frequency and data transfer rate of sequential operations

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF/

Record

Logical Device Summary 3(PI_LDS3)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O /sec	Read frequency (times per second)
Write I/O /sec	Frequency of write operations (times per second)
Read Response Rate	Average processing time (in microseconds) per read request
Write Response Rate	Average processing time per write request (microseconds)
Total Response Rate	Average processing time per read and write request (microseconds)
Read Hit %	Cache hit rate of read operations
Read Xfer /sec	Data transfer rate of read operations (megabytes per second)
Write Xfer /sec	Data transfer rate of write operations (megabytes per second)
Sequential Total I/O /sec	Frequency of sequential operations (times per second)
Sequential Total Xfer /sec	Data transfer rate of sequential operations (megabytes per second)
Random Total I/O /sec	Frequency of random operations (times per second)
Random Total Xfer /sec	Data transfer rate of random operations (megabytes per second)

Filter

Item	Description	Usage
Field	LDEV Number	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "x" OR LDEV Number = "x" OR LDEV Number = "x")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". Enter first LDEV here." AND LDEV Number <= "z Enter last LDEV here."	Records for the specified range of logical device numbers are displayed.

CU C0-FF LDEV Random IOPS

Overview

This report displays a line graph and table showing the frequency of random read and write operations for logical devices whose logical device number is in the range from 00:C0:00 to 00:FF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF/

Record

Logical Device Summary 3(PI_LDS3)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Total I/O /sec	Frequency of random operations (times per second)

Filter

Item	Description	Usage
Field	LDEV Number, Random Total I/O /sec	-

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Random Total I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU C0-FF LDEV Random Transfer

Overview

This report displays a line graph and table showing the data transfer rate of random read and write operations for logical devices whose logical device number is in the range from 00:C0:00 to 00:FF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF/

Record

Logical Device Summary 3(PI_LDS3)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Total Xfer /sec	Data transfer rate of random operations (megabytes per second)

Filter

Item	Description	Usage
Field	LDEV Number, Random Total Xfer /sec	-

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ".*Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Random Total Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU C0-FF LDEV Read Hit %

Overview

This report displays a line graph and table showing the cache hit rate of read operations for logical devices whose logical device number is in the range from 00:C0:00 to 00:FF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF/

Record

Logical Device Summary 3(PI_LDS3)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Hit %	Cache hit rate of read operations

Filter

Item	Description	Usage
Field	LDEV Number, Read Hit %	-

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Read Hit % > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU C0-FF LDEV Read IOPS

Overview

This report displays a line graph and table showing the frequency of read operations for logical devices whose logical device number is in the range from 00:C0:00 to 00:FF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF/

Record

Logical Device Summary 3(PI_LDS3)

Fields

Field Name	Description
LDEV Number	Logical device number
Read I/O /sec	Read frequency (times per second)

Filter

Item	Description	Usage
Field	LDEV Number, Read I/O /sec	-

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Read I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU C0-FF LDEV Read Response Time

Overview

This report displays a line graph and table showing the average processing time per read request for logical devices whose logical device number is in the range from 00:C0:00 to 00:FF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF/

Record

Logical Device Summary 3(PI_LDS3)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Response Rate	Average processing time (in microseconds) per read request

Filter

Item	Description	Usage
Field	LDEV Number, Read Response Rate	-

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Read Response Rate > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU C0-FF LDEV Read Transfer

Overview

This report displays a line graph and table showing the data transfer rate of read operations for logical devices whose logical device number is in the range from 00:C0:00 to 00:FF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF/

Record

Logical Device Summary 3(PI_LDS3)

Fields

Field Name	Description
LDEV Number	Logical device number
Read Xfer /sec	Data transfer rate of read operations (megabytes per second)

Filter

Item	Description	Usage
Field	LDEV Number, Read Xfer /sec	-

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Read Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU C0-FF LDEV Sequential IOPS

Overview

This report displays a line graph and table showing the frequency of sequential read and write operations for logical devices whose logical device number is in the range from 00:C0:00 to 00:FF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF/

Record

Logical Device Summary 3(PI_LDS3)

Fields

Field Name	Description
LDEV Number	Logical device number
Sequential Total I/O /sec	Frequency of sequential operations (times per second)

Filter

Item	Description	Usage
Field	LDEV Number, Sequential Total I/O /sec	-

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Sequential Total I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU C0-FF LDEV Sequential Transfer

Overview

This report displays a line graph and table showing the data transfer rate of sequential read and write operations for logical devices whose logical device number is in the range from 00:C0:00 to 00:FF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF/

Record

Logical Device Summary 3(PI_LDS3)

Fields

Field Name	Description
LDEV Number	Logical device number
Sequential Total Xfer /sec	Data transfer rate of sequential operations (megabytes per second)

Filter

Item	Description	Usage
Field	LDEV Number, Sequential Total Xfer /sec	-

Item	Description	Usage
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ".*Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Sequential Total Xfer /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU C0-FF LDEV Total Response Time

Overview

This report displays a line graph and table showing the average processing time per read and write request for logical devices whose logical device number is in the range from 00:C0:00 to 00:FF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF/

Record

Logical Device Summary 3(PI_LDS3)

Fields

Field Name	Description
LDEV Number	Logical device number
Total Response Rate	Average processing time per read and write request (microseconds)

Filter

Item	Description	Usage
Field	LDEV Number, Total Response Rate	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Total Response Rate > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU C0-FF LDEV Write IOPS

Overview

This report displays a line graph and table showing the frequency of write operations for logical devices whose logical device number is in the range from 00:C0:00 to 00:FF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF/

Record

Logical Device Summary 3(PI_LDS3)

Fields

Field Name	Description
LDEV Number	Logical device number
Write I/O /sec	Frequency of write operations (times per second)

Filter

Item	Description	Usage
Field	LDEV Number, Write I/O /sec	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x"* OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Write I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU C0-FF LDEV Write Response Time

Overview

This report displays a line graph and table showing the average processing time per write request for logical devices whose logical device number is in the range from 00:C0:00 to 00:FF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF/

Record

Logical Device Summary 3(PI_LDS3)

Fields

Field Name	Description
LDEV Number	Logical device number
Write Response Rate	Average processing time per write request (microseconds)

Filter

Item	Description	Usage
Field	LDEV Number, Write Response Rate	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "*x*" OR LDEV Number = "*x*" OR LDEV Number = "*x*")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". *Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.
	AND Write Response Rate > *-1.000*	Records with a performance value greater than the specified value are displayed.

CU C0-FF LDEV Write Transfer

Overview

This report displays a line graph and table showing the data transfer rate of write operations for logical devices whose logical device number is in the range from 00:C0:00 to 00:FF:FF.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF/

Record

Logical Device Summary 3(PI_LDS3)

Fields

Field Name	Description
LDEV Number	Logical device number
Write Xfer /sec	Data transfer rate of write operations (megabytes per second)

Filter

Item	Description	Usage
Field	LDEV Number, Write Xfer /sec	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "x" OR LDEV Number = "x" OR LDEV Number = "x")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". Enter first LDEV here." AND LDEV Number <= "z Enter last LDEV here."	Records for the specified range of logical device numbers are displayed.
	AND Write Xfer /sec > -1.000	Records with a performance value greater than the specified value are displayed.

CU C0-FF Up to 20 LDEV Bars for Yesterday's IOPS

Overview

This report displays a maximum of 20 records, each of which has a stacked column graph and table showing the following information for the last 24 hours for logical devices whose logical device number is in the range from 00:C0:00 to 00:FF:FF:

- Frequency of random read and write operations
- Frequency of sequential read and write operations

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF/

Record

LDEV Summary 3 - Extended(PI_LDE3)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Read I/O /sec	Frequency of random read operations (times per second)

Field Name	Description
Sequential Read I/O /sec	Frequency of sequential read operations (times per second)
Random Write I/O /sec	Frequency of random write operations (times per second)
Sequential Write I/O /sec	Frequency of sequential write operations (times per second)

Filter

Item	Description	Usage
Field	Random Read I/O /sec, Random Write I/O /sec, Sequential Read I/O /sec, Sequential Write I/O / sec, LDEV Number	-
Condition expression	(Random Read I/O /sec > *1.000* OR Random Write I/O /sec > *1.000* OR Sequential Read I/O /sec > *1.000* OR Sequential Write I/O /sec > *1.000*)	Records with a performance value greater than the specified value are displayed.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

CU C0-FF Up to 20 LDEV Bars for Yesterday's Transfer

Overview

This report displays a maximum of 20 records, each of which has a stacked column graph and table showing the following information for the last 24 hours for logical devices whose logical device number is in the range from 00:C0:00 to 00:FF:FF:

- Data transfer rate of random read and write operations
- Data transfer rate of sequential read and write operations

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/5. LDEV/CU C0-FF/

Record

LDEV Summary 3 - Extended(PI_LDE3)

Fields

Field Name	Description
LDEV Number	Logical device number
Random Read Xfer /sec	Data transfer rate of random read operations (megabytes per second)
Sequential Read Xfer /sec	Data transfer rate of sequential read operations (megabytes per second)
Random Write Xfer /sec	Data transfer rate of random write operations (megabytes per second)
Sequential Write Xfer /sec	Data transfer rate of sequential write operations (megabytes per second)

Filter

Item	Description	Usage
Field	Random Read Xfer, Random Write Xfer /sec, Sequential Read Xfer /sec, Sequential Write Xfer /sec, LDEV Number	-
Condition expression	(Random Read Xfer /sec > *1.000* OR Random Write Xfer /sec > *1.000* OR Sequential Read Xfer /sec > *1.000* OR Sequential Write Xfer /sec > *1.000*)	Records with a performance value greater than the specified value are displayed.
	AND LDEV Number >= "*. Enter first LDEV here.*" AND LDEV Number <= "*z Enter last LDEV here.*"	Records for the specified range of logical device numbers are displayed.

VSP G1000/VSP/VSP Gx00 Fx00/6. Subsystem folder

The following table lists and describes the reports stored in the `VSP G1000/VSP/VSP Gx00 Fx00/6. Subsystem` folder.

Table 1-49 Agent for RAID Report (Storage Resources - VSP G1000/VSP/VSP Gx00 Fx00 - 6. Subsystem)

Report Name	Displayed Information
Total Read/Write IOPS (Line) (VSP G1000/VSP/VSP Gx00 Fx00 - 6. Subsystem)	Frequency of read and write operations for logical devices for the last 24 hours
Total Read/Write IOPS (Stacked) (VSP G1000/VSP/VSP Gx00 Fx00 - 6. Subsystem)	Frequency of read and write operations for logical devices for the last 24 hours
Total Read/Write Transfer (Line) (VSP G1000/VSP/VSP Gx00 Fx00 - 6. Subsystem)	Data transfer rate of read and write operations for logical devices for the last 24 hours
Total Read/Write Transfer (Stacked) (VSP G1000/VSP/VSP Gx00 Fx00 - 6. Subsystem)	Data transfer rate of read and write operations for logical devices for the last 24 hours

Total Read/Write IOPS (Line) (VSP G1000/VSP/VSP Gx00 Fx00 - 6. Subsystem)

Overview

This report displays a line graph showing the frequency of read and write operations for logical devices for the last 24 hours, and displays a table showing the following information:

- Frequency and data transfer rate of read and write operations
- Read cache hit rate

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/6. Subsystem/

Record

Logical Device Aggregation(PI_LDA)

Fields

Field Name	Description
Read Xfer /sec	Data transfer rate for logical device read operations (megabytes per second) summarized for the entire storage system

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Field Name	Description
Read I/O /sec	Read frequency for the logical device (times per second) summarized for the entire storage system
Read Hit %	Read cache hit rate for the logical device summarized for the entire storage system
Write Xfer /sec	Data transfer rate for logical device write operations (megabytes per second) summarized for the entire storage system
Write I/O /sec	Write frequency for the logical device (times per second) summarized for the entire storage system

Total Read/Write IOPS (Stacked) (VSP G1000/VSP/VSP Gx00 Fx00 - 6. Subsystem)

Overview

This report displays a stacked column graph showing the frequency of read and write operations for logical devices for the last 24 hours, and displays a table showing the following information:

- Frequency and data transfer rate of read and write operations
- Read cache hit rate

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/6. Subsystem/

Record

Logical Device Aggregation(PI_LDA)

Fields

Field Name	Description
Read Xfer /sec	Data transfer rate for logical device read operations (megabytes per second) summarized for the entire storage system
Read I/O /sec	Read frequency for the logical device (times per second) summarized for the entire storage system
Read Hit %	Read cache hit rate for the logical device summarized for the entire storage system

Field Name	Description
Write Xfer /sec	Data transfer rate for logical device write operations (megabytes per second) summarized for the entire storage system
Write I/O /sec	Write frequency for the logical device (times per second) summarized for the entire storage system

Total Read/Write Transfer (Line) (VSP G1000/VSP/VSP Gx00 Fx00 - 6. Subsystem)

Overview

This report displays a line graph showing the data transfer rate of read and write operations for logical devices for the last 24 hours, and displays a table showing the following information:

- Frequency and data transfer rate of read and write operations
- Read cache hit rate

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/6. Subsystem/

Record

Logical Device Aggregation(PI_LDA)

Fields

Field Name	Description
Read Xfer /sec	Data transfer rate for logical device read operations (megabytes per second) summarized for the entire storage system
Read I/O /sec	Read frequency for the logical device (times per second) summarized for the entire storage system
Read Hit %	Read cache hit rate for the logical device summarized for the entire storage system
Write Xfer /sec	Data transfer rate for logical device write operations (megabytes per second) summarized for the entire storage system

Working with the Solution Set

Hitachi Tuning Manager Hardware Reports Reference

Field Name	Description
Write I/O /sec	Write frequency for the logical device (times per second) summarized for the entire storage system

Total Read/Write Transfer (Stacked) (VSP G1000/VSP/VSP Gx00 Fx00 - 6. Subsystem)

Overview

This report displays a stacked column graph showing the data transfer rate of read and write operations for logical devices for the last 24 hours, and displays a table showing the following information:

- Frequency and data transfer rate of read and write operations
- Read cache hit rate

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/6. Subsystem/

Record

Logical Device Aggregation(PI_LDA)

Fields

Field Name	Description
Read Xfer /sec	Data transfer rate for logical device read operations (megabytes per second) summarized for the entire storage system
Read I/O /sec	Read frequency for the logical device (times per second) summarized for the entire storage system
Read Hit %	Read cache hit rate for the logical device summarized for the entire storage system
Write Xfer /sec	Data transfer rate for logical device write operations (megabytes per second) summarized for the entire storage system
Write I/O /sec	Write frequency for the logical device (times per second) summarized for the entire storage system

VSP G1000/VSP/VSP Gx00 Fx00/7. HDP/HDT folder

The following table lists and describes the reports stored in the `VSP G1000/VSP/VSP Gx00 Fx00/7. HDP/HDT` folder.

Table 1-50 Agent for RAID Report (Storage Resources - VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)

Report Name	Displayed Information
Pool Read IOPS (VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)	Frequency of read operations for Dynamic Provisioning pools for the last 24 hours
Pool Read Response Times (VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)	Average processing time per read request for Dynamic Provisioning pools for the last 24 hours
Pool Space Usage % (VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)	Usage rate of the Dynamic Provisioning pool capacity for the last month
Pool Write IOPS (VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)	Frequency of write operations for Dynamic Provisioning pools for the last 24 hours
Pool Write Response Times (VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)	Average processing time per write request for Dynamic Provisioning pools for the last 24 hours
Tier IOPS	Frequency of read and write operations for the last seven days for tiers in a Dynamic Provisioning pool that has tier management enabled
Tier IOPS Usage % from Monitor (VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)	Activity rate for the last month for each tier type of a Dynamic Provisioning pool that has tier management enabled
Tier IOPS by DP-VOL	Average frequency of read and write operations for the last seven days for tiers in a Dynamic Provisioning pool that has tier management enabled
Tier Pages Demoted (VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)	Number of pages that have been moved from a tier to a lower tier in the last month for Dynamic Provisioning pools that have tier management enabled
Tier Pages Promoted (VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)	Number of pages that have been moved from a tier to a higher tier in the last month for Dynamic Provisioning pools that have tier management enabled
Tier Pages Relocation Status (VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)	Number of pages that have been moved by tier relocation in the last month for Dynamic Provisioning pools that have tier management enabled
Tier Space Usage % (VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)	Space usage for the last month for each tier type of a Dynamic Provisioning pool that has tier management enabled

Report Name	Displayed Information
Tier Space Usage % by DP-VOL (VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)	Space usage for each tier type of a Dynamic Provisioning V-VOL that has tier management enabled

Pool Read IOPS (VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)

Overview

This report displays a table and line graph showing the frequency of read operations for Dynamic Provisioning pools for the last 24 hours.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/7. HDP/HDT/

Record

Pool Summary(PI_PLS)

Fields

Field Name	Description
Pool ID	ID of the pool
Read I/O /sec	Read frequency of the virtual volumes mapped to the Dynamic Provisioning pool (times per second)
Read Response Rate	Average processing time (in microseconds) per read request for the V-VOLs mapped to the Dynamic Provisioning pool
Write I/O /sec	Write frequency of the virtual volumes mapped to the Dynamic Provisioning pool (times per second)
Write Response Rate	Average processing time (in microseconds) per write request for the V-VOLs mapped to the Dynamic Provisioning pool

Filter

Item	Description	Usage
Field	Pool ID, Read I/O /sec	-

Item	Description	Usage
Condition expression	(Pool ID = "*" OR Pool ID = "*x*" OR Pool ID = "*x*" OR Pool ID = "*x*")	A maximum of four records for the specified pool ID are displayed. Be sure to use the condition expressions in the order shown on the left to specify a pool ID.
	AND Pool ID >= "*. Enter first pool ID here.*" AND Pool ID <= "*z Enter last pool ID here.*"	Records for the specified range of pool IDs are displayed.
	AND Read I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

Pool Read Response Times (VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)

Overview

This report displays a line graph showing the average processing time per read request for Dynamic Provisioning pools for the last 24 hours. This report also displays a table showing the average processing time per read and write request for pools.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/7. HDP/HDT/

Record

Pool Summary(PI_PLS)

Fields

Field Name	Description
Pool ID	ID of the pool
Read I/O /sec	Read frequency of the virtual volumes mapped to the Dynamic Provisioning pool (times per second)
Read Response Rate	Average processing time (in microseconds) per read request for the V-VOLs mapped to the Dynamic Provisioning pool

Field Name	Description
Write I/O /sec	Write frequency of the virtual volumes mapped to the Dynamic Provisioning pool (times per second)
Write Response Rate	Average processing time (in microseconds) per write request for the V-VOLs mapped to the Dynamic Provisioning pool

Filter

Item	Description	Usage
Field	Pool ID, Read Response Rate	-
Condition expression	(Pool ID = "*" OR Pool ID = "x" OR Pool ID = "x" OR Pool ID = "x")	A maximum of four records for the specified pool ID are displayed. Be sure to use the condition expressions in the order shown on the left to specify a pool ID.
	AND Pool ID >= ". Enter first pool ID here." AND Pool ID <= "z Enter last pool ID here."	Records for the specified range of pool IDs are displayed.
	AND Read Response Rate > -1.000	Records with a performance value greater than the specified value are displayed.

Pool Space Usage % (VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)

Overview

This report displays a line graph showing the usage rate of the Dynamic Provisioning pool capacity for the last month, and displays a table showing the pool capacity and configuration information.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/7. HDP/HDT/

Record

Pool Configuration(PD_PLC)

Fields

Field Name	Description
Pool ID	ID of the pool
Free Capacity	The amount of unused capacity in the pool (GB)
Used Capacity	Size of the used capacity of the pool (GB)
Total Actual Capacity	Actual capacity of the pool (GB)
Usage %	Usage rate of the pool capacity
Total Managed Capacity	Virtual capacity of all Dynamic Provisioning V-VOLs mapped to the pool (GB)
Virtual Volume Count	Number of Dynamic Provisioning V-VOLs mapped to the pool
Pool Volume Count	Number of Dynamic Provisioning pool volumes in the pool

Filter

Item	Description	Usage
Field	Pool ID, Usage %	-
Condition expression	(Pool ID = "*" OR Pool ID = "x" OR Pool ID = "x" OR Pool ID = "x")	A maximum of four records for the specified pool ID are displayed. Be sure to use the condition expressions in the order shown on the left to specify a pool ID.
	AND Pool ID >= ". Enter first pool ID here." AND Pool ID <= "z Enter last pool ID here."	Records for the specified range of pool IDs are displayed.
	AND Usage % > -1.000	Records with a performance value greater than the specified value are displayed.

Pool Write IOPS (VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)

Overview

This report displays a table and line graph showing the frequency of write operations for Dynamic Provisioning pools for the last 24 hours.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/7. HDP/HDT/

Record

Pool Summary(PI_PLS)

Fields

Field Name	Description
Pool ID	ID of the pool
Read I/O /sec	Read frequency of the virtual volumes mapped to the Dynamic Provisioning pool (times per second)
Read Response Rate	Average processing time (in microseconds) per read request for the V-VOLs mapped to the Dynamic Provisioning pool
Write I/O /sec	Write frequency of the virtual volumes mapped to the Dynamic Provisioning pool (times per second)
Write Response Rate	Average processing time (in microseconds) per write request for the V-VOLs mapped to the Dynamic Provisioning pool

Filter

Item	Description	Usage
Field	Pool ID, Write I/O /sec	-
Condition expression	(Pool ID = "*" OR Pool ID = "x" OR Pool ID = "x" OR Pool ID = "x")	A maximum of four records for the specified pool ID are displayed. Be sure to use the condition expressions in the order shown on the left to specify a pool ID.
	AND Pool ID >= ". *Enter first pool ID here.*" AND Pool ID <= "z *Enter last pool ID here.*"	Records for the specified range of pool IDs are displayed.
	AND Write I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

Pool Write Response Times (VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)

Overview

This report displays a line graph showing the average processing time per write request for Dynamic Provisioning pools for the last 24 hours, and displays a table showing the average processing time per read and write request for pools.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/7. HDP/HDT/

Record

Pool Summary(PI_PLS)

Fields

Field Name	Description
Pool ID	ID of the pool
Read I/O /sec	Read frequency of the virtual volumes mapped to the Dynamic Provisioning pool (times per second)
Read Response Rate	Average processing time (in microseconds) per read request for the V-VOLs mapped to the Dynamic Provisioning pool
Write I/O /sec	Write frequency of the virtual volumes mapped to the Dynamic Provisioning pool (times per second)
Write Response Rate	Average processing time (in microseconds) per write request for the V-VOLs mapped to the Dynamic Provisioning pool

Filter

Item	Description	Usage
Field	Pool ID, Write Response Rate	-
Condition expression	(Pool ID = "*" OR Pool ID = "x" OR Pool ID = "x" OR Pool ID = "x")	A maximum of four records for the specified pool ID are displayed. Be sure to use the condition expressions in the order shown on the left to specify a pool ID.

Item	Description	Usage
	AND Pool ID >= ". *Enter first pool ID here.*" AND Pool ID <= "z *Enter last pool ID here.*"	Records for the specified range of pool IDs are displayed.
	AND Write Response Rate > *-1.000*	Records with a performance value greater than the specified value are displayed.

Tier IOPS

Overview

This report displays a line graph showing the frequency of read and write operations for the last seven days for tiers in Dynamic Provisioning pools that have tier management enabled. This report also displays a table showing the frequency of read and write operations by tier type.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/7. HDP/HDT/

Record

Pool Tier Type I/O Information(PI_PLTI)

Fields

Field Name	Description
Pool ID	ID of the pool
Tier Number	Number of the tier
Tier Type	Type of the tier
Avg I/O /sec	Read and write processing rate (number of times per second) for the tier

Filter

Item	Description	Usage
Field	Pool ID, Tier Number, Tier Type, Avg I/O /sec	-
Condition expression	(Pool ID = "*"	A maximum of four records for the specified pool ID are

Item	Description	Usage
	OR Pool ID = "*x*" OR Pool ID = "*x*" OR Pool ID = "*x*")	displayed. Be sure to use the condition expressions in the order shown on the left to specify a pool ID.
	AND Pool ID >= "*. Enter first pool ID here.*" AND Pool ID <= "*z Enter last pool ID here.*"	Records for the specified range of pool IDs are displayed.
	AND Tier Number = "***"	Records for the specified tier number are displayed.
	AND Tier Type <> "_Total"	This item cannot be specified.
	AND Avg I/O /sec > *-1.000*	Records with a performance value greater than the specified value are displayed.

Tier IOPS Usage % from Monitor (VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)

Overview

This report displays a table and line graph showing the activity rate by tier type for the last month for Dynamic Provisioning pools that have tier management enabled.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/7. HDP/HDT/

Record

Pool Tier Type Operation Status(PD_PLTS)

Fields

Field Name	Description
Pool ID	ID of the pool
Tier Number	Number of the tier
Tier Type	Tier type
Avg I/O /sec	Frequency of I/O operations (times per second) processed by the tier within the time period defined in the storage system

Working with the Solution Set

Hitachi Tuning Manager Hardware Reports Reference

Field Name	Description
Avg IOPS Utilization %	Tier activity rate (%)
Monitor Collection Start Time	Time when collection of monitoring information for the storage system began
Monitor Collection End Time	Time when collection of monitoring information for the storage system ended

Filter

Item	Description	Usage
Field	Pool ID, Tier Number, Avg IOPS Utilization %	-
Condition expression	(Pool ID = "*" OR Pool ID = "*x*" OR Pool ID = "*x*" OR Pool ID = "*x*")	A maximum of four records for the specified pool ID are displayed. Be sure to use the condition expressions in the order shown on the left to specify a pool ID.
	AND Pool ID >= "*. Enter first pool ID here.*" AND Pool ID <= "*z Enter last pool ID here.*"	Records for the specified range of pool IDs are displayed.
	AND Tier Number = "*"	Records for the specified tier number are displayed.
	AND Avg IOPS Utilization % > *-1.000*	Records with a performance value greater than the specified value are displayed.

Tier IOPS by DP-VOL

Overview

This report displays a line graph and table showing the average frequency of read and write operations for the last seven days for tiers in Dynamic Provisioning pools that have tier management enabled.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/7. HDP/HDT/

Record

V-VOL Tier Type I/O Information(PI_VVTI)

Fields

Field Name	Description
LDEV Number	Logical device number of the V-VOL
Pool ID	ID of the pool
Tier Number	Number of the tier
Tier Type	Type of the tier
Avg I/O /sec	Read and write processing rate (number of times per second) for the tier

Filter

Item	Description	Usage
Field	LDEV Number, Pool ID, Tier Type, Avg I/O /sec	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "x" OR LDEV Number = "x" OR LDEV Number = "x")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". Enter first LDEV Number here." AND LDEV Number <= "z Enter last LDEV Number here."	Records for the specified range of logical device numbers are displayed.
	AND Pool ID = "*"	Records for the specified pool ID are displayed.
	AND Tier Type <> "_Total"	This item cannot be specified.
	AND Avg I/O /sec > -1.000	Records with a performance value greater than the specified value are displayed.

Tier Pages Demoted (VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)

Overview

This report displays a line graph and table showing the number of pages moved from tiers to lower-level tiers in the last month in Dynamic Provisioning pools that have tier management enabled.

This report cannot be used if the monitored storage system is a midrange storage system.

Working with the Solution Set

Hitachi Tuning Manager Hardware Reports Reference

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/7.
HDP/HDT/

Record

Pool Tier Page Relocation(PD_PLTR)

Fields

Field Name	Description
Pool ID	ID of the pool
Tier Number	Number of the tier
Tier Type	Type of the tier
Demoted Pages	Number of pages moved to lower-level tiers
Promoted Pages	Number of pages moved to higher-level tiers
Relocation Start Time	Time when tier relocation began in the storage system
Relocation End Time	Time when tier relocation ended in the storage system

Filter

Item	Description	Usage
Field	Pool ID, Tier Number, Demoted Pages	-
Condition expression	(Pool ID = "*" OR Pool ID = "*x*" OR Pool ID = "*x*" OR Pool ID = "*x*")	A maximum of four records for the specified pool ID are displayed. Be sure to use the condition expressions in the order shown on the left to specify a pool ID.
	AND Pool ID >= ". *Enter first pool ID here.*" AND Pool ID <= "*z Enter last pool ID here.*"	Records for the specified range of pool IDs are displayed.
	AND Tier Number = "*"	Records for the specified tier number are displayed.
	AND Demoted Pages >= *0*	Records with a performance value greater than or equal to the specified value are displayed.

Tier Pages Promoted (VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)

Overview

This report displays a line graph and table showing the number of pages moved from tiers to higher-level tiers in the last month in Dynamic Provisioning pools that have tier management enabled.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/7. HDP/HDT/

Record

Pool Tier Page Relocation(PD_PLTR)

Fields

Field Name	Description
Pool ID	ID of the pool
Tier Number	Number of the tier
Tier Type	Type of the tier
Demoted Pages	Number of pages moved to lower-level tiers
Promoted Pages	Number of pages moved to higher-level tiers
Relocation Start Time	Time when tier relocation began in the storage system
Relocation End Time	Time when tier relocation ended in the storage system

Filter

Item	Description	Usage
Field	Pool ID, Tier Number, Promoted Pages	-
Condition expression	(Pool ID = "*" OR Pool ID = "x" OR Pool ID = "x" OR Pool ID = "x")	A maximum of four records for the specified pool ID are displayed. Be sure to use the condition expressions in the order shown on the left to specify a pool ID.

Item	Description	Usage
	AND Pool ID >= ". *Enter first pool ID here.*" AND Pool ID <= "z *Enter last pool ID here.*"	Records for the specified range of pool IDs are displayed.
	AND Tier Number = "*"	Records for the specified tier number are displayed.
	AND Promoted Pages >= *0*	Records with a performance value greater than or equal to the specified value are displayed.

Tier Pages Relocation Status (VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)

Overview

This report displays a line graph and table showing the number of pages moved by tier relocation in the last month in Dynamic Provisioning pools that have tier management enabled.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/7. HDP/HDT/

Record

Pool Page Relocation(PD_PLR)

Fields

Field Name	Description
Pool ID	ID of the pool
Progress %	Progress of tier relocation (%)
Moved Pages	Number of pages moved by tier relocation
Relocation Start Time	Time when tier relocation began in the storage system
Relocation End Time	Time when tier relocation ended in the storage system

Filter

Item	Description	Usage
Field	Pool ID, Moved Pages	-
Condition expression	(Pool ID = "*" OR Pool ID = "x" OR Pool ID = "x" OR Pool ID = "x")	A maximum of four records for the specified pool ID are displayed. Be sure to use the condition expressions in the order shown on the left to specify a pool ID.
	AND Pool ID >= ". *Enter first pool ID here.*" AND Pool ID <= "z *Enter last pool ID here.*"	Records for the specified range of pool IDs are displayed.
	AND Moved Pages >= 0	Records with a performance value greater than or equal to the specified value are displayed.

Tier Space Usage % (VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)

Overview

For Dynamic Provisioning pools that have tier management enabled, this report displays a line graph showing the usage rate of the pool capacity by tier type for the last month. This report also displays a table showing the pool capacity and configuration information by tier type.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/7. HDP/HDT/

Record

Pool Tier Type Configuration(PD_PLTC)

Fields

Field Name	Description
Pool ID	ID of the pool
Tier Number	Number of the tier
Tier Type	Type of the tier
Free Capacity	The amount of unused capacity in the tier (GB)

Field Name	Description
Used Capacity	Size of the used capacity of the tier (GB)
Total Capacity	Actual capacity of the tier (GB)
Usage % in Pool	Of the total actual capacity of a Dynamic Provisioning pool that has tier management enabled, the percentage of capacity used by the tier
Usage % in Tier	Of the total actual capacity of the tier, the percentage of used capacity
Monitoring Mode	Monitoring mode of the pool

Filter

Item	Description	Usage
Field	Pool ID, Tier Number, Usage % in Tier	-
Condition expression	(Pool ID = "*" OR Pool ID = "x" OR Pool ID = "x" OR Pool ID = "x")	A maximum of four records for the specified pool ID are displayed. Be sure to use the condition expressions in the order shown on the left to specify a pool ID.
	AND Pool ID >= ". *Enter first pool ID here.*" AND Pool ID <= "z *Enter last pool ID here.*"	Records for the specified range of pool IDs are displayed.
	AND Tier Number = "*"	Records for the specified tier number are displayed.
	AND Usage % in Tier > *-1.000*	Records with a performance value greater than the specified value are displayed.

Tier Space Usage % by DP-VOL (VSP G1000/VSP/VSP Gx00 Fx00 - 7. HDP/HDT)

Overview

For Dynamic Provisioning V-VOLs that have tier management enabled, this report displays a line graph showing the usage rate of the V-VOL capacity by tier type for the last month. This report also displays a table showing the size and percentage of the used capacity of the V-VOL by tier type.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/7. HDP/HDT/

Record

V-VOL Tier Type Configuration(PD_VVTC)

Fields

Field Name	Description
LDEV Number	Logical device number of the V-VOL
Pool ID	ID of the pool
Tier Number	Number of the tier
Tier Type	Type of the tier
Used Capacity	Of the virtual capacity of the V-VOL, the size (in MB) of the actual capacity used by the tier
Usage %	Of the virtual capacity of the V-VOL, the percentage of the actual capacity used by the tier (that is, the percentage of the used capacity of the V-VOL)

Filter

Item	Description	Usage
Field	LDEV Number, Tier Number, Usage %	-
Condition expression	(LDEV Number = "*" OR LDEV Number = "x" OR LDEV Number = "x" OR LDEV Number = "x")	A maximum of four records for the specified logical device number are displayed. Be sure to use the condition expressions in the order shown on the left to specify a logical device number.
	AND LDEV Number >= ". Enter first LDEV Number here." AND LDEV Number <= "z Enter last LDEV Number here."	Records for the specified range of logical device numbers are displayed.
	AND Tier Number = "*"	Records for the specified tier number are displayed.
	AND Usage % > -1.000	Records with a performance value greater than the specified value are displayed.

VSP G1000/VSP/VSP Gx00 Fx00/8. TC/HUR folder

The following table lists and describes the reports stored in the `VSP G1000/VSP/VSP Gx00 Fx00/8. TC/HUR` folder.

Table 1-51 Agent for RAID Report (Storage Resources - VSP G1000/VSP/VSP Gx00 Fx00 - 8. TC/HUR)

Report Name	Displayed Information
TC/HUR Initiator Port List	Configuration information for storage system ports
TC/HUR RCU Target Port List	Configuration information for storage system ports

TC/HUR Initiator Port List

Overview

This report displays a table showing the configuration information for storage system ports.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/8. TC/HUR/

Record

Port Configuration(PD_PTC)

Fields

Field Name	Description
Port Name	Port name of the storage system
Port Number	Port number of the storage system
Port Role	Role assigned to the storage system port
Port WWN	WWN of the storage system port

Filter

Item	Description	Description
Field	Port Role	-

Item	Description	Description
Condition expression	Port Role = "*Initiator*"	Records for the specified port type are displayed.

TC/HUR RCU Target Port List

Overview

This report displays a table showing the configuration information for storage system ports.

This report cannot be used if the monitored storage system is a midrange storage system.

Storage Location

Reports/RAID/Storage Resources/VSP G1000/VSP/VSP Gx00 Fx00/8. TC/HUR/

Record

Port Configuration(PD_PTC)

Fields

Field Name	Description
Port Name	Port name of the storage system
Port Number	Port number of the storage system
Port Role	Role assigned to the storage system port
Port WWN	WWN of the storage system port

Filter

Item	Description	Usage
Field	Port Role	-
Condition expression	Port Role = "*RCU Target*"	Records for the specified port type are displayed.

Agent for SAN Switch Reports

lists the reports defined in the solution set in alphabetical order.

Table 1-52 Agent for SAN Switch Reports

Report Name	Displayed Information	Storage Location
Connected Port Detail Status (real-time report)	Details of the configuration of a connected destination port	Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/
Connected Port Detail Status (hourly historical report)	Details of the configuration of a connected destination port	Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/
CRC Error Count – Top 10 Port	Performance of the ten ports that currently have the highest number of detected CRC errors	Reports/SAN Switch/ Troubleshooting/Real-Time/
CRC Error Count – Top 10 Switch	Performance of the ten switches that currently have the highest number of CRC errors detected in total on their ports	Reports/SAN Switch/ Troubleshooting/Real-Time/
Device Detail Status (real-time report)	Configuration of the devices and nodes	Reports/SAN Switch/Status Reporting/Real-Time/
Device Detail Status (hourly historical report)	Configuration of the devices and nodes	Reports/SAN Switch/Status Reporting/Daily Trend/
Encoding Disparity Count – Top 10 Port	Performance of the ten ports that currently have the highest number of detected encoding errors and disparity errors	Reports/SAN Switch/ Troubleshooting/Real-Time/
Encoding Disparity Count – Top 10 Switch	Performance of the ten switches that currently have the highest number of encoding errors and disparity errors detected in total on their ports	Reports/SAN Switch/ Troubleshooting/Real-Time/
Link Buffer Flow (real-time report)	Linkage between a graph indicating the total number of times that the port buffers became full for each switch, and a graph indicating the number of times that the buffers became full for each port	Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/
Link Buffer Flow (hourly historical report)	Linkage between a graph indicating the total number of times that the port buffers became full for each switch, and a graph indicating the number of times that the	Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/

Report Name	Displayed Information	Storage Location
	buffers became full for each port	
Link CRC Error Count	Linkage between a graph indicating the total number of CRC errors detected on the ports of each switch, and a graph indicating the number of CRC errors detected on each port	Reports/SAN Switch/ Troubleshooting/Recent Past/ Drilldown Only/
Link Rcvd Bytes Rate (real-time report)	Linkage between a graph indicating the total number of bytes received on the ports of each switch per unit of time, and a graph indicating the total number of bytes received on each port per unit of time	Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/
Link Rcvd Bytes Rate (hourly historical report)	Linkage between a graph indicating the total number of bytes received on the ports of each switch per unit of time, and a graph indicating the total number of bytes received on each port per unit of time	Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/
Link Rcvd Bytes Rate (daily historical report)	Linkage between a graph indicating the total number of bytes received on the ports of each switch per unit of time, and a graph indicating the total number of bytes received on each port per unit of time	Reports/SAN Switch/Monthly Trend/ Drilldown Only/
Link Rcvd Kbytes (real-time report)	Linkage between a graph indicating the total number of kilobytes received on the ports of each switch, and a graph indicating the total number of kilobytes received on each port	Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/
Link Rcvd Kbytes (hourly historical report)	Linkage between a graph indicating the total number of kilobytes received on the ports of each switch, and a graph indicating the total number of kilobytes received on each port	Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/

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Report Name	Displayed Information	Storage Location
`Link Rcvd Kbytes` (hourly historical report for troubleshooting use)	Linkage between a graph indicating the total number of kilobytes received on the ports of each switch, and a graph indicating the number of kilobytes received on each port	`Reports/SAN Switch/ Troubleshooting/Recent Past/ Drilldown Only/`
`Link Rcvd Kbytes` (daily historical report)	Linkage between a graph indicating the total number of kilobytes received on the ports of each switch, and a graph indicating the number of kilobytes received on each port	`Reports/SAN Switch/Monthly Trend/ Drilldown Only/`
`Link Xmitd Bytes Rate` (real-time report)	Linkage between a graph indicating the total number of bytes sent through the ports for each switch per unit of time, and a graph indicating the number of bytes sent through each port per unit of time	`Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/`
`Link Xmitd Bytes Rate` (hourly historical report)	Linkage between a graph indicating the total number of bytes sent through the ports for each switch per unit of time, and a graph indicating the number of bytes sent through each port per unit of time	`Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/`
`Link Xmitd Bytes Rate` (daily historical report)	Linkage between a graph indicating the total number of bytes sent through the ports for each switch per unit of time, and a graph indicating the number of bytes sent through each port per unit of time	`Reports/SAN Switch/Monthly Trend/ Drilldown Only/`
`Link Xmitd Kbytes` (real-time report)	Linkage between a graph indicating the total number of kilobytes sent through the ports for each switch, and a graph indicating the number of kilobytes sent through each port	`Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/`

Report Name	Displayed Information	Storage Location
Link Xmitd Kbytes (hourly historical report)	Linkage between a graph indicating the total number of kilobytes sent through the ports for each switch, and a graph indicating the number of kilobytes sent through each port	Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/
Link Xmitd Kbytes (hourly historical report for troubleshooting use)	Linkage between a graph indicating the total number of kilobytes sent through the ports for each switch, and a graph indicating the number of kilobytes sent through each port	Reports/SAN Switch/ Troubleshooting/Recent Past/ Drilldown Only/
Link Xmitd Kbytes (daily historical report)	Linkage between a graph indicating the total number of kilobytes sent through the ports for each switch, and a graph indicating the number of kilobytes sent through each port	Reports/SAN Switch/Monthly Trend/ Drilldown Only/
Loss of Signal Count - Top 10 Port	Performance of the ten ports that currently have the highest number of detected optical signal losses	Reports/SAN Switch/ Troubleshooting/Real-Time/
Loss of Signal Count - Top 10 Switch	Performance of the ten switches that currently have the highest number of detected optical signal losses on their ports	Reports/SAN Switch/ Troubleshooting/Real-Time/
Loss of Sync Count - Top 10 Port	Performance of the ten ports that currently have the highest number of detected sync losses	Reports/SAN Switch/ Troubleshooting/Real-Time/
Loss of Sync Count - Top 10 Switch	Performance of the ten switches that currently have the highest number of detected sync losses in total on their ports	Reports/SAN Switch/ Troubleshooting/Real-Time/
Port Buffer Flow Status (real-time report)	Number of times that the port buffers became full and the number of times that the credit count in Buffer-to-Buffer flow control became 0	Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/

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Report Name	Displayed Information	Storage Location
`Port Buffer Flow Status` (hourly historical report)	Number of times that the port buffers became full and the number of times that the credit count in Buffer-to-Buffer flow control became 0	`Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/`
`Port CRC Error Count`	Details of the number of CRC errors detected on each port	`Reports/SAN Switch/ Troubleshooting/Recent Past/ Drilldown Only/`
`Port Detail Overview` (real-time report)	Details of the configuration of ports	`Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/`
`Port Detail Overview` (hourly historical report for troubleshooting use)	Details of the configuration of ports	`Reports/SAN Switch/ Troubleshooting/Recent Past/ Drilldown Only/`
`Port Detail Overview` (hourly historical report)	Details of the configuration of ports	`Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/`
`Port Detail Status` (real-time report)	Port configuration	`Reports/SAN Switch/Status Reporting/Real-Time/`
`Port Detail Status` (hourly historical report)	Port configuration	`Reports/SAN Switch/Status Reporting/Daily Trend/`
`Port Operation Status` (real-time report)	Operating mode and status of ports	`Reports/SAN Switch/Status Reporting/Real-Time/`
`Port Operation Status` (minute-by-minute historical report)	Operating mode and status of ports	`Reports/SAN Switch/ Troubleshooting/Recent Past/`
`Port Operation Status` (hourly historical report)	Operating mode and status of ports	`Reports/SAN Switch/Status Reporting/Daily Trend/`
`Port Rcvd Bytes Rate Status` (real-time report)	Details of the number of bytes and frames received on each port per unit of time	`Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/`
`Port Rcvd Bytes Rate Status` (hourly historical report)	Details of the number of bytes and frames received on each port per unit of time	`Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/`
`Port Rcvd Bytes Rate Trend`	Details of the number of bytes and frames received on each port per unit of time	`Reports/SAN Switch/Monthly Trend/ Drilldown Only/`

Report Name	Displayed Information	Storage Location
`Port Rcvd Kbytes`	Details of the number of kilobytes received on each port	`Reports/SAN Switch/ Troubleshooting/Recent Past/ Drilldown Only/`
`Port Rcvd Kbytes Status` (real-time report)	Details of the number of kilobytes and frames received on each port	`Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/`
`Port Rcvd Kbytes Status` (hourly historical report)	Details of the number of kilobytes and frames received on each port	`Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/`
`Port Rcvd Kbytes Trend`	Details of the number of kilobytes and frames received on each port	`Reports/SAN Switch/Monthly Trend/ Drilldown Only/`
`Port Xmitd Bytes Rate Status` (real-time report)	Details of the number of bytes and frames sent through each port per unit of time	`Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/`
`Port Xmitd Bytes Rate Status` (hourly historical report)	Details of the number of bytes and frames sent through each port per unit of time	`Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/`
`Port Xmitd Bytes Rate Trend`	Details of the number of bytes and frames sent through each port per unit of time	`Reports/SAN Switch/Monthly Trend/ Drilldown Only/`
`Port Xmitd Kbytes`	Details of the number of kilobytes sent through each port	`Reports/SAN Switch/ Troubleshooting/Recent Past/ Drilldown Only/`
`Port Xmitd Kbytes Status` (real-time report)	Details of the number of kilobytes and frames sent through each port	`Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/`
`Port Xmitd Kbytes Status` (hourly historical report)	Details of the number of kilobytes and frames sent through each port	`Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/`
`Port Xmitd Kbytes Trend`	Details of the number of kilobytes and frames sent through each port	`Reports/SAN Switch/Monthly Trend/ Drilldown Only/`
`Rcvd Kbytes - Top 10 Port`	Performance of the ten ports that currently have the most received kilobytes	`Reports/SAN Switch/ Troubleshooting/Real-Time/`
`Rcvd Kbytes - Top 10 Switch`	Performance of the ten switches that currently have the highest number of kilobytes in total received on their ports	`Reports/SAN Switch/ Troubleshooting/Real-Time/`

Report Name	Displayed Information	Storage Location
Switch Buffer Flow Status (real-time report)	Total number of times for each switch that the port buffers became full and that the credit count in Buffer-to-Buffer flow control became 0	Reports/SAN Switch/Status Reporting/Real-Time/
Switch Buffer Flow Status (hourly historical report)	Total number of times for each switch that the port buffers became full and that the credit count in Buffer-to-Buffer flow control became 0	Reports/SAN Switch/Status Reporting/Daily Trend/
Switch CRC Error Count	Total number of CRC errors detected on the ports for each switch	Reports/SAN Switch/ Troubleshooting/Recent Past/
Switch Detail Overview (real-time report)	Details of the configuration of the fabric and switches	Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/
Switch Detail Overview (hourly historical report for troubleshooting use)	Details of the configuration of the fabric and switches	Reports/SAN Switch/ Troubleshooting/Recent Past/ Drilldown Only/
Switch Detail Overview (hourly historical report)	Details of the configuration of the fabric and switches	Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/
Switch Detail Status (real-time report)	Fabric and switch configuration	Reports/SAN Switch/Status Reporting/Real-Time/
Switch Detail Status (hourly historical report)	Fabric and switch configuration	Reports/SAN Switch/Status Reporting/Daily Trend/
Switch List Status (real-time report)	List of switches	Reports/SAN Switch/Status Reporting/Real-Time/
Switch Operation Status (real-time report)	Operating mode and status of a switch	Reports/SAN Switch/Status Reporting/Real-Time/
Switch Operation Status (minute-by-minute historical report)	Operating mode and status of a switch	Reports/SAN Switch/ Troubleshooting/Recent Past/
Switch Operation Status (hourly historical report)	Operating mode and status of a switch	Reports/SAN Switch/Status Reporting/Daily Trend/
Switch Rcvd Bytes Rate	Total number of bytes and frames received on the	Reports/SAN Switch/Status Reporting/Real-Time/

Report Name	Displayed Information	Storage Location
Status (real-time report)	ports for each switch per unit of time	
Switch Rcvd Bytes Rate Status (hourly historical report)	Total number of bytes and frames received on the ports for each switch per unit of time	Reports/SAN Switch/Status Reporting/Daily Trend/
Switch Rcvd Bytes Rate Trend	Total number of bytes and frames received on the ports for each switch per unit of time	Reports/SAN Switch/Monthly Trend/
Switch Rcvd Kbytes	Total number of kilobytes received on the ports for each switch	Reports/SAN Switch/ Troubleshooting/Recent Past/
Switch Rcvd Kbytes Status (real-time report)	Total number of kilobytes and frames received on the ports for each switch	Reports/SAN Switch/Status Reporting/Real-Time/
Switch Rcvd Kbytes Status (hourly historical report)	Total number of kilobytes and frames received on the ports for each switch	Reports/SAN Switch/Status Reporting/Daily Trend/
Switch Rcvd Kbytes Trend	Total number of kilobytes and frames received on the ports for each switch	Reports/SAN Switch/Monthly Trend/
Switch Xmitd Bytes Rate Status (real-time report)	Total number of bytes and frames sent through the ports for each switch per unit of time	Reports/SAN Switch/Status Reporting/Real-Time/
Switch Xmitd Bytes Rate Status (hourly historical report)	Total number of bytes and frames sent through the ports for each switch per unit of time	Reports/SAN Switch/Status Reporting/Daily Trend/
Switch Xmitd Bytes Rate Trend	Total number of bytes and frames sent through the ports for each switch per unit of time	Reports/SAN Switch/Monthly Trend/
Switch Xmitd Kbytes	Total number of kilobytes sent through the ports for each switch	Reports/SAN Switch/ Troubleshooting/Recent Past/
Switch Xmitd Kbytes Status (real-time report)	Total number of kilobytes and frames sent through the ports for each switch	Reports/SAN Switch/Status Reporting/Real-Time/
Switch Xmitd Kbytes Status (hourly historical report)	Total number of kilobytes and frames sent through the ports for each switch	Reports/SAN Switch/Status Reporting/Daily Trend/
Switch Xmitd Kbytes Trend	Total number of kilobytes and frames sent through the ports for each switch	Reports/SAN Switch/Monthly Trend/

Report Name	Displayed Information	Storage Location
Xmitd Kbytes - Top 10 Port	Performance of the ten ports that, at present, have sent the highest number of kilobytes	Reports/SAN Switch/ Troubleshooting/Real-Time/
Xmitd Kbytes - Top 10 Switch	Performance of the ten switches that, at present, have sent the highest number of kilobytes in total through their ports	Reports/SAN Switch/ Troubleshooting/Real-Time/

Connected Port Detail Status (Real-Time Report)

Overview

The `Connected Port Detail Status` report shows a table containing configuration information for a connected destination port in real time. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/`

Record

Connected Port Detail (`PD_CPTD`)

Fields

Field Name	Description
Conn Port WWN	WWN of the connected destination port
Port WWN	WWN of the port

Drilldown Report (Field Level)

Report Name	Description
Port Detail Status	Displays a table containing configuration information for the port. To display this report, click the following field in the `Connected Port Detail Status` report: • Conn Port WWN

Connected Port Detail Status (Hourly Historical Report)

Overview

The `Connected Port Detail Status` report shows a table containing configuration information for a connected destination port for the past 24 hours. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/`

Record

Connected Port Detail (`PD_CPTD`)

Fields

Field Name	Description
Conn Port WWN	WWN of the connected destination port
Port WWN	WWN of the port

Drilldown Report (Field Level)

Report Name	Description
Port Detail Status	Displays a table containing configuration information for the port. To display this report, click the following field in the `Connected Port Detail Status` report: • Conn Port WWN

CRC Error Count - Top 10 Port

Overview

The `CRC Error Count - Top 10 Port` report shows a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected CRC errors. The report displays information in real time.

Storage Location

`Reports/SAN Switch/Troubleshooting/Real-Time/`

Record

Port Error Summary (`PI_PTES`)

Fields

Field Name	Description
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
CRC Error Count	Number of CRC errors detected for the port
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Switch WWN	WWN of the switch

Drilldown Reports (Report Level)

Report Name	Description
`Encoding Disparity Count - Top 10 Port`	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected encoding errors and disparity errors.
`Loss of Signal Count - Top 10 Port`	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected optical signal losses.
`Loss of Sync Count - Top 10 Port`	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected sync losses.
`Rcvd Kbytes - Top 10 Port`	Displays a table and a horizontal bar graph indicating performance information for the ten ports that have, at present, received the highest number of kilobytes.
`Xmitd Kbytes - Top 10 Port`	Displays a table and a horizontal bar graph indicating performance information for the ten ports that have, at present, sent the highest number of kilobytes.

Drilldown Reports (Field Level)

Report Name	Description
`CRC Error Count - Top 10 Switch`	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of CRC errors detected in total on their ports. To display this report, click the following field in the `CRC Error Count - Top 10 Port` report: • Switch WWN
`Port Detail Overview`	Displays port configuration information in list form. To display this report, click the following field in the `CRC Error Count - Top 10 Port` report:

Report Name	Description
	• Port WWN

CRC Error Count - Top 10 Switch

Overview

The `CRC Error Count - Top 10 Switch` report shows a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of CRC errors detected in total on their ports. The report displays information in real time.

Storage Location

`Reports/SAN Switch/Troubleshooting/Real-Time/`

Record

Switch Error Summary (`PI_SWES`)

Fields

Field Name	Description
CRC Error Count	Total CRC errors detected on the ports for each switch
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Model Name	Model name of the switch
Switch Name	Name of the switch
Switch WWN	WWN of the switch

Drilldown Reports (Report Level)

Report Name	Description
Encoding Disparity Count - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of encoding errors and disparity errors detected in total on their ports.
Loss of Signal Count - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of detected optical signal losses on their ports.
Loss of Sync Count - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently

Working with the Solution Set

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Report Name	Description
	have the highest number of sync losses detected in total on their ports.
`Rcvd Kbytes - Top 10 Switch`	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of kilobytes in total received on their ports.
`Xmitd Kbytes - Top 10 Switch`	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of kilobytes in total sent through their ports.

Drilldown Report (Field Level)

Report Name	Description
`CRC Error Count - Top 10 Port`	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected CRC errors. To display this report, click the following field in the `CRC Error Count - Top 10 Switch` report: • Switch WWN

Device Detail Status (Real-Time Report)

Overview

The `Device Detail Status` report shows a table containing configuration information for devices and nodes in real time. The information is displayed for each node.

Storage Location

`Reports/SAN Switch/Status Reporting/Real-Time/`

Record

Device Detail (`PD_DEVD`)

Fields

Field Name	Description
Device Name	Name of the device
Device Type	Type of device: Host, Storage
Node Name	Name of the node
Node WWN	WWN of the node

Drilldown Reports (Report Level)

Report Name	Description
Port Detail Status	Displays a table containing configuration information for the ports.
Switch Detail Status	Displays a table containing fabric and switch configuration information listed by switch.

Drilldown Report (Field Level)

Report Name	Description
Port Detail Status	Displays a table containing configuration information for the ports. To display this report, click the following field in the Device Detail Status report: • Node WWN

Device Detail Status (Hourly Historical Report)

Overview

The Device Detail Status report shows a table containing configuration information for devices and nodes for the past 24 hours. The information is displayed for each node.

Storage Location

Reports/SAN Switch/Status Reporting/Daily Trend/

Record

Device Detail (PD_DEVD)

Fields

Field Name	Description
Device Name	Name of the device
Device Type	Type of device: Host, Storage
Node Name	Name of the node
Node WWN	WWN of the node

Drilldown Reports (Report Level)

Report Name	Description
Port Detail Status	Displays a table containing configuration information for a port.
Switch Detail Status	Displays a table containing fabric and switch configuration information listed by switch.

Drilldown Report (Field Level)

Report Name	Description
Port Detail Status	Displays a table containing configuration information for the ports. To display this report, click the following field in the `Device Detail Status` report: • Node WWN

Encoding Disparity Count - Top 10 Port

Overview

The `Encoding Disparity Count - Top 10 Port` report shows a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected encoding errors and disparity errors. The report displays information in real time.

Storage Location

`Reports/SAN Switch/Troubleshooting/Real-Time/`

Record

Port Error Summary (`PI_PTES`)

Fields

Field Name	Description
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Encoding Disparity Count	Number of encoding errors and disparity errors detected for the port
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Field Name	Description
Switch WWN	WWN of the switch

Drilldown Reports (Report Level)

Report Name	Description
CRC Error Count – Top 10 Port	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected CRC errors.
Loss of Signal Count – Top 10 Port	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected optical signal losses.
Loss of Sync Count – Top 10 Port	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected sync losses.
Rcvd Kbytes – Top 10 Port	Displays a table and a horizontal bar graph indicating performance information for the ten ports that have, at present, received the highest number of kilobytes.
Xmitd Kbytes – Top 10 Port	Displays a table and a horizontal bar graph indicating performance information for the ten ports that have, at present, sent the highest number of kilobytes.

Drilldown Reports (Field Level)

Report Name	Description
Encoding Disparity Count – Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of encoding errors and disparity errors detected in total on their ports. To display this report, click the following field in the Encoding Disparity Count – Top 10 Port report: • Switch WWN
Port Detail Overview	Displays port configuration information in list form. To display this report, click the following field in the Encoding Disparity Count – Top 10 Port report: • Port WWN

Encoding Disparity Count - Top 10 Switch

Overview

The Encoding Disparity Count – Top 10 Switch report shows a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of encoding errors and

disparity errors detected in total on their ports. The report displays information in real time.

Storage Location

`Reports/SAN Switch/Troubleshooting/Real-Time/`

Record

Switch Error Summary (`PI_SWES`)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Encoding Disparity Count	Total number of encoding errors and disparity errors detected on the ports for each switch
Model Name	Model name of the switch
Switch Name	Name of the switch
Switch WWN	WWN of the switch

Drilldown Reports (Report Level)

Report Name	Description
CRC Error Count - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of CRC errors detected in total on their ports.
Loss of Signal Count - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of detected optical signal losses on their ports.
Loss of Sync Count - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of sync losses detected in total on their ports.
Rcvd Kbytes - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of kilobytes in total received on their ports.
Xmitd Kbytes - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of kilobytes sent in total through their ports.

Drilldown Report (Field Level)

Report Name	Description
Encoding Disparity Count - Top 10 Port	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected encoding errors and disparity errors. To display this report, click the following field in the `Encoding Disparity Count - Top 10 Switch` report: • Switch WWN

Link Buffer Flow (Real-Time Report)

Overview

The `Link Buffer Flow` report shows a table linking a graph indicating the total number of times that the port buffers became full for each switch, and a graph indicating the number of times that the buffers became full for each port. The report displays information in real time. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/`

Record

Port Detail (`PD_PTD`)

Fields

Field Name	Description
Parent WWN	WWN of the object to which the port belongs
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Drilldown Reports (Field Level)

Report Name	Description
Port Buffer Flow Status	Displays the number of times that the port buffers became full and the number of times that the credit count in Buffer-to-Buffer flow control became 0. This report displays a horizontal bar graph indicating the number of times that the buffers became full, and a table containing those data

Report Name	Description
	values along with the number of times that the credit count in Buffer-to-Buffer flow control became 0. To display this report, click one of the following fields in the `Link Buffer Flow` report: • Port Module Number • Port WWN
`Switch Buffer Flow Status`	Displays for each switch the total number of times that the port buffers became full and the credit count in Buffer-to-Buffer flow control became 0. This report displays a horizontal bar graph indicating the number of times that the buffers became full, and a table containing those data values along with the number of times that the credit count in Buffer-to-Buffer flow control became 0. To display this report, click the following field in the `Link Buffer Flow` report: • Parent WWN

Link Buffer Flow (Hourly Historical Report)

Overview

The `Link Buffer Flow` report shows a table linking a graph indicating the total number of times that the port buffers became full for each switch, and a graph indicating the number of times that the buffers became full for each port. The report displays information for the past 24 hours on an hourly basis. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/`

Record

Port Detail (`PD_PTD`)

Fields

Field Name	Description
Parent WWN	WWN of the object to which the port belongs
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Drilldown Reports (Field Level)

Report Name	Description
Port Buffer Flow Status	Displays the number of times that the port buffers became full and the number of times that the credit count in Buffer-to-Buffer flow control became 0. This report displays a horizontal bar graph indicating the number of times that the buffers became full, and a table containing those data values along with the number of times that the credit count in Buffer-to-Buffer flow control became 0. To display this report, click one of the following fields in the `Link Buffer Flow` report: • Port Module Number • Port WWN
Switch Buffer Flow Status	Displays for each switch the total number of times that the port buffers became full and the number of times that the credit count in Buffer-to-Buffer flow control became 0. This report displays a horizontal bar graph indicating the number of times that the buffers became full, and a table containing those data values along with the number of times that the credit count in Buffer-to-Buffer flow control became 0. To display this report, click the following field in the `Link Buffer Flow` report: • Parent WWN

Link CRC Error Count

Overview

The `Link CRC Error Count` report shows a table linking a graph indicating the total number of CRC errors detected on the ports of each switch, and a graph indicating the number of CRC errors detected on each port. The report displays minute-by-minute information for the past hour. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Troubleshooting/Recent Past/Drilldown Only/`

Record

Port Detail (`PD_PTD`)

Fields

Field Name	Description
Parent WWN	WWN of the object to which the port belongs
Port Module Number	Module number of the port

Field Name	Description
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Drilldown Reports (Field Level)

Report Name	Description
`Port CRC Error Count`	Displays the number of CRC errors detected on a port. This report displays a horizontal bar graph indicating the number of CRC errors, as well as a table containing those data values. To display this report, click one of the following fields in the `Link CRC Error Count` report: • Port Module Number • Port WWN
`Switch CRC Error Count`	Displays a table and a horizontal bar graph indicating the total number of CRC errors detected on the ports for each switch. To display this report, click the following field in the `Link CRC Error Count` report: • Parent WWN

Link Rcvd Bytes Rate (Real-Time Report)

Overview

The `Link Rcvd Bytes Rate` report shows a table linking a graph indicating the total number of bytes received on the ports of each switch per unit of time, and a graph indicating the total number of bytes received on each port per unit of time. The report displays information in real time. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/`

Record

Port Detail (`PD_PTD`)

Fields

Field Name	Description
Parent WWN	WWN of the object to which the port belongs
Port Module Number	Module number of the port

Field Name	Description
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Drilldown Reports (Field Level)

Report Name	Description
`Port Rcvd Bytes Rate Status`	Displays the number of bytes and frames received on each port per unit of time. This report displays a horizontal bar graph indicating the number of bytes received, as well as a table containing those data values along with the number of frames received. To display this report, click one of the following fields in the `Link Rcvd Bytes Rate` report: • Port Module Number • Port WWN
`Switch Rcvd Bytes Rate Status`	Displays the total number of bytes and frames received on the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes received, and a table containing those data values along with the number of frames received. To display this report, click the following field in the `Link Rcvd Bytes Rate` report: • Parent WWN

Link Rcvd Bytes Rate (Hourly Historical Report)

Overview

The `Link Rcvd Bytes Rate` report shows a table that links a graph indicating the total number of bytes received on the ports of each switch per unit of time, and a graph indicating the total number of bytes received on each port per unit of time. The report displays information for the past 24 hours on an hourly basis. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/`

Record

Port Detail (`PD_PTD`)

Fields

Field Name	Description
Parent WWN	WWN of the object to which the port belongs
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Drilldown Reports (Field Level)

Report Name	Description
`Port Rcvd Bytes Rate Status`	Displays the total number of bytes and frames received on a port per unit of time. This report displays a horizontal bar graph indicating the number of bytes received, as well as a table containing those data values along with the number of frames received. To display this report, click one of the following fields in the `Link Rcvd Bytes Rate` report: • Port Module Number • Port WWN
`Switch Rcvd Bytes Rate Status`	Displays the total number of bytes and frames received on the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes received, as well as a table containing those data values along with the number of frames received. To display this report, click the following field in the `Link Rcvd Bytes Rate` report: • Parent WWN

Link Rcvd Bytes Rate (Daily Historical Report)

Overview

The `Link Rcvd Bytes Rate` report shows a table that links a graph indicating the total number of bytes received on the ports of each switch per unit of time, and a graph indicating the total number of bytes received on each port per unit of time. The report displays information for the past month on a daily basis. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Monthly Trend/Drilldown Only/`

Record

Port Detail (`PD_PTD`)

Fields

Field Name	Description
Parent WWN	WWN of the object to which the port belongs
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Drilldown Reports (Field Level)

Report Name	Description
`Port Rcvd Bytes Rate Trend`	Displays the total number of bytes and frames received on a port per unit of time. This report displays a line graph indicating the number of bytes received, as well as a table containing those data values along with the number of frames received. To display this report, click one of the following fields in the `Link Rcvd Bytes Rate` report: • Port Module Number • Port WWN
`Switch Rcvd Bytes Rate Trend`	Displays the total number of bytes and frames received on the ports for each switch per unit of time. This report displays a line graph indicating the number of bytes received, as well as a table containing those data values along with the number of frames received. To display this report, click the following field in the `Link Rcvd Bytes Rate` report: • Parent WWN

Link Rcvd Kbytes (Real-Time Report)

Overview

The `Link Rcvd Kbytes` report shows a table that links a graph indicating the total number of kilobytes received on the ports of each switch, and a graph indicating the number of kilobytes received on each port in real time. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/`

Record

Port Detail (`PD_PTD`)

Fields

Field Name	Description
Parent WWN	WWN of the object to which the port belongs
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Drilldown Reports (Field Level)

Report Name	Description
`Port Rcvd Kbytes Status`	Displays the number of kilobytes and frames received on a port. This report displays a horizontal bar graph indicating the number of kilobytes received, as well as a table containing those data values and the number of frames received. To display this report, click one of the following fields in the `Link Rcvd Kbytes` report: • Port Module Number • Port WWN
`Switch Rcvd Kbytes Status`	Displays the total number of kilobytes and frames received on the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes received, as well as a table containing those data values and the number of frames received. To display this report, click the following field in the `Link Rcvd Kbytes` report: • Parent WWN

Link Rcvd Kbytes (Hourly Historical Report)

Overview

The `Link Rcvd Kbytes` report shows a table that links a graph indicating the total number of kilobytes received on the ports of each switch, and a graph indicating the number of kilobytes received on each port. The report displays information for the past 24 hours on an hourly basis. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/`

Record

Port Detail (`PD_PTD`)

Fields

Field Name	Description
Parent WWN	WWN of the object to which the port belongs
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Drilldown Reports (Field Level)

Report Name	Description
`Port Rcvd Kbytes Status`	Displays the number of kilobytes and frames received on a port. This report displays a horizontal bar graph indicating the number of kilobytes received, as well as a table containing those data values and the number of frames received. To display this report, click one of the following fields in the `Link Rcvd Kbytes` report: • Port Module Number • Port WWN
`Switch Rcvd Kbytes Status`	Displays the total number of kilobytes and frames received on the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes received, as well as a table containing those data values and the number of frames received. To display this report, click the following field in the `Link Rcvd Kbytes` report: • Parent WWN

Link Rcvd Kbytes (Hourly Historical Report for Troubleshooting Use)

Overview

The `Link Rcvd Kbytes` report shows a table that links a graph indicating the total number of kilobytes received on the ports of each switch, and a graph indicating the number of kilobytes received on each port. The report displays minute-by-minute information for the past hour. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Troubleshooting/Recent Past/Drilldown Only/`

Record

Port Detail (`PD_PTD`)

Fields

Field Name	Description
Parent WWN	WWN of the object to which the port belongs
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Drilldown Reports (Field Level)

Report Name	Description
`Port Rcvd Kbytes`	Displays the number of kilobytes and frames received on a port. This report displays a horizontal bar graph indicating the number of kilobytes received, as well as a table containing those data values and the number of frames received. To display this report, click one of the following fields in the `Link Rcvd Kbytes` report: • Port Module Number • Port WWN
`Switch Rcvd Kbytes`	Displays the total number of kilobytes and frames received on the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes received, as well as a table containing those data values and the number of frames received. To display this report, click the following field in the `Link Rcvd Kbytes` report: • Parent WWN

Link Rcvd Kbytes (Daily Historical Report)

Overview

The `Link Rcvd Kbytes` report shows a table that links a graph indicating the total number of kilobytes received on the ports for each switch, and a graph indicating the number of kilobytes received on each port. The report shows information for the past month on a daily basis. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Monthly Trend/Drilldown Only/`

Record

Port Detail (`PD_PTD`)

Fields

Field Name	Description
Parent WWN	WWN of the object to which the port belongs
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Drilldown Reports (Field Level)

Report Name	Description
`Port Rcvd Kbytes Trend`	Displays the number of kilobytes and frames received on a port. This report displays a line graph indicating the number of kilobytes received, as well as a table containing those data values and the number of frames received. To display this report, click one of the following fields in the `Link Rcvd Kbytes` report: • Port Module Number • Port WWN
`Switch Rcvd Kbytes Trend`	Displays the total number of kilobytes and frames received on the ports for each switch. This report displays a line graph indicating the number of kilobytes received, as well as a table containing those data values and the number of frames received. To display this report, click the following field in the `Link Rcvd Kbytes` report: • Parent WWN

Link Xmitd Bytes Rate (Real-Time Report)

Overview

The `Link Xmitd Bytes Rate` report shows a table that links a graph indicating the total number of bytes sent through the ports for each switch per unit of time, and a graph indicating the number of bytes sent through each port per unit of time. The report displays information in real time. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/`

Record

Port Detail (`PD_PTD`)

Fields

Field Name	Description
Parent WWN	WWN of the object to which the port belongs
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Drilldown Reports (Field Level)

Report Name	Description
`Port Xmitd Bytes Rate Status`	Displays the number of bytes and frames sent through each port per unit of time. This report displays a horizontal bar graph indicating the number of bytes sent, as well as a table containing those data values and the number of frames sent. To display this report, click one of the following fields in the `Link Xmitd Bytes Rate` report: • Port Module Number • Port WWN
`Switch Xmitd Bytes Rate Status`	Displays the total number of bytes and frames sent through the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes sent, as well as a table containing those data values and the number of frames sent. To display this report, click the following field in the `Link Xmitd Bytes Rate` report: • Parent WWN

Link Xmitd Bytes Rate (Hourly Historical Report)

Overview

The `Link Xmitd Bytes Rate` report shows a table that links a graph indicating the total number of bytes sent through the ports for each switch per unit of time, and a graph indicating the number of bytes sent through each port per unit of time. The report displays information for the past 24 hours on an hourly basis. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/`

Record

Port Detail (`PD_PTD`)

Fields

Field Name	Description
Parent WWN	WWN of the object to which the port belongs
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Drilldown Reports (Field Level)

Report Name	Description
`Port Xmitd Bytes Rate Status`	Displays the number of bytes and frames sent through a port per unit of time. This report displays a horizontal bar graph indicating the number of bytes sent, as well as a table containing those data values and the number of frames sent. To display this report, click one of the following fields in the `Link Xmitd Bytes Rate` report: • Port Module Number • Port WWN
`Switch Xmitd Bytes Rate Status`	Displays the total number of bytes and frames sent through the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes sent, as well as a table containing those data values and the number of frames sent. To display this report, click the following field in the `Link Xmitd Bytes Rate` report: • Parent WWN

Link Xmitd Bytes Rate (Daily Historical Report)

Overview

The `Link Xmitd Bytes Rate` report shows a table that links a graph indicating the total number of bytes sent through the ports for each switch per unit of time, and a graph indicating the number of bytes sent through each port per unit of time. This report displays information for the past month on a daily basis. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Monthly Trend/Drilldown Only/`

Record

Port Detail (`PD_PTD`)

Fields

Field Name	Description
Parent WWN	WWN of the object to which the port belongs
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Drilldown Reports (Field Level)

Report Name	Description
`Port Xmitd Bytes Rate Trend`	Displays the number of bytes and frames sent through a port per unit of time. This report displays a line graph indicating the number of bytes sent, as well as a table containing those data values and the number of frames sent. To display this report, click one of the following fields in the `Link Xmitd Bytes Rate` report: • Port Module Number • Port WWN
`Switch Xmitd Bytes Rate Trend`	Displays the total number of bytes and frames sent through the ports for each switch per unit of time. This report displays a line graph indicating the number of bytes sent, as well as a table containing those data values and the number of frames sent. To display this report, click the following field in the `Link Xmitd Bytes Rate` report: • Parent WWN

Link Xmitd Kbytes (Real-Time Report)

Overview

The `Link Xmitd Kbytes` report shows a table that links a graph indicating the total number of kilobytes sent through the ports for each switch, and a graph indicating the number of kilobytes sent through each port. The report displays information in real time. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/`

Record

Port Detail (`PD_PTD`)

Fields

Field Name	Description
Parent WWN	WWN of the object to which the port belongs
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Drilldown Reports (Field Level)

Report Name	Description
`Port Xmitd Kbytes Status`	Displays the number of kilobytes and frames sent through each port. This report displays a horizontal bar graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent. To display this report, click one of the following fields in the `Link Xmitd Kbytes` report: • Port Module Number • Port WWN
`Switch Xmitd Kbytes Status`	Displays the total number of kilobytes and frames sent through the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent. To display this report, click the following field in the `Link Xmitd Kbytes` report: • Parent WWN

Link Xmitd Kbytes (Hourly Historical Report)

Overview

The `Link Xmitd Kbytes` report shows a table that links a graph indicating the total number of kilobytes sent through the ports for each switch per unit of time, and a graph indicating the number of kilobytes sent through each port. The report displays information for the past 24 hours on an hourly basis. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/`

Record

Port Detail (`PD_PTD`)

Fields

Field Name	Description
Parent WWN	WWN of the object to which the port belongs
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Drilldown Reports (Field Level)

Report Name	Description
`Port Xmitd Kbytes Status`	Displays the number of kilobytes and frames sent through a port. This report displays a horizontal bar graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent. To display this report, click one of the following fields in the `Link Xmitd Kbytes` report: • Port Module Number • Port WWN
`Switch Xmitd Kbytes Status`	Displays the total number of kilobytes and frames sent through the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent. To display this report, click the following field in the `Link Xmitd Kbytes` report: • Parent WWN

Link Xmitd Kbytes (Hourly Historical Report for Troubleshooting Use)

Overview

The `Link Xmitd Kbytes` report shows a table that links a graph indicating the total number of kilobytes sent through the ports for each switch, and a graph indicating the number of kilobytes sent through each port. The report displays minute-by-minute information for the past hour. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Troubleshooting/Recent Past/Drilldown Only/`

Record

Port Detail (`PD_PTD`)

Fields

Field Name	Description
Parent WWN	WWN of the object to which the port belongs
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Drilldown Reports (Field Level)

Report Name	Description
`Port Xmitd Kbytes`	Displays the number of kilobytes and frames sent through each port. This report displays a horizontal bar graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent. To display this report, click one of the following fields in the `Link Xmitd Kbytes` report: • Port Module Number • Port WWN
`Switch Xmitd Kbytes`	Displays the total number of kilobytes and frames sent through the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent. To display this report, click the following field in the `Link Xmitd Kbytes` report: • Parent WWN

Link Xmitd Kbytes (Daily Historical Report)

Overview

The `Link Xmitd Kbytes` report shows a table that links a graph indicating the total number of kilobytes sent through the ports for each switch per unit of time, and a graph indicating the number of kilobytes sent through each port. The report displays information for the past month on a daily basis. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Monthly Trend/Drilldown Only/`

Record

Port Detail (`PD_PTD`)

Fields

Field Name	Description
Parent WWN	WWN of the object to which the port belongs
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Drilldown Reports (Field Level)

Report Name	Description
`Port Xmitd Kbytes Trend`	Displays the number of kilobytes and frames sent through a port. This report displays a line graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent. To display this report, click one of the following fields in the `Link Xmitd Kbytes` report: • Port Module Number • Port WWN
`Switch Xmitd Kbytes Trend`	Displays the total number of kilobytes and frames sent through the ports for each switch. This report displays a line graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent. To display this report, click the following field in the `Link Xmitd Kbytes` report: • Parent WWN

Loss of Signal Count - Top 10 Port

Overview

The `Loss of Signal Count - Top 10 Port` report shows a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected optical signal losses. The report displays information in real time.

Storage Location

`Reports/SAN Switch/Troubleshooting/Real-Time/`

Record

Port Error Summary (`PI_PTES`)

Fields

Field Name	Description
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Loss of Signal Count	Number of times that loss of an optical signal was detected for the port
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Switch WWN	WWN of the switch

Drilldown Reports (Report Level)

Report Name	Description
`CRC Error Count – Top 10 Port`	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected CRC errors.
`Encoding Disparity Count – Top 10 Port`	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected encoding errors and disparity errors.
`Loss of Sync Count – Top 10 Port`	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected sync losses.
`Rcvd Kbytes – Top 10 Port`	Displays a table and a horizontal bar graph indicating performance information for the ten ports that have, at present, received the highest number of kilobytes.
`Xmitd Kbytes – Top 10 Port`	Displays a table and a horizontal bar graph indicating performance information for the ten ports that have, at present, sent the highest number of kilobytes.

Drilldown Reports (Field Level)

Report Name	Description
`Loss of Signal Count – Top 10 Switch`	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of detected optical signal losses on their ports. To display this report, click the following field in the `Loss of Signal Count – Top 10 Port` report: • Switch WWN

Report Name	Description
Port Detail Overview	Displays port configuration information in list form. To display this report, click the following field in the `Loss of Signal Count - Top 10 Port` report: • Port WWN

Loss of Signal Count - Top 10 Switch

Overview

The `Loss of Signal Count - Top 10 Switch` report shows a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of detected optical signal losses on their ports. The report displays information in real time.

Storage Location

`Reports/SAN Switch/Troubleshooting/Real-Time/`

Record

Switch Error Summary (`PI_SWES`)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Loss of Signal Count	Total number of times that loss of an optical signal was detected on the ports per switch
Model Name	Model name of the switch
Switch Name	Name of the switch
Switch WWN	WWN of the switch

Drilldown Reports (Report Level)

Report Name	Description
CRC Error Count - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of CRC errors detected in total on their ports.
Encoding Disparity Count - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently

Report Name	Description
	have the highest number of encoding errors and disparity errors detected in total on their ports.
Loss of Sync Count - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of sync losses detected in total on their ports.
Rcvd Kbytes - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of kilobytes in total received on their ports.
Xmitd Kbytes - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of kilobytes in total sent through their ports.

Drilldown Report (Field Level)

Report Name	Description
Loss of Signal Count - Top 10 Port	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected optical signal losses. To display this report, click the following field in the `Loss of Signal Count - Top 10 Switch` report: • Switch WWN

Loss of Sync Count - Top 10 Port

Overview

The `Loss of Sync Count - Top 10 Port` report shows a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected sync losses. The report displays information in real time.

Storage Location

`Reports/SAN Switch/Troubleshooting/Real-Time/`

Record

Port Error Summary (`PI_PTES`)

Fields

Field Name	Description
Area ID	Area identifier in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Loss of Sync Count	Number of sync losses detected for the port
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Switch WWN	WWN of the switch

Drilldown Reports (Report Level)

Report Name	Description
`CRC Error Count - Top 10 Port`	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected CRC errors.
`Encoding Disparity Count - Top 10 Port`	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected encoding errors and disparity errors.
`Loss of Signal Count - Top 10 Port`	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected optical signal losses.
`Rcvd Kbytes - Top 10 Port`	Displays a table and a horizontal bar graph indicating performance information for the ten ports that have, at present, received the highest number of kilobytes.
`Xmitd Kbytes - Top 10 Port`	Displays a table and a horizontal bar graph indicating performance information for the ten ports that have, at present, sent the highest number of kilobytes.

Drilldown Reports (Field Level)

Report Name	Description
`Loss of Sync Count - Top 10 Switch`	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of sync losses detected in total on their ports. To display this report, click the following field in the `Loss of Sync Count - Top 10 Port` report: • Switch WWN
`Port Detail Overview`	Displays port configuration information in list form. To display this report, click the following field in the `Loss of Sync Count - Top 10 Port` report:

Report Name	Description
	• Port WWN

Loss of Sync Count - Top 10 Switch

Overview

The `Loss of Sync Count - Top 10 Switch` report shows a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of sync losses detected in total on their ports. The report displays information in real time.

Storage Location

`Reports/SAN Switch/Troubleshooting/Real-Time/`

Record

Switch Error Summary (`PI_SWES`)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Loss of Sync Count	Total number of sync losses on the ports per switch
Model Name	Model name of the switch
Switch Name	Name of the switch
Switch WWN	WWN of the switch

Drilldown Reports (Report Level)

Report Name	Description
CRC Error Count - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of CRC errors detected in total on their ports.
Encoding Disparity Count - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of encoding errors and disparity errors detected in total on their ports.
Loss of Signal Count - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently

Report Name	Description
	have the highest number of detected optical signal losses on their ports.
`Rcvd Kbytes - Top 10 Switch`	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of kilobytes in total received on their ports.
`Xmitd Kbytes - Top 10 Switch`	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of kilobytes in total sent through their ports.

Drilldown Report (Field Level)

Report Name	Description
`Loss of Sync Count - Top 10 Port`	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected sync losses. To display this report, click the following field in the `Loss of Sync Count - Top 10 Switch` report: • Switch WWN

Port Buffer Flow Status (Real-Time Report)

Overview

The `Port Buffer Flow Status` report shows the number of times that the port buffers became full and the number of times that the credit count in the Buffer-to-Buffer flow control for each port became 0. The report displays a horizontal bar graph indicating the number of times that the buffers became full, as well as a table containing those data values along with the number of times that the credit count in the Buffer-to-Buffer flow control became 0. The report displays information in real time. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Buffer Credit Zero State Count	Number of times that the credit count in the Buffer-to-Buffer flow control for the port became 0
Input Buffers Full Count	Number of times that the buffer for the port became full
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Switch WWN	WWN of the switch

Drilldown Reports (Field Level)

Report Name	Description
`Port Detail Overview`	Displays port configuration information in list form. To display this report, click the following field in the `Port Buffer Flow Status` report: • Port WWN
`Switch Buffer Flow Status`	Displays for each switch the total number of times that the port buffers became full and the credit count in Buffer-to-Buffer flow control became 0. This report displays a horizontal bar graph indicating the number of times that the buffers became full, and a table containing those data values along with the number of times that the credit count in the Buffer-to-Buffer flow control became 0. To display this report, click the following field in the `Port Buffer Flow Status` report: • Switch WWN

Port Buffer Flow Status (Hourly Historical Report)

Overview

The `Port Buffer Flow Status` report shows the number of times that the port buffers became full and the number of times that the credit count in the Buffer-to-Buffer flow control for the port became 0. The report displays a horizontal bar graph indicating the number of times that the buffers became full, and a table containing those data values along with the number of times that the credit count in the Buffer-to-Buffer flow control became 0. The report displays information for the past 24 hours on an hourly basis. This is a drilldown report.

Storage Location

```
Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/
```

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Buffer Credit Zero State Count	Number of times that the credit count in the Buffer-to-Buffer flow control for the port became 0
Input Buffers Full Count	Number of times that the buffer for the port became full
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Switch WWN	WWN of the switch

Drilldown Reports (Field Level)

Report Name	Description
`Port Detail Overview`	Displays port configuration information in list form. To display this report, click the following field in the `Port Buffer Flow Status` report: • Port WWN
`Switch Buffer Flow Status`	Displays for each switch the total number of times that the port buffers became full and the credit count in Buffer-to-Buffer flow control became 0. This report displays a horizontal bar graph indicating the number of times that the buffers became full, and a table containing those data values along with the number of times that the credit count in the Buffer-to-Buffer flow control became 0. To display this report, click the following field in the `Port Buffer Flow Status` report: • Switch WWN

Port CRC Error Count

Overview

The `Port CRC Error Count` report shows a table and a horizontal bar graph indicating the number of CRC errors on each port. The report displays minute-by-minute information for the past hour. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Troubleshooting/Recent Past/Drilldown Only/`

Record

Port Error Summary (`PI_PTES`)

Fields

Field Name	Description
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
CRC Error Count	Number of CRC errors detected on the port
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Switch WWN	WWN of the switch

Drilldown Reports (Field Level)

Report Name	Description
`Port Detail Overview`	Displays port configuration information in list form. To display this report, click the following field in the `Port CRC Error Count` report: • Port WWN
`Switch CRC Error Count`	Displays a table and a horizontal bar graph indicating the total number of CRC errors detected on the ports for each switch. To display this report, click the following field in the `Port CRC Error Count` report: • Switch WWN

Port Detail Overview (Real-Time Report)

Overview

The `Port Detail Overview` report shows port configuration information in list form. The report displays information in real time. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/`

Record

Port Detail (`PD_PTD`)

Fields

Field Name	Description
Address ID	Address identifier in hexadecimal (*Example:* `0x0E010A`). The high-order byte is the Domain ID, the middle byte is the Area ID, and the low-order byte is the Port ID.
Area ID	Area identifier in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
GBIC Type	Type of the GBIC (light module): Short-wave, Long-wave, etc.
Parent Type	Type of the object to which the port belongs: Switch, Node
Parent WWN	WWN of the object to which the port belongs
Port ID	Port identifier, in hexadecimal (*Example:* `0x00`). In an arbitrated loop configuration, `AL_PA` is the Port ID.
Port Module Number	Module number of the port
Port Name	Name of the port
Port Number	Number assigned to the port
Port Speed	Signal transmission speed of the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Drilldown Report (Field Level)

Report Name	Description
`Switch Detail Overview`	Displays switch configuration information in list form. To display this report, click the following field in the `Port Detail Overview` report:

Report Name	Description
	• Parent WWN

Port Detail Overview (Hourly Historical Report for Troubleshooting Use)

Overview

The `Port Detail Overview` report shows port configuration information for the past 24 hours in list form. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Troubleshooting/Recent Past/Drilldown Only/`

Record

Port Detail (`PD_PTD`)

Fields

Field Name	Description
Address ID	Address identifier, in hexadecimal (*Example:* `0x0E010A`). The high-order byte is the Domain ID, the middle byte is the Area ID, and the low-order byte is the Port ID.
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
GBIC Type	Type of the GBIC (light module): Short-wave, Long-wave, etc.
Parent Type	Type of the object to which the port belongs: Switch, Node
Parent WWN	WWN of the object to which the port belongs
Port ID	Port identifier, in hexadecimal (*Example:* `0x00`). In an arbitrated loop configuration, `AL_PA` is the Port ID.
Port Module Number	Module number of the port
Port Name	Name of the port
Port Number	Number assigned to the port
Port Speed	Signal transmission speed of the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

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Drilldown Report (Field Level)

Report Name	Description
Switch Detail Overview	Displays switch configuration information in list form. To display this report, click the following field in the `Port Detail Overview` report: • Parent WWN

Port Detail Overview (Hourly Historical Report)

Overview

The `Port Detail Overview` report shows port configuration information for the past 24 hours in list form. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/`

Record

Port Detail (`PD_PTD`)

Fields

Field Name	Description
Address ID	Address identifier, in hexadecimal (*Example:* `0x0E010A`). The high-order byte is the Domain ID, the middle byte is the Area ID, and the low-order byte is the Port ID.
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
GBIC Type	Type of the GBIC (light module): Short-wave, Long-wave, etc.
Parent Type	Type of the object to which the port belongs: Switch, Node
Parent WWN	WWN of the object to which the port belongs
Port ID	Port identifier, in hexadecimal (*Example:* `0x00`). In an arbitrated loop configuration, `AL_PA` is the Port ID.
Port Module Number	Module number of the port
Port Name	Name of the port
Port Number	Number assigned to the port
Port Speed	Signal transmission speed of the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Drilldown Report (Field Level)

Report Name	Description
Switch Detail Overview	Displays switch configuration information in list form. To display this report, click the following field in the `Port Detail Overview` report: • Parent WWN

Port Detail Status (Real-Time Report)

Overview

The `Port Detail Status` report shows a table containing port configuration information in real time.

Storage Location

`Reports/SAN Switch/Status Reporting/Real-Time/`

Record

Port Detail (`PD_PTD`)

Fields

Field Name	Description
Address ID	Address identifier in hexadecimal (*Example:* `0x0E010A`). The high-order byte is the Domain ID, the middle byte is the Area ID, and the low-order byte is the Port ID.
Area ID	Area identifier in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
GBIC Type	Type of the GBIC (light module): Short-wave, Long-wave, etc.
Parent Type	Type of the object to which the port belongs: Switch, Node
Parent WWN	WWN of the object to which the port belongs
Port ID	Port identifier, in hexadecimal (*Example:* `0x00`). In an arbitrated loop configuration, `AL_PA` is the Port ID.
Port Module Number	Module number of the port
Port Name	Name of the port
Port Number	Number assigned to the port
Port Speed	Signal transmission speed of the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Drilldown Reports (Report Level)

Report Name	Description
Device Detail Status	Displays a table containing device and node configuration information listed by node.
Switch Detail Status	Displays a table containing fabric and switch configuration information listed by switch.

Drilldown Report (Field Level)

Report Name	Description
Connected Port Detail Status	Displays a table containing configuration information for the connected destination port. To display this report, click the following field in the `Port Detail Status` report: • Port WWN

Port Detail Status (Hourly Historical Report)

Overview

The `Port Detail Status` report shows a table containing port configuration information for the past 24 hours.

Storage Location

`Reports/SAN Switch/Status Reporting/Daily Trend/`

Record

Port Detail (`PD_PTD`)

Fields

Field Name	Description
Address ID	Address identifier, in hexadecimal (*Example:* `0x0E010A`). The high-order byte is the Domain ID, the middle byte is the Area ID, and the low-order byte is the Port ID.
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
GBIC Type	Type of the GBIC (light module): Short-wave, Long-wave, etc.
Parent Type	Type of the object to which the port belongs: Switch, Node
Parent WWN	WWN of the object to which the port belongs

Field Name	Description
Port ID	Port identifier, in hexadecimal (*Example:* `0x00`). In an arbitrated loop configuration, `AL_PA` is the Port ID.
Port Module Number	Module number of the port
Port Name	Name of the port
Port Number	Number assigned to the port
Port Speed	Signal transmission speed of the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Drilldown Reports (Report Level)

Report Name	Description
`Device Detail Status`	Displays a table containing device and node configuration information listed by node.
`Switch Detail Status`	Displays a table containing fabric and switch configuration information listed by switch.

Drilldown Report (Field Level)

Report Name	Description
`Connected Port Detail Status`	Displays a table containing configuration information for the connected destination port. To display this report, click the following field in the `Port Detail Status` report: • Port WWN

Port Operation Status (Real-Time Report)

Overview

The `Port Operation Status` report shows a table containing information about the operating mode and status of the port in real time.

Storage Location

`Reports/SAN Switch/Status Reporting/Real-Time/`

Record

Port Error Summary (`PI_PTES`)

Fields

Field Name	Description
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Port Mode	Operating mode of the port: Online, Offline
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Ops Status	Operating status of the port: Ok, Warning, Faulty
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Switch WWN	WWN of the switch

Drilldown Report (Field Level)

Report Name	Description
`Port Detail Overview`	Displays port configuration information in list form. To display this report, click the following field in the `Port Operation Status` report: • Port WWN

Port Operation Status (Minute-by-Minute Historical Report)

Overview

The `Port Operation Status` report shows a table containing information about the operating mode and status of the port. The report displays minute-by-minute information for the past hour.

Storage Location

`Reports/SAN Switch/Troubleshooting/Recent Past/`

Record

Port Error Summary (`PI_PTES`)

Fields

Field Name	Description
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.

Field Name	Description
Port Mode	Operating mode of the port: Online, Offline
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Ops Status	Operating status of the port: Ok, Warning, Faulty
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Switch WWN	WWN of the switch

Drilldown Report (Field Level)

Report Name	Description
`Port Detail Overview`	Displays port configuration information in list form. To display this report, click the following field in the `Port Operation Status` report: • Port WWN

Port Operation Status (Hourly Historical Report)

Overview

The `Port Operation Status` report shows a table containing information about the operating mode and status of the port. The report displays information for the past 24 hours on an hourly basis.

Storage Location

`Reports/SAN Switch/Status Reporting/Daily Trend/`

Record

Port Error Summary (`PI_PTES`)

Fields

Field Name	Description
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Port Mode	Operating mode of the port: Online, Offline
Port Module Number	Module number of the port
Port Number	Number assigned to the port

Working with the Solution Set

Hitachi Tuning Manager Hardware Reports Reference

Field Name	Description
Port Ops Status	Operating status of the port: Ok, Warning, Faulty
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Switch WWN	WWN of the switch

Drilldown Report (Field Level)

Report Name	Description
`Port Detail Overview`	Displays port configuration information in list form. To display this report, click the following field in the `Port Operation Status` report: • Port WWN

Port Rcvd Bytes Rate Status (Real-Time Report)

Overview

The `Port Rcvd Bytes Rate Status` report shows the number of bytes and frames received on each port per unit of time. The report displays a horizontal bar graph indicating the number of bytes received, as well as a table containing those data values along with the number of frames received. The report displays information in real time. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port

Field Name	Description
Rcvd Bytes / sec	Number of bytes received by the port per unit of time
Rcvd Frames / sec	Number of frames received by the port per unit of time
Switch WWN	WWN of the switch

Drilldown Reports (Field Level)

Report Name	Description
Port Detail Overview	Displays port configuration information in list form. To display this report, click the following field in the `Port Rcvd Bytes Rate Status` report: • Port WWN
Switch Rcvd Bytes Rate Status	Displays the total number of bytes and frames received on the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes received, as well as a table containing those data values along with the number of frames received. To display this report, click the following field in the `Port Rcvd Bytes Rate Status` report: • Switch WWN

Port Rcvd Bytes Rate Status (Hourly Historical Report)

Overview

The `Port Rcvd Bytes Rate Status` report shows the number of bytes and frames received on each port per unit of time. The report displays a horizontal bar graph indicating the number of bytes received per unit of time, as well as a table containing those data values along with the number of frames received per unit of time. The report displays information for the past 24 hours on an hourly basis. This is a drilldown report.

Storage Location

Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Rcvd Bytes / sec	Number of bytes received by the port per unit of time
Rcvd Frames / sec	Number of frames received by the port per unit of time
Switch WWN	WWN of the switch

Drilldown Reports (Field Level)

Report Name	Description
`Port Detail Overview`	Displays port configuration information in list form. To display this report, click the following field in the `Port Rcvd Bytes Rate Status` report: • Port WWN
`Switch Rcvd Bytes Rate Status`	Displays the total number of bytes and frames received on the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes received, as well as a table containing those data values along with the number of frames received. To display this report, click the following field in the `Port Rcvd Bytes Rate Status` report: • Switch WWN

Port Rcvd Bytes Rate Trend

Overview

The `Port Rcvd Bytes Rate Trend` shows the number of bytes and frames received on each port per unit of time. The report displays a line graph indicating the number of bytes received per unit of time, as well as a table containing those data values along with the number of frames received per unit of time. The report displays information for the past month on a daily basis. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Monthly Trend/Drilldown Only/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Rcvd Bytes / sec	Number of bytes received by the port per unit of time
Rcvd Frames / sec	Number of frames received by the port per unit of time
Switch WWN	WWN of the switch

Drilldown Report (Field Level)

Report Name	Description
Switch Rcvd Bytes Rate Trend	Displays the total number of bytes and frames received on the ports for each switch per unit of time. This report displays a line graph indicating the number of bytes received, and a table containing those data values along with the number of frames received. To display this report, click the following field in the `Port Rcvd Bytes Rate Trend` report: • Switch WWN

Port Rcvd Kbytes

Overview

The `Port Rcvd Kbytes` report shows a table and a horizontal bar graph indicating the number of kilobytes received on each port. The report displays minute-by-minute information for the past hour. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Troubleshooting/Recent Past/Drilldown Only/`

Record

Port Summary (`PI_PTS`)

Working with the Solution Set

Fields

Field Name	Description
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Rcvd Kbytes	Number of kilobytes received by the port
Switch WWN	WWN of the switch

Drilldown Reports (Field Level)

Report Name	Description
`Port Detail Overview`	Displays port configuration information in list form. To display this report, click the following field in the `Port Rcvd Kbytes` report: • Port WWN
`Switch Rcvd Kbytes`	Displays a table and a horizontal bar graph indicating the total number of kilobytes received on the ports for each switch. To display this report, click the following field in the `Port Rcvd Kbytes` report: • Switch WWN

Port Rcvd Kbytes Status (Real-Time Report)

Overview

The `Port Rcvd Kbytes Status` report shows the number of kilobytes and frames received on each port in real time. The report displays a horizontal bar graph indicating the number of kilobytes received, as well as a table containing those values along with the number of frames received. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Area ID	Area identifier in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Rcvd Frames	Number of frames received by the port
Rcvd Kbytes	Number of kilobytes received by the port
Switch WWN	WWN of the switch

Drilldown Reports (Field Level)

Report Name	Description
`Port Detail Overview`	Displays port configuration information in list form. To display this report, click the following field in the `Port Rcvd Kbytes Status` report: • Port WWN
`Switch Rcvd Kbytes Status`	Displays the total number of kilobytes and frames received on the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes received, and a table containing those data values along with the number of frames received. To display this report, click the following field in the `Port Rcvd Kbytes Status` report: • Switch WWN

Port Rcvd Kbytes Status (Hourly Historical Report)

Overview

The `Port Rcvd Kbytes Status` report displays the number of kilobytes and frames received on each port. The report displays a horizontal bar graph indicating the number of kilobytes received, as well as a table containing those values along with the number of frames received. The report displays information for the past 24 hours on an hourly basis. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Rcvd Frames	Number of frames received by the port
Rcvd Kbytes	Number of kilobytes received by the port
Switch WWN	WWN of the switch

Drilldown Reports (Field Level)

Report Name	Description
`Port Detail Overview`	Displays port configuration information in list form. To display this report, click the following field in the `Port Rcvd Kbytes Status` report: • Port WWN
`Switch Rcvd Kbytes Status`	Displays the total number of kilobytes and frames received on the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes received, as well as a table containing those data values along with the number of frames received. To display this report, click the following field in the `Port Rcvd Kbytes Status` report: • Switch WWN

Port Rcvd Kbytes Trend

Overview

The `Port Rcvd Kbytes Trend` report shows the number of kilobytes and frames received on each port. The report displays a line graph of the number of kilobytes received, as well as a table containing those values along with the number of frames received. The report displays information for the past month on a daily basis. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Monthly Trend/Drilldown Only/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Rcvd Frames	Number of frames received by the port
Rcvd Kbytes	Number of kilobytes received by the port
Switch WWN	WWN of the switch

Drilldown Report (Field Level)

Report Name	Description
`Switch Rcvd Kbytes Trend`	Displays the total number of kilobytes and frames received on the ports for each switch. This report displays a line graph indicating the number of kilobytes received, as well as a table containing those data values along with the number of frames received. To display this report, click the following field in the `Port Rcvd Kbytes Trend` report: • Switch WWN

Port Xmitd Bytes Rate Status (Real-Time Report)

Overview

The `Port Xmitd Bytes Rate Status` report shows the number of bytes and frames sent through each port per unit of time in real time. The report displays a horizontal bar graph indicating the number of bytes sent, as well as a table containing those values along with the number of frames sent. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Switch WWN	WWN of the switch
Xmitd Bytes / sec	Number of bytes sent by the port per unit of time
Xmitd Frames / sec	Number of frames sent by the port per unit of time

Drilldown Reports (Field Level)

Report Name	Description
Port Detail Overview	Displays port configuration information in list form. To display this report, click the following field in the `Port Xmitd Bytes Rate Status` report: • Port WWN
Switch Xmitd Bytes Rate Status	Displays the total number of bytes and frames sent through the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes sent, and a table containing those data values along with the number of frames sent. To display this report, click the following field in the `Port Xmitd Bytes Rate Status` report: • Switch WWN

Port Xmitd Bytes Rate Status (Hourly Historical Report)

Overview

The `Port Xmitd Bytes Rate Status` report shows the number of bytes and frames sent through each port per unit of time. The report displays a horizontal bar graph indicating the number of bytes sent, as well as a table containing those values along with the number of frames sent. The report displays information for the past 24 hours on an hourly basis. This is a drilldown report.

Storage Location

Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Switch WWN	WWN of the switch
Xmitd Bytes / sec	Number of bytes sent by the port per unit of time
Xmitd Frames / sec	Number of frames sent by the port per unit of time

Drilldown Reports (Field Level)

Report Name	Description
`Port Detail Overview`	Displays port configuration information in list form. To display this report, click the following field in the `Port Xmitd Bytes Rate Status` report: • Port WWN
`Switch Xmitd Bytes Rate Status`	Displays the total number of bytes and frames sent through the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes sent, and a table containing those data values along with the number of frames sent. To display this report, click the following field in the `Port Xmitd Bytes Rate Status` report: • Switch WWN

Port Xmitd Bytes Rate Trend

Overview

The `Port Xmitd Bytes Rate Trend` report shows the number of bytes and frames sent through each port per unit of time. The report displays a line graph indicating the number of bytes sent, as well as a table containing those

values along with the number of frames sent. The report displays information for the past month on a daily basis. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Monthly Trend/Drilldown Only/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Switch WWN	WWN of the switch
Xmitd Bytes / sec	Number of bytes sent by the port per unit of time
Xmitd Frames / sec	Number of frames sent by the port per unit of time

Drilldown Report (Field Level)

Report Name	Description
`Switch Xmitd Bytes Rate Trend`	Displays the total number of bytes and frames sent through the ports for each switch per unit of time. This report displays a line graph indicating the number of bytes sent, and a table containing those data values and the number of frames sent. To display this report, click the following field in the `Port Xmitd Bytes Rate Trend` report: • Switch WWN

Port Xmitd Kbytes

Overview

The `Port Xmitd Kbytes` report shows a table and a horizontal bar graph indicating the number of kilobytes sent from each port. The report displays minute-by-minute information for the past hour. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Troubleshooting/Recent Past/Drilldown Only/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Switch WWN	WWN of the switch
Xmitd Kbytes	Number of kilobytes sent by the port

Drilldown Reports (Field Level)

Report Name	Description
`Port Detail Overview`	Displays port configuration information in list form. To display this report, click the following field in the `Port Xmitd Kbytes` report: • Port WWN
`Switch Xmitd Kbytes`	Displays a table and a horizontal bar graph indicating the total number of kilobytes sent through the ports for each switch. To display this report, click the following field in the `Port Xmitd Kbytes` report: • Switch WWN

Port Xmitd Kbytes Status (Real-Time Report)

Overview

The `Port Xmitd Kbytes Status` report shows the number of kilobytes and frames sent through each port in real time. The report displays a horizontal bar graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent. This is a drilldown report.

Storage Location

Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Switch WWN	WWN of the switch
Xmitd Frames	Number of frames sent by the port
Xmitd Kbytes	Number of kilobytes sent by the port

Drilldown Reports (Field Level)

Report Name	Description
Port Detail Overview	Displays port configuration information in list form. To display this report, click the following field in the `Port Xmitd Kbytes Status` report: • Port WWN
Switch Xmitd Kbytes Status	Displays the total number of kilobytes and frames sent through the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes sent, and a table containing those data values along with the number of frames sent. To display this report, click the following field in the `Port Xmitd Kbytes Status` report: • Switch WWN

Port Xmitd Kbytes Status (Hourly Historical Report)

Overview

The `Port Xmitd Kbytes Status` report shows the number of kilobytes and frames sent through each port. The report displays a horizontal bar graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent. The report displays

information for the past 24 hours on an hourly basis. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Switch WWN	WWN of the switch
Xmitd Frames	Number of frames sent by the port
Xmitd Kbytes	Number of kilobytes sent by the port

Drilldown Reports (Field Level)

Report Name	Description
`Port Detail Overview`	Displays port configuration information in list form. To display this report, click the following field in the `Port Xmitd Kbytes Status` report: • Port WWN
`Switch Xmitd Kbytes Status`	Displays the total number of kilobytes and frames sent through the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent. To display this report, click the following field in the `Port Xmitd Kbytes Status` report: • Switch WWN

Port Xmitd Kbytes Trend

Overview

The `Port Xmitd Kbytes Trend` report shows the number of kilobytes and frames sent through each port over the past month on a daily basis. The report displays a line graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Monthly Trend/Drilldown Only/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Area ID	Area identifier, in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Switch WWN	WWN of the switch
Xmitd Frames	Number of frames sent by the port
Xmitd Kbytes	Number of kilobytes sent by the port

Drilldown Report (Field Level)

Report Name	Description
`Switch Xmitd Kbytes Trend`	Displays the total number of kilobytes and frames sent through the ports for each switch. This report displays a line graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent. To display this report, click the following field in the `Port Xmitd Kbytes Trend` report: • Switch WWN

Rcvd Kbytes - Top 10 Port

Overview

The `Rcvd Kbytes - Top 10 Port` report shows a table and bar graph indicating performance information for the ten ports that have, at present, received the highest number of kilobytes in real time.

Storage Location

`Reports/SAN Switch/Troubleshooting/Real-Time/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Area ID	Area identifier in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Rcvd Kbytes	Number of kilobytes received by the port
Switch WWN	WWN of the switch

Drilldown Reports (Report Level)

Report Name	Description
`CRC Error Count - Top 10 Port`	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected CRC errors.
`Encoding Disparity Count - Top 10 Port`	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected encoding errors and disparity errors.
`Loss of Signal Count - Top 10 Port`	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected optical signal losses.
`Loss of Sync Count - Top 10 Port`	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected sync losses.

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Report Name	Description
Xmitd Kbytes - Top 10 Port	Displays a table and a horizontal bar graph indicating performance information for the ten ports that have, at present, sent the highest number of kilobytes.

Drilldown Report (Field Level)

Report Name	Description
Rcvd Kbytes - Top 10 Switch	Displays a table and bar graph indicating the performance information of the ten switches that currently have the highest number of kilobytes in total received on their ports. To display this report, click the following field in the `Rcvd Kbytes - Top 10 Port` report: • Switch WWN

Rcvd Kbytes - Top 10 Switch

Overview

The `Rcvd Kbytes - Top 10 Switch` report shows a table and a horizontal bar graph indicating performance information, in real time, for the ten switches that have, at present, received the highest number of kilobytes in total on their ports.

Storage Location

`Reports/SAN Switch/Troubleshooting/Real-Time/`

Record

Switch Summary (`PI_SWS`)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Model Name	Model name of the switch
Rcvd Kbytes	Total number of kilobytes received by the ports for each switch
Switch Name	Name of the switch
Switch WWN	WWN of the switch

Drilldown Reports (Report Level)

Report Name	Description
CRC Error Count - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of CRC errors detected in total on their ports.
Encoding Disparity Count - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of encoding errors and disparity errors detected in total on their ports.
Loss of Signal Count - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of detected optical signal losses on their ports.
Loss of Sync Count - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of sync losses detected in total on their ports.
Xmitd Kbytes - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that have, at present, sent the highest number of kilobytes in total through their ports.

Drilldown Report (Field Level)

Report Name	Description
Rcvd Kbytes - Top 10 Port	Displays a table and a horizontal bar graph indicating performance information for the ten ports that have, at present, received the highest number of kilobytes. To display this report, click the following field in the Rcvd Kbytes - Top 10 Switch report: • Switch WWN

Switch Buffer Flow Status (Real-Time Report)

Overview

The Switch Buffer Flow Status report shows for each switch the total number of times the port buffers became full and the total number of times that the credit count in the Buffer-to-Buffer flow control became 0. The report displays a horizontal bar graph indicating the number of times that the buffers became full, and a table containing those data values along with the number of times that the credit count in the Buffer-to-Buffer flow control became 0. The report displays information in real time.

Storage Location

Reports/SAN Switch/Status Reporting/Real-Time/

Record

Switch Summary (`PI_SWS`)

Fields

Field Name	Description
Buffer Credit Zero State Count	Total number of times per switch that the credit count became 0 in Buffer-to-Buffer flow control for each port
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Input Buffers Full Count	Total number of times that the port buffers became full, for each switch
Model Name	Model number of the switch
Switch Name	Name of the switch
Switch WWN	WWN of the switch

Drilldown Reports (Report Level)

Report Name	Description
Switch Rcvd Bytes Rate Status	Displays the total number of bytes and frames received on the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes received, and a table containing those data values along with the number of frames received.
Switch Rcvd Kbytes Status	Displays the total number of kilobytes and frames received on the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes received, and a table containing those data values along with the number of frames received.
Switch Xmitd Bytes Rate Status	Displays the total number of bytes and frames sent through the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes sent, and a table containing those data values along with the number of frames.
Switch Xmitd Kbytes Status	Displays the total number of kilobytes and frames sent through the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes sent, and a table containing those data values along with the number of frames sent.

Drilldown Report (Field Level)

Report Name	Description
Link Buffer Flow	Provides a link between a graph indicating the total number of times that the port buffers became full for each

Report Name	Description
	switch, and a graph indicating the number of times that the buffers became full for each port. To display this report, click the following field in the `Switch Buffer Flow Status` report: • Switch WWN

Switch Buffer Flow Status (Hourly Historical Report)

Overview

The `Switch Buffer Flow Status` report shows for each switch the total number of times that the port buffers became full, and the total number of times that the credit count in the Buffer-to-Buffer flow control became 0. The report displays a horizontal bar graph indicating the number of times that the buffers became full, as well as a table containing those data values along with the number of times that the credit count in the Buffer-to-Buffer flow control became 0. The report displays information for the past 24 hours on an hourly basis.

Storage Location

`Reports/SAN Switch/Status Reporting/Daily Trend/`

Record

Switch Summary (`PI_SWS`)

Fields

Field Name	Description
Buffer Credit Zero State Count	Total number of times per switch that the credit count became 0 in Buffer-to-Buffer flow control for each port
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Input Buffers Full Count	Total number of times that the port buffers became full, for each switch
Model Name	Model number of the switch
Switch Name	Name of the switch
Switch WWN	WWN of the switch

Working with the Solution Set

Hitachi Tuning Manager Hardware Reports Reference

Drilldown Reports (Report Level)

Report Name	Description
Switch Rcvd Bytes Rate Status	Displays the total number of bytes and frames received on the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes received, as well as a table containing those data values along with the number of frames received.
Switch Rcvd Kbytes Status	Displays the total number of kilobytes and frames received on the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes received, as well as a table containing those data values along with the number of frames received.
Switch Xmitd Bytes Rate Status	Displays the total number of bytes and frames sent through the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes sent, as well as a table containing those data values along with the number of frames.
Switch Xmitd Kbytes Status	Displays the total number of kilobytes and frames sent through the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent.

Drilldown Report (Field Level)

Report Name	Description
Link Buffer Flow	Provides a link between a graph indicating the total number of times that the buffers became full for the ports of each switch, and a graph indicating the total number of times that the buffer became full for each port. To display this report, click the following field in the Switch Buffer Flow Status report: • Switch WWN

Switch CRC Error Count

Overview

The Switch CRC Error Count report shows a table and a horizontal bar graph indicating the total number of CRC errors detected on the ports for each switch. The report displays minute-by-minute information for the past hour.

Storage Location

Reports/SAN Switch/Troubleshooting/Recent Past/

Record

Switch Error Summary (`PI_SWES`)

Fields

Field Name	Description
CRC Error Count	Total number of CRC errors on the ports for each switch
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Model Name	Model name of the switch
Switch Name	Name of the switch
Switch WWN	WWN of the switch

Drilldown Reports (Report Level)

Report Name	Description
Switch Rcvd Kbytes	Displays a table and a horizontal bar graph indicating the total number of kilobytes received on the ports for each switch.
Switch Xmitd Kbytes	Displays a table and a horizontal bar graph indicating the total number of kilobytes sent through the ports for each switch.

Drilldown Report (Field Level)

Report Name	Description
Link CRC Error Count	Provides a link between a graph indicating the total number of CRC errors detected on the ports of each switch, and a graph indicating the number of CRC errors detected on each port. To display this report, click the following field in the Switch CRC Error Count report: • Switch WWN

Switch Detail Overview (Real-Time Report)

Overview

The Switch Detail Overview report shows, in list form, configuration information for the fabric and switches in real time. This is a drilldown report.

Storage Location

Reports/SAN Switch/Status Reporting/Real-Time/Drilldown Only/

Record

Switch Detail (`PD`)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Fabric Name	Name of the fabric
Firmware Version	Firmware version of the switch
Model Name	Model name of the switch
Port Count	Number of ports with which the switch is equipped
Port Module Count	Number of port modules with which the switch is equipped
Principal Switch WWN	WWN of the principal switch
Switch Name	Name of the switch
Switch Role	Role of the switch
Switch WWN	WWN of the switch
Vendor Name	Vendor name of the switch

Switch Detail Overview (Hourly Historical Report for Troubleshooting Use)

Overview

The `Switch Detail Overview` report shows, in list form, configuration information for the fabric and switches over the past 24 hours. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Troubleshooting/Recent Past/Drilldown Only/`

Record

Switch Detail (`PD`)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.

Field Name	Description
Fabric Name	Name of the fabric
Firmware Version	Firmware version of the switch
Model Name	Model name of the switch
Port Count	Number of ports with which the switch is equipped
Port Module Count	Number of port modules with which the switch is equipped
Principal Switch WWN	WWN of the principal switch
Switch Name	Name of the switch
Switch Role	Role of the switch
Switch WWN	WWN of the switch
Vendor Name	Vendor name of the switch

Switch Detail Overview (Hourly Historical Report)

Overview

The `Switch Detail Overview` report shows, in list form, configuration information for the fabric and switches for the past 24 hours. This is a drilldown report.

Storage Location

`Reports/SAN Switch/Status Reporting/Daily Trend/Drilldown Only/`

Record

Switch Detail (`PD`)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Fabric Name	Name of the fabric
Firmware Version	Firmware version of the switch
Model Name	Model name of the switch
Port Count	Number of ports with which the switch is equipped
Port Module Count	Number of port modules with which the switch is equipped
Principal Switch WWN	WWN of the principal switch

Field Name	Description
Switch Name	Name of the switch
Switch Role	Role of the switch
Switch WWN	WWN of the switch
Vendor Name	Vendor name of the switch

Switch Detail Status (Real-Time Report)

Overview

The `Switch Detail Status` report shows a table showing the configuration information for the fabric and switches in real time.

Storage Location

`Reports/SAN Switch/Status Reporting/Real-Time/`

Record

Switch Detail (`PD`)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Fabric Name	Name of the fabric
Firmware Version	Firmware version of the switch
Model Name	Model name of the switch
Port Count	Number of ports with which the switch is equipped
Port Module Count	Number of port modules with which the switch is equipped
Principal Switch WWN	WWN of the principal switch
Switch Name	Name of the switch
Switch Role	Role of the switch
Switch WWN	WWN of the switch
Vendor Name	Vendor name of the switch

Drilldown Reports (Report Level)

Report Name	Description
Device Detail Status	Displays a table containing device and node configuration information listed by node.
Port Detail Status	Displays a table containing configuration information for the port.

Drilldown Report (Field Level)

Report Name	Description
Port Detail Status	Displays a table containing configuration information for the port. To display this report, click the following field in the Switch Detail Status report: • Switch WWN

Switch Detail Status (Hourly Historical Report)

Overview

The Switch Detail Status report shows a table containing the configuration information for the fabric and switches, over the past 24 hours.

Storage Location

Reports/SAN Switch/Status Reporting/Daily Trend/

Record

Switch Detail (PD)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Fabric Name	Name of the fabric
Firmware Version	Firmware version of the switch
Model Name	Model name of the switch
Port Count	Number of ports with which the switch is equipped
Port Module Count	Number of port modules with which the switch is equipped
Principal Switch WWN	WWN of the principal switch
Switch Name	Name of the switch

Field Name	Description
Switch Role	Role of the switch
Switch WWN	WWN of the switch
Vendor Name	Vendor name of the switch

Drilldown Reports (Report Level)

Report Name	Description
Device Detail Status	Displays a table containing device and node configuration information listed by node.
Port Detail Status	Displays a table containing configuration information for the port.

Drilldown Report (Field Level)

Report Name	Description
Port Detail Status	Displays a table containing configuration information for the port. To display this report, click the following field in the `Switch Detail Status` report: • Switch WWN

Switch List Status (Real-Time Report)

Overview

The `Switch List Status` report shows a table that lists switches in real time. It is used to create an unmonitored switch configuration file.

Storage Location

`Reports/SAN Switch/Status Reporting/Real-Time/`

Record

Switch Detail (`PD`)

Fields

Field Name	Description
Switch WWN	WWN of the switch
Model Name	Model name of the switch
Firmware Version	Firmware version of the switch

Switch Operation Status (Real-Time Report)

Overview

The `Switch Operation Status` report shows a table containing information about the operating mode and status of a switch in real time.

Storage Location

`Reports/SAN Switch/Status Reporting/Real-Time/`

Record

Switch Error Summary (`PI_SWES`)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Model Name	Model name of the switch
Switch Mode	Operating mode of the switch: Online, Offline
Switch Name	Name of the switch
Switch Ops Status	Operating status of the switch: Ok, Warning, Faulty
Switch WWN	WWN of the switch

Drilldown Report (Field Level)

Report Name	Description
`Port Operation Status`	Displays a table containing information about the operating mode and status of the port. To display this report, click the following field in the `Switch Operation Status` report: • Switch WWN

Switch Operation Status (Minute-by-Minute Historical Report)

Overview

The `Switch Operation Status` report shows a table containing minute-by-minute information about the operating mode and status of a switch over the past hour.

Storage Location

```
Reports/SAN Switch/Troubleshooting/Recent Past/
```

Record

Switch Error Summary (`PI_SWES`)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Model Name	Model name of the switch
Switch Mode	Operating mode of the switch: Online, Offline
Switch Name	Name of the switch
Switch Ops Status	Operating status of the switch: Ok, Warning, Faulty
Switch WWN	WWN of the switch

Drilldown Report (Field Level)

Report Name	Description
Port Operation Status	Displays a table containing information about the operating mode and status of the active port. To display this report, click the following field in the `Switch Operation Status` report: • Switch WWN

Switch Operation Status (Hourly Historical Report)

Overview

The `Switch Operation Status` report shows a table containing information about the operating mode and status of a switch for the past 24 hours on an hourly basis.

Storage Location

```
Reports/SAN Switch/Status Reporting/Daily Trend/
```

Record

Switch Error Summary (`PI_SWES`)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Model Name	Model name of the switch
Switch Mode	Operating mode of the switch: Online, Offline
Switch Name	Name of the switch
Switch Ops Status	Operating status of the switch: Ok, Warning, Faulty
Switch WWN	WWN of the switch

Drilldown Report (Field Level)

Report Name	Description
Port Operation Status	Displays a table containing information about the operating mode and status of the active port. To display this report, click the following field in the `Switch Operation Status` report: • Switch WWN

Switch Rcvd Bytes Rate Status (Real-Time Report)

Overview

The `Switch Rcvd Bytes Rate Status` report shows the total number of bytes and frames received on the ports for each switch per unit of time. The report displays a horizontal bar graph indicating the number of bytes received, as well as a table containing those data values along with the number of frames received. The report displays information in real time.

Storage Location

`Reports/SAN Switch/Status Reporting/Real-Time/`

Record

Switch Summary (`PI_SWS`)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.

Field Name	Description
Model Name	Model name of the switch
Rcvd Bytes / sec	Total number of bytes received on the ports for each switch per unit of time
Rcvd Frames / sec	Total number of frames received on the ports for each switch per unit of time
Switch Name	Name of the switch
Switch WWN	WWN of the switch

Drilldown Reports (Report Level)

Report Name	Description
Switch Buffer Flow Status	Displays for each switch the total number of times that the port buffers became full and the number of times that the credit count in Buffer-to-Buffer flow control became 0. This report displays a horizontal bar graph indicating the number of times that the buffers became full, and a table containing those data values along with the number of times that the credit count in Buffer-to-Buffer flow control became 0.
Switch Rcvd Kbytes Status	Displays the total number of kilobytes and frames received on the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes received, as well as a table containing those data values along with the number of frames received.
Switch Xmitd Bytes Rate Status	Displays the total number of bytes and frames sent through the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes sent, as well as a table containing those data values and the number of frames sent.
Switch Xmitd Kbytes Status	Displays the total number of kilobytes and frames sent through the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent.

Drilldown Report (Field Level)

Report Name	Description
Link Rcvd Bytes Rate	Provides a link between a graph indicating the total number of bytes received on the ports of each switch per unit of time, and a graph indicating the total number of bytes received on each port per unit of time. To display this report, click the following field in the Switch Rcvd Bytes Rate Status report: • Switch WWN

Switch Rcvd Bytes Rate Status (Hourly Historical Report)

Overview

The `Switch Rcvd Bytes Rate Status` report shows the total number of bytes and frames received on the ports for each switch per unit of time. The report displays a horizontal bar graph indicating the number of bytes received, as well as a table containing those data values along with the number of frames received. The report displays information for the past 24 hours on an hourly basis.

Storage Location

`Reports/SAN Switch/Status Reporting/Daily Trend/`

Record

Switch Summary (`PI_SWS`)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Model Name	Model name of the switch
Rcvd Bytes / sec	Total number of bytes received on the ports for each switch per unit of time
Rcvd Frames / sec	Total number of frames received on the ports for each switch per unit of time
Switch Name	Name of the switch
Switch WWN	WWN of the switch

Drilldown Reports (Report Level)

Report Name	Description
Switch Buffer Flow Status	Displays for each switch the total number of times that the port buffers became full, and the number of times the credit count in Buffer-to-Buffer flow control became 0. This report displays a horizontal bar graph indicating the number of times that the buffers became full, and a table containing those data values along with the number of times that the credit count in Buffer-to-Buffer flow control became 0.
Switch Rcvd Kbytes Status	Displays the total number of kilobytes and frames received on the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes

Working with the Solution Set

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Report Name	Description
	received, as well as a table containing those data values along with the number of frames received.
Switch Xmitd Bytes Rate Status	Displays the total number of bytes and frames sent through the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes sent, as well as a table containing those data values and the number of frames sent.
Switch Xmitd Kbytes Status	Displays the total number of kilobytes and frames sent through the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent.

Drilldown Report (Field Level)

Report Name	Description
Link Rcvd Bytes Rate	Provides a link between a graph indicating the total number of bytes received on the ports of each switch per unit of time, and a graph indicating the total number of bytes received on each port per unit of time. To display this report, click the following field in the Switch Rcvd Bytes Rate Status report: • Switch WWN

Switch Rcvd Bytes Rate Trend

Overview

The Switch Rcvd Bytes Rate Trend report shows the total number of bytes and frames received on the ports for each switch per unit of time. The report displays a line graph indicating the number of bytes received, as well as a table containing those data values along with the number of frames received. The report displays information for the past month on a daily basis.

Storage Location

Reports/SAN Switch/Monthly Trend/

Record

Switch Summary (PI_SWS)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Model Name	Model name of the switch
Rcvd Bytes / sec	Total number of bytes received on the ports for each switch per unit of time
Rcvd Frames / sec	Total number of frames received on the ports for each switch per unit of time
Switch Name	Name of the switch
Switch WWN	WWN of the switch

Drilldown Reports (Report Level)

Report Name	Description
Switch Rcvd Kbytes Trend	Displays the total number of kilobytes and frames received on the ports for each switch. This report displays a line graph indicating the number of kilobytes received, as well as a table containing those data values and the number of frames received.
Switch Xmitd Bytes Rate Trend	Displays the total number of bytes and frames sent through the ports for each switch per unit of time. This report displays a line graph indicating the number of bytes sent, as well as a table containing those data values and the number of frames sent.
Switch Xmitd Kbytes Trend	Displays the total number of kilobytes and frames sent through the ports for each switch. This report displays a line graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent.

Drilldown Report (Field Level)

Report Name	Description
Link Rcvd Bytes Rate	Provides a link between a graph indicating the total number of bytes received on the ports of each switch per unit of time, and a graph indicating the total number of bytes received on each port per unit of time. To display this report, click the following field in the Switch Rcvd Bytes Rate Trend report: • Switch WWN

Switch Rcvd Kbytes

Overview

The `Switch Rcvd Kbytes` report shows a table and a horizontal bar graph indicating the total number of kilobytes received on the ports for each switch. The report displays minute-by-minute information for the past hour.

Storage Location

`Reports/SAN Switch/Troubleshooting/Recent Past/`

Record

Switch Summary (`PI_SWS`)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Model Name	Model name of the switch
Rcvd Kbytes	Total number of kilobytes received on the ports for each switch
Switch Name	Name of the switch
Switch WWN	WWN of the switch

Drilldown Reports (Report Level)

Report Name	Description
`Switch CRC Error Count`	Displays a table and a horizontal bar graph indicating the total number of CRC errors detected on the ports for each switch.
`Switch Xmitd Kbytes`	Displays a table and a horizontal bar graph indicating the total number of kilobytes sent through the ports for each switch.

Drilldown Report (Field Level)

Report Name	Description
`Link Rcvd Kbytes`	Provides a link between a graph indicating the total number of kilobytes received on the ports of each switch, and a graph indicating the number of kilobytes received on each port. To display this report, click the following field in the `Switch Rcvd Kbytes` report:

Report Name	Description
	• Switch WWN

Switch Rcvd Kbytes Status (Real-Time Report)

Overview

The `Switch Rcvd Kbytes Status` report shows the total number of kilobytes and frames received on the ports for each switch in real time. The report displays a horizontal bar graph indicating the number of kilobytes received, as well as a table containing those values along with the number of frames received.

Storage Location

`Reports/SAN Switch/Status Reporting/Real-Time/`

Record

Switch Summary (`PI_SWS`)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Model Name	Model name of the switch
Rcvd Frames	Total number of frames received on the ports for each switch
Rcvd Kbytes	Total number of kilobytes received on the ports for each switch
Switch Name	Name of the switch
Switch WWN	WWN of the switch

Drilldown Reports (Report Level)

Report Name	Description
`Switch Buffer Flow Status`	Displays for each switch the total number of times that the port buffers became full, and the number of times the credit count in Buffer-to-Buffer flow control became 0. This report displays a horizontal bar graph indicating the number of times that the buffers became full, and a table containing those data values along with the number of

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Report Name	Description
	times that the credit count in Buffer-to-Buffer flow control became 0.
Switch Rcvd Bytes Rate Status	Displays the total number of bytes and frames received on the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes received, as well as a table containing those data values along with the number of frames received.
Switch Xmitd Bytes Rate Status	Displays the total number of bytes and frames sent through the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes sent, as well as a table containing those data values and the number of frames sent.
Switch Xmitd Kbytes Status	Displays the total number of kilobytes and frames sent through the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent.

Drilldown Report (Field Level)

Report Name	Description
Link Rcvd Kbytes	Provides a link between a graph indicating the total number of kilobytes received on the ports of each switch, and a graph indicating the number of kilobytes received on each port. To display this report, click the following field in the Switch Rcvd Kbytes Status report: • Switch WWN

Switch Rcvd Kbytes Status (Hourly Historical Report)

Overview

The Switch Rcvd Kbytes Status report shows the total number of kilobytes and frames received on the ports for each switch. The report displays a horizontal bar graph indicating the number of kilobytes received, as well as a table containing those values along with the number of frames received. The report displays information for the past 24 hours on an hourly basis.

Storage Location

Reports/SAN Switch/Status Reporting/Daily Trend/

Record

Switch Summary (PI_SWS)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Model Name	Model name of the switch
Rcvd Frames	Total number of frames received on the ports for each switch
Rcvd Kbytes	Total number of kilobytes received on the ports for each switch
Switch Name	Name of the switch
Switch WWN	WWN of the switch

Drilldown Reports (Report Level)

Report Name	Description
Switch Buffer Flow Status	Displays for each switch the total number of times that the port buffers became full and the number of times the credit count in Buffer-to-Buffer flow control became 0. This report displays a horizontal bar graph indicating the number of times that the buffers became full, and a table containing those data values along with the number of times that the credit count in Buffer-to-Buffer flow control became 0.
Switch Rcvd Bytes Rate Status	Displays the total number of bytes and frames received on the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes received, as well as a table containing those data values along with the number of frames received.
Switch Xmitd Bytes Rate Status	Displays the total number of bytes and frames sent through the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes sent, as well as a table containing those data values and the number of frames sent.
Switch Xmitd Kbytes Status	Displays the total number of kilobytes and frames sent through the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent.

Drilldown Report (Field Level)

Report Name	Description
Link Rcvd Kbytes	Provides a link between a graph indicating the total number of kilobytes received on the ports of each switch, and a graph indicating the number of kilobytes received on each port. To display this report, click the following field in the Switch Rcvd Kbytes Status report:

Report Name	Description
	• Switch WWN

Switch Rcvd Kbytes Trend

Overview

The `Switch Rcvd Kbytes Trend` report shows the total number of kilobytes and frames received on the ports for each switch. The report displays a line graph of the number of kilobytes received, as well as a table containing those values along with the number of frames received. The report displays information for the past month on a daily basis.

Storage Location

`Reports/SAN Switch/Monthly Trend/`

Record

Switch Summary (`PI_SWS`)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Model Name	Model name of the switch
Rcvd Frames	Total number of frames received on the ports for each switch
Rcvd Kbytes	Total number of kilobytes received on the ports for each switch
Switch Name	Name of the switch
Switch WWN	WWN of the switch

Drilldown Reports (Report Level)

Report Name	Description
`Switch Rcvd Bytes Rate Trend`	Displays the total number of bytes and frames received on the ports for each switch per unit of time. This report displays a line graph indicating the number of bytes received, as well as a table containing those data values along with the number of frames received.
`Switch Xmitd Bytes Rate Trend`	Displays the total number of bytes and frames sent through the ports for each switch per unit of time. This

Report Name	Description
	report displays a line graph indicating the number of bytes sent, as well as a table containing those data values and the number of frames sent.
`Switch Xmitd Kbytes Trend`	Displays the total number of kilobytes and frames sent through the ports for each switch. This report displays a line graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent.

Drilldown Report (Field Level)

Report Name	Description
`Link Rcvd Kbytes`	Provides a link between a graph indicating the total number of kilobytes received on the ports of each switch, and a graph indicating the number of kilobytes received on each port. To display this report, click the following field in the `Switch Rcvd Kbytes Trend` report: • Switch WWN

Switch Xmitd Bytes Rate Status (Real-Time Report)

Overview

The `Switch Xmitd Bytes Rate Status` report shows the total number of bytes and frames sent through the ports for each switch per unit of time in real time. The report displays a horizontal bar graph indicating the number of bytes sent, as well as a table containing those values along with the number of frames sent.

Storage Location

`Reports/SAN Switch/Status Reporting/Real-Time/`

Record

Switch Summary (`PI_SWS`)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Model Name	Model name of the switch
Switch Name	Name of the switch

Field Name	Description
Switch WWN	WWN of the switch
Xmitd Bytes / sec	Total number of bytes sent through the ports for each switch per unit of time
Xmitd Frames / sec	Total number of frames sent through the ports for each switch per unit of time

Drilldown Reports (Report Level)

Report Name	Description
Switch Buffer Flow Status	Displays for each switch the total number of times that the port buffers became full and the number of times the credit count in Buffer-to-Buffer flow control became 0. This report displays a horizontal bar graph indicating the number of times that the buffers became full, and a table containing those data values along with the number of times that the credit count in Buffer-to-Buffer flow control became 0.
Switch Rcvd Bytes Rate Status	Displays the total number of bytes and frames received on the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes received, as well as a table containing those data values along with the number of frames received.
Switch Rcvd Kbytes Status	Displays the total number of kilobytes and frames received on the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes received, as well as a table containing those data values along with the number of frames received.
Switch Xmitd Kbytes Status	Displays the total number of kilobytes and frames sent through the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent.

Drilldown Report (Field Level)

Report Name	Description
Link Xmitd Bytes Rate	Provides a link between a graph indicating the total number of bytes sent through the ports for each switch per unit of time, and a graph indicating the number of bytes sent through each port per unit of time. To display this report, click the following field in the Switch Xmitd Bytes Rate Status report: • Switch WWN

Switch Xmitd Bytes Rate Status (Hourly Historical Report)

Overview

The `Switch Xmitd Bytes Rate Status` report shows the total number of bytes and frames sent through the ports for each switch per unit of time. The report displays a horizontal bar graph indicating the number of bytes sent, as well as a table containing those values along with the number of frames sent. The report displays information for the past 24 hours on an hourly basis.

Storage Location

`Reports/SAN Switch/Status Reporting/Daily Trend/`

Record

Switch Summary (`PI_SWS`)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Model Name	Model name of the switch
Switch Name	Name of the switch
Switch WWN	WWN of the switch
Xmitd Bytes / sec	Total number of bytes sent through the ports for each switch per unit of time
Xmitd Frames / sec	Total number of frames sent through the ports for each switch per unit of time

Drilldown Reports (Report Level)

Report Name	Description
Switch Buffer Flow Status	Displays for each switch the total number of times that the port buffers became full and the number of times the credit count in Buffer-to-Buffer flow control became 0. This report displays a horizontal bar graph indicating the number of times that the buffers became full, and a table containing those data values along with the number of times that the credit count in Buffer-to-Buffer flow control became 0.
Switch Rcvd Bytes Rate Status	Displays the total number of bytes and frames received on the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes received, as well as a table containing those data values along with the number of frames received.

Report Name	Description
Switch Rcvd Kbytes Status	Displays the total number of kilobytes and frames received on the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes received, as well as a table containing those data values along with the number of frames received.
Switch Xmitd Kbytes Status	Displays the total number of kilobytes and frames sent through the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent.

Drilldown Report (Field Level)

Report Name	Description
Link Xmitd Bytes Rate	Provides a link between a graph indicating the total number of bytes sent through the ports for each switch per unit of time, and a graph indicating the number of bytes sent through each port per unit of time. To display this report, click the following field in the Switch Xmitd Bytes Rate Status report: • Switch WWN

Switch Xmitd Bytes Rate Trend

Overview

The Switch Xmitd Bytes Rate Trend report shows the total number of bytes and frames sent through the ports for each switch per unit of time. The report displays a line graph indicating the number of bytes sent, as well as a table containing those data values along with the number of frames sent. The report displays information for the past month on a daily basis.

Storage Location

Reports/SAN Switch/Monthly Trend/

Record

Switch Summary (PI_SWS)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.

Field Name	Description
Model Name	Model name of the switch
Switch Name	Name of the switch
Switch WWN	WWN of the switch
Xmitd Bytes Rate	Total number of bytes sent through the ports for each switch per unit of time
Xmitd Frames / sec	Total number of frames sent through the ports for each switch per unit of time

Drilldown Reports (Report Level)

Report Name	Description
Switch Rcvd Bytes Rate Trend	Displays the total number of bytes and frames received on the ports for each switch per unit of time. This report displays a line graph indicating the number of bytes received, as well as a table containing those data values along with the number of frames received.
Switch Rcvd Kbytes Trend	Displays the total number of kilobytes and frames received on the ports for each switch. This report displays a line graph indicating the number of kilobytes received, as well as a table containing those data values and the number of frames received.
Switch Xmitd Kbytes Trend	Displays the total number of kilobytes and frames sent through the ports for each switch. This report displays a line graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent.

Drilldown Report (Field Level)

Report Name	Description
Link Xmitd Bytes Rate	Provides a link between a graph indicating the total number of bytes sent through the ports of each switch per unit of time, and a graph indicating the number of bytes sent through each port per unit of time. To display this report, click the following field in the Switch Xmitd Bytes Rate Trend report: • Switch WWN

Switch Xmitd Kbytes

Overview

The Switch Xmitd Kbytes report shows a table and a horizontal bar graph indicating the total number of kilobytes sent through the ports for each switch. The report displays minute-by-minute information for the past hour.

Storage Location

`Reports/SAN Switch/Troubleshooting/Recent Past/`

Record

Switch Summary (`PI_SWS`)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Model Name	Model name of the switch
Switch Name	Name of the switch
Switch WWN	WWN of the switch
Xmitd Kbytes	Total number of kilobytes sent through the ports for each switch

Drilldown Reports (Report Level)

Report Name	Description
`Switch CRC Error Count`	Displays a table and a horizontal bar graph indicating the total number of CRC errors detected on the ports for each switch.
`Switch Rcvd Kbytes`	Displays a table and a horizontal bar graph indicating for each switch the total number of kilobytes received by the ports.

Drilldown Report (Field Level)

Report Name	Description
`Link Xmitd Kbytes`	Provides a link between a graph indicating the total number of kilobytes sent through the ports for each switch, and a graph indicating the number of kilobytes sent through each port. To display this report, click the following field in the `Switch Xmitd Kbytes` report: • Switch WWN

Switch Xmitd Kbytes Status (Real-Time Report)

Overview

The `Switch Xmitd Kbytes Status` report shows the total number of kilobytes and frames sent through the ports for each switch in real time. The

report displays a horizontal bar graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent.

Storage Location

```
Reports/SAN Switch/Status Reporting/Real-Time/
```

Record

Switch Summary (`PI_SWS`)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Model Name	Model name of the switch
Switch Name	Name of the switch
Switch WWN	WWN of the switch
Xmitd Frames	Total number of frames sent through the ports for each switch
Xmitd Kbytes	Total number of kilobytes sent through the ports for each switch

Drilldown Reports (Report Level)

Report Name	Description
Switch Buffer Flow Status	Displays for each switch the total number of times that the port buffers became full and the number of times the credit count in Buffer-to-Buffer flow control became 0. This report displays a horizontal bar graph indicating the number of times that the buffers became full, and a table containing those data values along with the number of times that the credit count in Buffer-to-Buffer flow control became 0.
Switch Rcvd Bytes Rate Status	Displays the total number of bytes and frames received on the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes received, as well as a table containing those data values along with the number of frames received.
Switch Rcvd Kbytes Status	Displays the total number of kilobytes and frames received on the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes received, as well as a table containing those data values along with the number of frames received.
Switch Xmitd Bytes Rate Status	Displays the total number of bytes and frames sent through the ports for each switch per unit of time. This

Report Name	Description
	report displays a horizontal bar graph indicating the number of bytes sent, as well as a table containing those data values along with the number of frames sent.

Drilldown Report (Field Level)

Report Name	Description
Link Xmitd Kbytes	Provides a link between a graph indicating the total number of kilobytes sent through the ports for each switch, and a graph indicating the number of kilobytes sent through each port. To display this report, click the following field in the Switch Xmitd Kbytes Status report: • Switch WWN

Switch Xmitd Kbytes Status (Hourly Historical Report)

Overview

The Switch Xmitd Kbytes Status report shows the total number of kilobytes and frames sent through the ports for each switch. The report displays a horizontal bar graph indicating the number of kilobytes sent, as well as a table containing those data values along with the number of frames sent. The report displays information for the past 24 hours on an hourly basis.

Storage Location

Reports/SAN Switch/Status Reporting/Daily Trend/

Record

Switch Summary (PI_SWS)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Model Name	Model name of the switch
Switch Name	Name of the switch
Switch WWN	WWN of the switch
Xmitd Frames	Total number of frames sent through the ports for each switch

Field Name	Description
Xmitd Kbytes	Total number of kilobytes sent through the ports for each switch

Drilldown Reports (Report Level)

Report Name	Description
Switch Buffer Flow Status	Displays for each switch the total number of times that the port buffers became full and the number of times the credit count in Buffer-to-Buffer flow control became 0. This report displays a horizontal bar graph indicating the number of times that the buffers became full, and a table containing those data values along with the number of times that the credit count in Buffer-to-Buffer flow control became 0.
Switch Rcvd Bytes Rate Status	Displays the total number of bytes and frames received on the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes received, as well as a table containing those data values along with the number of frames received.
Switch Rcvd Kbytes Status	Displays the total number of kilobytes and frames received on the ports for each switch. This report displays a horizontal bar graph indicating the number of kilobytes received, as well as a table containing those data values along with the number of frames received.
Switch Xmitd Bytes Rate Status	Displays the total number of bytes and frames sent through the ports for each switch per unit of time. This report displays a horizontal bar graph indicating the number of bytes sent, as well as a table containing those data values along with the number of frames sent.

Drilldown Report (Field Level)

Report Name	Description
Link Xmitd Kbytes	Provides a link between a graph indicating the total number of kilobytes sent through the ports for each switch, and a graph indicating the number of kilobytes sent through each port. To display this report, click the following field in the Switch Xmitd Kbytes Status report: • Switch WWN

Switch Xmitd Kbytes Trend

Overview

The Switch Xmitd Kbytes Trend report shows the total number of kilobytes and frames sent through the ports for each switch. The report displays a line graph indicating the number of kilobytes sent, as well as a table containing

those data values along with the number of frames sent. The report displays information for the past month on a daily basis.

Storage Location

`Reports/SAN Switch/Monthly Trend/`

Record

Switch Summary (`PI_SWS`)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Model Name	Model name of the switch
Switch Name	Name of the switch
Switch WWN	WWN of the switch
Xmitd Frames	Total number of frames sent through the ports for each switch
Xmitd Kbytes	Total number of kilobytes sent through the ports for each switch

Drilldown Reports (Report Level)

Report Name	Description
Switch Rcvd Bytes Rate Trend	Displays the total number of bytes and frames received on the ports for each switch per unit of time. This report displays a line graph indicating the number of bytes received, as well as a table containing those data values along with the number of frames received.
Switch Rcvd Kbytes Trend	Displays the total number of kilobytes and frames received on the ports for each switch. This report displays a line graph indicating the number of kilobytes received, as well as a table containing those data values and the number of frames received.
Switch Xmitd Bytes Rate Trend	Displays the total number of bytes and frames sent through the ports for each switch per unit of time. This report displays a line graph indicating the number of bytes sent, as well as a table containing those data values along with the number of frames sent.

Drilldown Report (Field Level)

Report Name	Description
Link Xmitd Kbytes	Provides a link between a graph indicating the total number of kilobytes sent through the ports for each switch, and a graph indicating the number of kilobytes sent through each port. To display this report, click the following field in the `Switch Xmitd Kbytes Trend` report: • Switch WWN

Xmitd Kbytes - Top 10 Port

Overview

The `Xmitd Kbytes - Top 10 Port` report shows a table and a horizontal bar graph indicating performance information for the ten ports that have, at present, sent the highest number of kilobytes in real time.

Storage Location

`Reports/SAN Switch/Troubleshooting/Real-Time/`

Record

Port Summary (`PI_PTS`)

Fields

Field Name	Description
Area ID	Area identifier in hexadecimal (*Example:* `0x1c`). In an arbitrated loop configuration, the switches, hosts, and storage ports have the same area ID.
Port Module Number	Module number of the port
Port Number	Number assigned to the port
Port Type	Type of the port (*Example:* `F port`)
Port WWN	WWN of the port
Switch WWN	WWN of the switch
Xmitd Kbytes	Number of kilobytes sent by the port

Drilldown Reports (Report Level)

Report Name	Description
CRC Error Count - Top 10 Port	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected CRC errors.

Report Name	Description
Encoding Disparity Count - Top 10 Port	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected encoding errors and disparity errors.
Loss of Signal Count - Top 10 Port	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected optical signal losses.
Loss of Sync Count - Top 10 Port	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of detected sync losses.
Rcvd Kbytes - Top 10 Port	Displays a table and a horizontal bar graph indicating performance information for the ten ports that have, at present, received the highest number of kilobytes.

Drilldown Report (Field Level)

Report Name	Description
Xmitd Kbytes - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that have, at present, sent the highest number of kilobytes in total through their ports. To display this report, click the following field in the Xmitd Kbytes - Top 10 Port report: • Switch WWN

Xmitd Kbytes - Top 10 Switch

Overview

The Xmitd Kbytes - Top 10 Switch report shows a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of kilobytes in total sent through their ports in real time.

Storage Location

Reports/SAN Switch/Troubleshooting/Real-Time/

Record

Switch Summary (PI_SWS)

Fields

Field Name	Description
Domain ID	Domain identifier for the switch (decimal value in the range 1-255). This number uniquely identifies each switch making up a fabric.
Model Name	Model name of the switch
Switch Name	Name of the switch
Switch WWN	WWN of the switch
Xmitd Kbytes	Total number of kilobytes sent by the ports for each switch

Drilldown Reports (Report Level)

Report Name	Description
CRC Error Count - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten ports that currently have the highest number of CRC errors detected in total on their ports.
Encoding Disparity Count - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of encoding errors and disparity errors detected in total on their ports.
Loss of Signal Count - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of detected optical signal losses on their ports.
Loss of Sync Count - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that currently have the highest number of sync losses detected in total on their ports.
Rcvd Kbytes - Top 10 Switch	Displays a table and a horizontal bar graph indicating performance information for the ten switches that have, at present, received the highest number of kilobytes in total on their ports.

Drilldown Report (Field Level)

Report Name	Description
Xmitd Kbytes - Top 10 Port	Displays a table and a horizontal bar graph indicating performance information for the ten ports that have, at present, sent the highest number of kilobytes in total. To display this report, click the following field in the Xmitd Kbytes - Top 10 Switch report: • Switch WWN

Agent for NAS Reports (for Hitachi Data Ingestor)

In this section, the following file servers are collectively called *Hitachi Data Ingestor*.

- Hitachi Data Ingestor
- Hitachi Capacity Optimization
- Hitachi NAS Platform F1000 Series
- Hitachi Essential NAS Platform

Table 1-53 Agent for NAS Reports (for Hitachi Data Ingestor) on page 1-617 lists the reports that are defined in the solution set in alphabetical order:

Table 1-53 Agent for NAS Reports (for Hitachi Data Ingestor)

Report Name	Displayed Information	Storage Location
Channel Node Configuration	The configuration information of a NAS system	Reports/NAS/Status Reporting/ Real-Time/
Channel Node Configuration(Multi -Agent)	The configuration information of multiple NAS systems over the last 24 hours	Reports/NAS/Status Reporting/ Daily Trend/
Channel Node Platform Configuration	The platform configuration information of a NAS system	Reports/NAS/Status Reporting/ Real-Time/
Channel Node Platform Configuration(Multi -Agent)	The platform configuration information of multiple NAS systems over the last 24 hours	Reports/NAS/Status Reporting/ Daily Trend/
CPU Status	The CPU usage rate of a NAS system	Reports/NAS/Status Reporting/ Real-Time/
CPU Status(Multi- Agent)	The hourly CPU usage rate of multiple NAS systems over the last 24 hours	Reports/NAS/Status Reporting/ Daily Trend/
CPU Trend	The daily CPU usage rate of a specific NAS system over the last month	Reports/NAS/Monthly Trend/
CPU Trend(Multi- Agent)	The daily CPU usage rate of multiple NAS systems over the last month	Reports/NAS/Monthly Trend/
CPU Usage - Top 10 Processes	The ten processes in a NAS system that are the highest in CPU usage rate	Reports/NAS/Troubleshooting/ Real-Time/

Report Name	Displayed Information	Storage Location
CPU Usage Summary	The CPU usage rate of a specific NAS system for every minute in the last hour	Reports/NAS/Troubleshooting/ Recent Past/
Device Detail	Details of a selected local disk device in a NAS system	Reports/NAS/Status Reporting/ Real-Time/Drilldown Only/
Device Detail Status	Performance information of the local disk device I/O for each logical unit in a NAS system over the last 24 hours	Reports/NAS/Status Reporting/ Daily Trend/
Device Usage Status	The local disk device I/O performance for each logical unit in a NAS system	Reports/NAS/Status Reporting/ Real-Time/
Device Usage Summary	The local disk device usage in a NAS system	Reports/NAS/Status Reporting/ Real-Time/
Device Usage Summary (Multi-Agent)	The hourly local disk device usage of multiple NAS systems over the last 24 hours	Reports/NAS/Status Reporting/ Daily Trend/Advanced/
File System Configuration (historical report)	The file system and logical device's configuration information for a specific NAS system over the last 24 hours	Reports/NAS/Status Reporting/ Daily Trend/
File System Configuration (real-time report)	The file system and logical device configuration information for a NAS system	Reports/NAS/Status Reporting/ Real-Time/
File System Configuration Detail	Details of the file system and logical device configuration for a selected device	Reports/NAS/Status Reporting/ Real-Time/Drilldown Only/
Free Space Mbytes – Top 10 Local File Systems	The ten local file systems in a NAS system that are the smallest in unused capacity	Reports/NAS/Status Reporting/ Real-Time/
I/O Overview	The I/O count of a specific NAS system for every minute in the last hour	Reports/NAS/Troubleshooting/ Recent Past/
IP Address Configuration (historical report)	The IP address configuration information for a specific	Reports/NAS/Status Reporting/ Daily Trend/

Working with the Solution Set

Report Name	Displayed Information	Storage Location
	NAS system over the last 24 hours	
IP Address Configuration (real-time report)	The IP address configuration information of a NAS system	Reports/NAS/Status Reporting/ Real-Time/
Local File System Detail	Details of a local file system selected in a NAS system	Reports/NAS/Troubleshooting/ Real-Time/Drilldown Only/
Local File System Status	Performance information of a local file system in a NAS system over the last 24 hours	Reports/NAS/Status Reporting/ Daily Trend/
Network Overview	The network usage of a specific NAS system for every minute in the last hour	Reports/NAS/Troubleshooting/ Recent Past/
Network Status	The network usage of a NAS system	Reports/NAS/Status Reporting/ Real-Time/
Network Status(Multi-Agent)	The hourly network usage of multiple NAS systems over the last 24 hours	Reports/NAS/Status Reporting/ Daily Trend/
Process Detail	Details of the real-time information about a selected process	Reports/NAS/Troubleshooting/ Real-Time/Drilldown Only/
Process Trend	The daily operation count of processes of a specific NAS system over the last month	Reports/NAS/Monthly Trend/
Space Usage – Top 10 Local File Systems	The ten local file systems in a NAS system that are the highest in usage rate	Reports/NAS/Troubleshooting/ Real-Time/
System Overview (historical report)	The system operation status of a specific NAS system for every minute in the last hour	Reports/NAS/Troubleshooting/ Recent Past/
System Overview (real-time report)	The operation status of a NAS system	Reports/NAS/Troubleshooting/ Real-Time/
System Utilization Status	The operation status of a NAS system	Reports/NAS/Status Reporting/ Real-Time/
Workload Status	The system workload of a NAS system	Reports/NAS/Status Reporting/ Real-Time/
Workload Status(Multi-Agent)	The hourly system workload of multiple NAS systems over the last 24 hours	Reports/NAS/Status Reporting/ Daily Trend/

Channel Node Configuration

Overview

The `Channel Node Configuration` report displays the configuration information of a NAS system in real time.

Storage Location

`Reports/NAS/Status Reporting/Real-Time/`

Record

Channel Node Configuration (`PD_CHC`)

Fields

Field Name	Description
CHN Number	Channel node number
Host Name	Name of the host where the NAS system to be monitored is installed

Channel Node Configuration (Multi-Agent)

Overview

The `Channel Node Configuration(Multi-Agent)` report displays the configuration information of multiple NAS systems over the last 24 hours.

Storage Location

`Reports/NAS/Status Reporting/Daily Trend/`

Record

Channel Node Configuration (`PD_CHC`)

Fields

Field Name	Description
Agent Instance	Name of the instance where Agent for NAS is running
CHN Number	Channel node number
Host Name	Name of the host where the NAS system to be monitored is installed

Working with the Solution Set

Channel Node Platform Configuration

Overview

The `Channel Node Platform Configuration` report displays the platform configuration information of a NAS system in real time.

Storage Location

`Reports/NAS/Status Reporting/Real-Time/`

Record

Channel Node Platform Configuration (`PD_CPC`)

Fields

Field Name	Description
OS Name	OS name for the NAS system being monitored
OS Version	OS version for the NAS system being monitored
IP Address	From among the IP addresses of the NAS system that was specified as a monitoring target via `destination_address` or `detour_address` during the Agent for NAS instance set up, the IP address that the NAS system, which is a monitoring target of Agent for NAS, uses for connections when a record is created

Channel Node Platform Configuration (Multi-Agent)

Overview

The `Channel Node Platform Configuration(Multi-Agent)` report displays the platform configuration information of multiple NAS systems over the last 24 hours.

Storage Location

`Reports/NAS/Status Reporting/Daily Trend/`

Record

Channel Node Platform Configuration (`PD_CPC`)

Fields

Field Name	Description
Agent Instance	Name of the instance where Agent for NAS is running

Field Name	Description
IP Address	From among the IP addresses of the NAS system that was specified as a monitoring target via `destination_address` or `detour_address` during the Agent for NAS instance set up, the IP address that the NAS system, which is a monitoring target of Agent for NAS, uses for connections when a record is created
OS Name	OS name for the NAS system being monitored
OS Version	OS version for the NAS system being monitored

CPU Status

Overview

The `CPU Status` report displays the CPU usage rate of a NAS system in real time.

Storage Location

`Reports/NAS/Status Reporting/Real-Time/`

Record

System Summary Overview (`PI`)

Fields

Field Name	Description
1-Minute Run Queue Avg	Average number of processes that were waiting in execution queues and disk I/O queues in the past minute
5-Minute Run Queue Avg	Average number of processes that were waiting in execution queues and disk I/O queues in the past 5 minutes
15-Minute Run Queue Avg	Average number of processes that were waiting in execution queues and disk I/O queues in the past 15 minutes
Context Switches	Number of context switches executed on the NAS system processor
CPU %	Percentage of time that the NAS system processor was running
Idle %	Percentage of time that the NAS system processor was idle
Kernel CPU %	Percentage of time that the NAS system processor was running in kernel mode
User CPU %	Percentage of time that the NAS system processor was running in user mode

CPU Status (Multi-Agent)

Overview

The `CPU Status(Multi-Agent)` report displays the hourly CPU usage rate of multiple NAS systems over the last 24 hours.

Storage Location

`Reports/NAS/Status Reporting/Daily Trend/`

Record

System Summary Overview (`PI`)

Fields

Field Name	Description
1-Minute Run Queue Avg	Average number of processes that were waiting in execution queues and disk I/O queues in the past minute
Agent Instance	Name of the instance where Agent for NAS is running
Context Switches	Average number of context switches executed on the NAS system processor
CPU %	Average percentage of time that the NAS system processor was running
Kernel CPU %	Average percentage of time that the NAS system processor was running in kernel mode
User CPU %	Average percentage of time that the NAS system processor was running in user mode

Drilldown Report (Field Level)

Report Name	Description
`CPU Status(Multi-Agent)`	`CPU Status(Multi-Agent)` report that is summed minute-by-minute. To display this report, choose a time in the `CPU Status(Multi-Agent)` report.

CPU Trend

Overview

The `CPU Trend` report displays the daily CPU usage rate of a specific NAS system over the last month.

Storage Location

`Reports/NAS/Monthly Trend/`

Record

System Summary Overview (`PI`)

Fields

Field Name	Description
CPU %	Average percentage of time that the NAS system processor was running
Kernel CPU %	Average percentage of time that the NAS system processor was running in kernel mode
User CPU %	Average percentage of time that the NAS system processor was running in user mode

CPU Trend (Multi-Agent)

Overview

The `CPU Trend(Multi-Agent)` report displays the daily CPU usage rate of multiple NAS systems over the last month.

Storage Location

`Reports/NAS/Monthly Trend/`

Record

System Summary Overview (`PI`)

Fields

Field Name	Description
Agent Instance	Name of the instance where Agent for NAS is running
CPU %	Average percentage of time that the NAS system processor was running

Drilldown Report (Field Level)

Report Name	Description
`CPU Trend`	A summary of the CPU usage rate of a selected NAS system is displayed. To display this report, click the CPU % field.

CPU Usage - Top 10 Processes

Overview

The `CPU Usage - Top 10 Processes` report displays the ten processes in a NAS system that are the highest in CPU usage rate in real time.

Storage Location

`Reports/NAS/Troubleshooting/Real-Time/`

Record

Process Detail (`PD`)

Fields

Field Name	Description
CPU %	Percentage of the CPU in use for the process
PID	Process ID
Program Name	Name of the program being executed

Drilldown Report (Field Level)

Report Name	Description
Process Detail	Details of the real-time information about a selected process are displayed in a list. To display this report, click the CPU % field.

CPU Usage Summary

Overview

The `CPU Usage Summary` report displays the CPU usage rate of a specific NAS system for every minute in the last hour.

Storage Location

`Reports/NAS/Troubleshooting/Recent Past/`

Record

System Summary Overview (`PI`)

Fields

Field Name	Description
15-Minute Run Queue Avg	Average number of processes that were waiting in execution queues and disk I/O queues in 15 minutes
Context Switches	Number of context switches executed on the NAS system processor
CPU %	Percentage of time that the NAS system processor was running
Idle %	Percentage of time that the NAS system processor was idle
Interrupts	Number of interrupts that occurred on the NAS system
Kernel CPU %	Percentage of time that the NAS system processor was running in kernel mode
Run Queue	Number of processes waiting in the execution queue or disk I/O queue
User CPU %	Percentage of time that the NAS system processor was running in user mode

Device Detail

Overview

The `Device Detail` report displays details of a selected local disk device in a NAS system in real time. This is a drilldown report.

Storage Location

`Reports/NAS/Status Reporting/Real-Time/Drilldown Only/`

Record

Device Detail (`PI_DEVD`)

Fields

Field Name	Description
Device Name	Local disk device name
I/O Mbytes	Total transfer size (in megabytes) of block I/O operations for logical units
Mbytes Xferd/sec	Average block I/O speed for logical units (megabytes per second)
Read Mbytes	Transfer size (in megabytes) of read operations for logical unit blocks
Read Ops	Number of logical unit read operations
Read Ops/sec	Frequency of logical unit read operations (count per second)

Field Name	Description
Total I/O Ops	Number of times I/O operations for logical units occurred
Total I/O Ops/sec	Frequency of I/O operations for logical units (number of times per second)
Write Mbytes	Transfer size (in megabytes) of write operations for logical unit blocks
Write Ops	Number of logical unit write operations
Writes Ops/sec	Frequency of logical unit write operations (count per second)

Device Detail Status

Overview

The `Device Detail Status` report displays hourly information on the local disk device I/O performance for each logical unit in a NAS system over the last 24 hours.

Storage Location

`Reports/NAS/Status Reporting/Daily Trend/`

Record

Device Detail (`PI_DEVD`)

Fields

Field Name	Description
Device Name	Local disk device name
I/O Mbytes	Average total transfer size (in megabytes) of block I/O operations for logical units
Mbytes Xferd/sec	Average block I/O speed for logical units (megabytes per second)
Read Mbytes	Average transfer size (in megabytes) of read operations for logical unit blocks
Read Ops	Average number of logical unit read operations
Read Ops/sec	Average frequency of logical unit read operations (count per second)
Total I/O Ops	Average number of times I/O operations for logical units occurred
Total I/O Ops/sec	Average frequency of I/O operations for logical units (number of times per second)

Field Name	Description
Write Mbytes	Average transfer size (in megabytes) of write operations for logical unit blocks
Write Ops	Average number of logical unit write operations
Write Ops/sec	Average frequency of logical unit write operations (count per second)

Drilldown Report (Field Level)

Report Name	Description
Device Detail Status	A version of the Device Detail Status report that is summed up on a minute basis. To display this report, click a time in the Device Detail Status report.

Device Usage Status

Overview

The Device Usage Status report displays the local disk device I/O performance for each logical unit in a NAS system in real time.

Storage Location

Reports/NAS/Status Reporting/Real-Time/

Record

Device Detail (PI_DEVD)

Fields

Field Name	Description
Device Name	Local disk device name
I/O Mbytes	Total transfer size (in megabytes) of block I/O operations for logical units
Mbytes Xferd/sec	Average block I/O speed for logical units (megabytes per second)
Total I/O Ops/sec	Frequency of I/O operations for logical units (number of times per second)

Working with the Solution Set

Drilldown Report (Field Level)

Report Name	Description
Device Detail	Details of a selected local disk device in a NAS system are displayed in real time. To display this report, click the Device Name field.

Device Usage Summary

Overview

The `Device Usage Summary` report displays the local disk device usage in a NAS system in real time.

Storage Location

`Reports/NAS/Status Reporting/Real-Time/`

Record

Device Summary (`PI_DEVS`)

Fields

Field Name	Description
Devices	Number of local disk devices
I/O Mbytes	Total transfer size (in megabytes) of block I/O operations for logical units
Mbytes Xferd/sec	Average block I/O speed for logical units (megabytes per second)
Read Mbytes	Transfer size (in megabytes) of read operations for logical unit blocks
Read Ops %	The percentage of read operations in all I/O operations for logical units
Total I/O Ops	Number of times I/O operations for logical units occurred
Total I/O Ops/sec	Frequency of I/O operations for logical units (number of times per second)
Write Mbytes	Transfer size (in megabytes) of write operations for logical unit blocks
Write Ops %	The percentage of write operations in all I/O operations for logical units

Device Usage Summary (Multi-Agent)

Overview

The `Device Usage Summary (Multi-Agent)` report displays the hourly local disk device usage of multiple NAS systems over the last 24 hours.

Storage Location

`Reports/NAS/Status Reporting/Daily Trend/Advanced/`

Record

Device Summary (`PI_DEVS`)

Fields

Field Name	Description
Agent Instance	Name of the instance where Agent for NAS is running
Devices	Number of local disk devices
I/O Mbytes	Average total transfer size (in megabytes) of block I/O operations for logical units
Mbytes Xferd/sec	Average block I/O speed for logical units (megabytes per second)
Read Mbytes	Average transfer size (in megabytes) of read operations for logical unit blocks
Read Ops %	Average percentage of read operations in all I/O operations for logical units
Total I/O Ops	Average number of times I/O operations for logical units occurred
Total I/O Ops/sec	Average frequency of I/O operations for logical units (number of times per second)
Write Mbytes	Average transfer size (in megabytes) of write operations for logical unit blocks
Write Ops %	Average percentage of write operations in all I/O operations for logical units

Drilldown Report (Field Level)

Report Name	Description
Device Usage Summary (Multi-Agent)	A version of the `Device Usage Summary (Multi-Agent)` report that is summed up on a minute basis. To display this report, click a time in the `Device Usage Summary (Multi-Agent)` report.

File System Configuration (Historical Report)

Overview

The `File System Configuration` report displays the file system and logical device's configuration information about a specific NAS system over the last 24 hours.

Storage Location

`Reports/NAS/Status Reporting/Daily Trend/`

Record

File System Configuration (`PD_FSC`)

Fields

Field Name	Description
Device Name	Device special file name
File System Name	Mount point of the file system
LDEV Number	Logical device number
LU Number	Logical unit number
Port Number	Port number of the storage system
Product ID	Emulation type
Product Name	Model name of the storage system
Serial Number	Serial number of the storage system
Vendor ID	Vendor name of the storage system

File System Configuration (Real-Time Report)

Overview

The `File System Configuration` report displays the file system and logical device configuration information for a NAS system in real time.

Storage Location

`Reports/NAS/Status Reporting/Real-Time/`

Record

File System Configuration (`PD_FSC`)

Fields

Field Name	Description
Device Name	Device special file name
File System Name	Mount point of the file system
LDEV Number	Logical device number
LU Number	Logical unit number
Port Number	Port number of the storage system
Serial Number	Serial number of the storage system

Drilldown Report (Field Level)

Report Name	Description
File System Configuration Detail	Details of the file system and logical device configuration for a selected device are displayed in real time. To display this report, click the Device Name field.

File System Configuration Detail

Overview

The `File System Configuration Detail` report displays details of the file system and logical device configuration for a selected device in real time. This is a drilldown report.

Storage Location

`Reports/NAS/Status Reporting/Real-Time/Drilldown Only/`

Record

File System Configuration (`PD_FSC`)

Fields

Field Name	Description
Device Name	Device special file name
File System Name	Mount point of the file system
LDEV Number	Logical device number
LU Number	Logical unit number
Port Number	Port number of the storage system
Product ID	Emulation type

Field Name	Description
Product Name	Model name of the storage system
Serial Number	Serial number of the storage system
Vendor ID	Vendor name of the storage system

Free Space Mbytes - Top 10 Local File Systems

Overview

The `Free Space Mbytes - Top 10 Local File Systems` report displays the ten local file systems in a NAS system that are the smallest in unused capacity in real time.

Storage Location

`Reports/NAS/Status Reporting/Real-Time/`

Record

File System Detail - Local (`PD_FSL`)

Fields

Field Name	Description
File System Name	Mount point of the file system
Mbytes Free	Unused capacity in megabytes
Mbytes in Use	Used capacity in megabytes
Total Size Mbytes	File system size in megabytes

I/O Overview

Overview

The `I/O Overview` report displays the I/O count of a specific NAS system for every minute in the last hour.

Storage Location

`Reports/NAS/Troubleshooting/Recent Past/`

Record

System Summary Overview (`PI`)

Fields

Field Name	Description
Block IO Ops	Number of block I/O operations that occurred
Block Read Ops	Number of block read operations
Block Write Ops	Number of block write operations
Physical I/O Ops	Number of physical I/O operations that occurred
Physical Read Ops	Number of physical read operations
Physical Write Ops	Number of physical write operations

IP Address Configuration (Historical Report)

Overview

The `IP Address Configuration` report displays the configuration information of an IP address of a specific NAS system over the last 24 hours.

Storage Location

`Reports/NAS/Status Reporting/Daily Trend/`

Record

IP Address Configuration (`PD_IAC`)

Fields

Field Name	Description
IP Address	IP address for the NAS system
Sub Net Mask	Subnet mask of the NAS system

IP Address Configuration (Real-Time Report)

Overview

The `IP Address Configuration` report displays the IP address configuration information of a NAS system in real time.

Storage Location

`Reports/NAS/Status Reporting/Real-Time/`

Record

IP Address Configuration (`PD_IAC`)

Fields

Field Name	Description
IP Address	IP address for the NAS system
Sub Net Mask	Subnet mask of the NAS system

Local File System Detail

Overview

The `Local File System Detail` report displays details of a selected local file system in real time. This is a drilldown report.

Storage Location

`Reports/NAS/Troubleshooting/Real-Time/Drilldown Only/`

Record

File System Detail - Local (`PD_FSL`)

Fields

Field Name	Description
Block Size	File system block size (in bytes)
Blocks Free	Number of unused blocks
Blocks in Use	Number of used blocks
File System Name	Mount point of the file system
Mbytes Free	Unused capacity in megabytes
Mbytes in Use	Used capacity in megabytes
Mbytes in Use %	Percentage of the capacity used
Total Inodes	Number of inodes for the file system
Total Inodes Free %	Percentage of the number of unused inodes
Total Inodes in Use %	Percentage of the number of used inodes
Total Size Blocks	Number of blocks of the file system

Local File System Status

Overview

The `Local File System Status` report displays the performance information of a local file system in a NAS system over the last 24 hours.

Storage Location

`Reports/NAS/Status Reporting/Daily Trend/`

Record

File System Detail - Local (`PD_FSL`)

Fields

Field Name	Description
Blocks Free	Number of unused blocks
Blocks in Use	Number of used blocks
File System Name	Mount point of the file system
Mbytes Free	Unused capacity in megabytes
Mbytes in Use	Used capacity in megabytes
Mbytes in Use %	Percentage of the capacity used
Total Inodes	Number of inodes for the file system
Total Inodes Free	Number of unused inodes
Total Inodes Free %	Percentage of the number of unused inodes
Total Inodes in Use	Number of used inodes
Total Inodes in Use %	Percentage of the number of used inodes
Total Size Blocks	Number of blocks of the file system

Network Overview

Overview

The `Network Overview` report displays the network usage of a specific NAS system for every minute in the last hour.

Storage Location

`Reports/NAS/Troubleshooting/Recent Past/`

Working with the Solution Set

Record

System Summary Overview (`PI`)

Fields

Field Name	Description
ICMP Pkts In	Number of IPv4 and IPv6 protocol ICMP packets received by the NAS system
ICMP Pkts Out	Number of IPv4 and IPv6 protocol ICMP packets sent by the NAS system
IP Pkts In	Number of IPv4 and IPv6 protocol IP packets received by the NAS system
IP Pkts Out	Number of IPv4 and IPv6 protocol IP packets sent by the NAS system
TCP Pkts In	Number of IPv4 and IPv6 protocol TCP packets received by the NAS system
TCP Pkts Out	Number of IPv4 and IPv6 protocol TCP packets sent by the NAS system
Total Pkts In	Total number of IPv4 and IPv6 protocol packets received by the NAS system
Total Pkts Out	Total number of IPv4 and IPv6 protocol packets sent by the NAS system
UDP Pkts In	Number of IPv4 and IPv6 protocol UDP packets received by the NAS system
UDP Pkts Out	Number of IPv4 and IPv6 protocol UDP packets sent by the NAS system

Network Status

Overview

The `Network Status` report displays the network usage of a NAS system in real time.

Storage Location

`Reports/NAS/Status Reporting/Real-Time/`

Record

System Summary Overview (`PI`)

Fields

Field Name	Description
ICMP Pkts In	Number of IPv4 and IPv6 protocol ICMP packets received by the NAS system
ICMP Pkts Out	Number of IPv4 and IPv6 protocol ICMP packets sent by the NAS system
IP Pkts In	Number of IPv4 and IPv6 protocol IP packets received by the NAS system
IP Pkts Out	Number of IPv4 and IPv6 protocol IP packets sent by the NAS system
TCP Pkts In	Number of IPv4 and IPv6 protocol TCP packets received by the NAS system
TCP Pkts Out	Number of IPv4 and IPv6 protocol TCP packets sent by the NAS system
UDP Pkts In	Number of IPv4 and IPv6 protocol UDP packets received by the NAS system
UDP Pkts Out	Number of IPv4 and IPv6 protocol UDP packets sent by the NAS system

Network Status (Multi-Agent)

Overview

The `Network Status(Multi-Agent)` report displays the hourly network usage of multiple NAS systems over the last 24 hours.

Storage Location

`Reports/NAS/Status Reporting/Daily Trend/`

Record

System Summary Overview (`PI`)

Fields

Field Name	Description
Agent Instance	Name of the instance where Agent for NAS is running
ICMP Pkts In	Average number of IPv4 and IPv6 protocol ICMP packets received by the NAS system
ICMP Pkts Out	Average number of IPv4 and IPv6 protocol ICMP packets sent by the NAS system
IP Pkts In	Average number of IPv4 and IPv6 protocol IP packets received by the NAS system

Working with the Solution Set

Field Name	Description
IP Pkts Out	Average number of IPv4 and IPv6 protocol IP packets sent by the NAS system
Kernel CPU %	Average percentage of time that the NAS system processor was running in kernel mode
TCP Pkts In	Average number of IPv4 and IPv6 protocol TCP packets received by the NAS system
TCP Pkts Out	Average number of IPv4 and IPv6 protocol TCP packets sent by the NAS system
UDP Pkts In	Average number of IPv4 and IPv6 protocol UDP packets received by the NAS system
UDP Pkts Out	Average number of IPv4 and IPv6 protocol UDP packets sent by the NAS system

Drilldown Report (Field Level)

Report Name	Description
Network Status(Multi-Agent)	A version of the `Network Status(Multi-Agent)` report that is summed up on a minute basis. To display this report, choose a time in the `Network Status(Multi-Agent)` report.

Process Detail

Overview

The `Process Detail` report displays details of the real-time information about a selected process in a list. This is a drilldown report.

Storage Location

`Reports/NAS/Troubleshooting/Real-Time/Drilldown Only/`

Record

Process Detail (`PD`)

Fields

Field Name	Description
CPU %	Percentage of the CPU in use for the process
Elapsed Time	Time elapsed since the process started
Major Faults	Number of physical page faults that occurred since the process started

Field Name	Description
Minor Faults	Number of logical page faults that occurred since the process started
PID	Process ID
Priority	Priority of the process
Program Name	Name of the program being executed
Real Memory Kbytes	Real memory size used by the process (in kilobytes)
State	State of the process
Total Process Kbytes	Size of the process (in kilobytes)

Process Trend

Overview

The `Process Trend` report displays the daily operation count of processes of a specific NAS system over the last month.

Storage Location

`Reports/NAS/Monthly Trend/`

Record

System Summary Overview (`PI`)

Field

Field Name	Description
Processes	Average number of processes executed per day in the NAS system over the last month

Space Usage - Top 10 Local File Systems

Overview

The `Space Usage - Top 10 Local File Systems` report displays the ten local file systems in a NAS system that are the highest in usage rate in real time.

Storage Location

`Reports/NAS/Troubleshooting/Real-Time/`

Record

File System Detail - Local (`PD_FSL`)

Fields

Field Name	Description
File System Name	Mount point of the file system
Mbytes in Use %	Percentage of the capacity used
Total Size Mbytes	Size of the file system (in megabytes)

Drilldown Report (Field Level)

Report Name	Description
Local File System Detail	Detailed information about a selected local file system is displayed in real time. To display this report, click the Mbytes in Use % field.

System Overview (Historical Report)

Overview

The `System Overview` report displays the system operation status of a specific NAS system for every minute in the last hour.

Storage Location

`Reports/NAS/Troubleshooting/Recent Past/`

Record

System Summary Overview (`PI`)

Fields

Field Name	Description
Block Read Ops	Number of block read operations that occurred
CPU %	Percentage of time that the NAS system processor was running
Total Pkts In	Total number of IPv4 and IPv6 protocol packets received by the NAS system

Drilldown Reports (Field Level)

Report Name	Description
CPU Usage Summary	Information regarding the CPU usage rate. To display this report, click the CPU % field.
I/O Overview	Information regarding the I/O count. To display this report, click the Block Read Ops field.
Network Overview	Information regarding network operation status. To display this report, click the Total Pkts In field.

System Overview (Real-Time Report)

Overview

The `System Overview` report displays the operation status of a NAS system in real time.

Storage Location

`Reports/NAS/Troubleshooting/Real-Time/`

Record

System Summary Overview (`PI`)

Fields

Field Name	Description
CPU %	Percentage of time that the NAS system processor was running
Kernel CPU %	Percentage of time that the NAS system processor was running in kernel mode
Physical I/O Ops	Number of physical I/O operations that occurred
Run Queue	Number of processes waiting in the execution queue or disk I/O queue
Total Pkts In	Total number of IPv4 and IPv6 protocol packets received by the NAS system
User CPU %	Percentage of time that the NAS system processor was running in user mode

Drilldown Report (Report Level)

Report Name	Description
Space Usage - Top 10 Local File Systems	The ten local file systems that are the highest in usage rate are displayed in real time.

Drilldown Report (Field Level)

Report Name	Description
CPU Usage - Top 10 Processes	The ten processes that are the highest in CPU usage rate are displayed in real time. To display this report, click the CPU % field.

System Utilization Status

Overview

The `System Utilization Status` report displays the operation status of a NAS system in real time.

Storage Location

`Reports/NAS/Status Reporting/Real-Time/`

Record

System Summary Overview (`PI`)

Fields

Field Name	Description
15-Minute Run Queue Avg	Average number of processes that were waiting in execution queues and disk I/O queues in the past 15 minutes
Alloc Mem %	Percentage of actual used capacity to total real memory capacity in the NAS system
Boot Time	NAS system's last boot time
Context Switches/sec	Frequency of context switches executed on the NAS system processor (count per second)
CPU %	Percentage of time that the NAS system processor was running
Interrupts/sec	Frequency of interrupt occurrences (count per second)
Physical I/O OPS	Number of physical I/O operations that occurred
Processes	Number of processes within the NAS system
Total Pkts In	Total number of IPv4 and IPv6 protocol packets received by the NAS system
Users	Number of users logged into the NAS system

Workload Status

Overview

The `Workload Status` report displays the system workload of a NAS system in real time.

Storage Location

`Reports/NAS/Status Reporting/Real-Time/`

Record

System Summary Overview (`PI`)

Fields

Field Name	Description
5-Minute Run Queue Avg	Average number of processes that were waiting in execution queues and disk I/O queues in the past 5 minutes
Context Switches/sec	Number of context switches executed on the NAS system processor per second
CPU %	Percentage of time that the NAS system processor was running
Processes	Number of processes within the NAS system
Users	Number of users logged into the NAS system

Workload Status (Multi-Agent)

Overview

The `Workload Status(Multi-Agent)` report displays the hourly system workload of multiple NAS systems over the last 24 hours.

Storage Location

`Reports/NAS/Status Reporting/Daily Trend/`

Record

System Summary Overview (`PI`)

Fields

Field Name	Description
1-Minute Run Queue Avg	Average number of processes that were waiting in execution queues and disk I/O queues in the past minute
Agent Instance	Name of the instance where Agent for NAS is running
Context Switches/sec	Number of context switches executed on the NAS system processor per second
CPU %	Average percentage of time that the NAS system processor was running
Processes	Average number of processes running in the NAS system
Users	Average number of users who have logged in to the NAS system

Drilldown Report (Field Level)

Report Name	Description
`Workload Status(Multi-Agent)`	A version of the `Workload Status(Multi-Agent)` report that is summed up on a minute basis. To display this report, choose a time in the `Workload Status(Multi-Agent)` report.

Reports associated with Agent for NAS (for NAS Platform)

The following table lists the NAS Platform-related reports that are defined in the solution set. Reports are listed in alphabetical order.

Table 1-54 Agent for NAS Reports(for NAS Platform)

Report name	Displayed information	Storage location
`EVS Configuration (6.4)`	EVS configuration information for the last month.	`Reports/NAS/HNAS/EVS/`
`File System Capacity (6.4)`	Information about the file system capacity and configuration over the past month.	`Reports/NAS/HNAS/File System/`
`File System Read Transfer Rate (6.4)`	Read-transfer rate per second of file systems over the past 24 hours.	`Reports/NAS/HNAS/File System/`

Report name	Displayed information	Storage location
File System Total Ops/sec (6.4)	Information about the number of operations performed per second on file systems over the past 24 hours.	Reports/NAS/HNAS/File System/
File System Write Transfer Rate (6.4)	Write-transfer rate per second of file systems over the past 24 hours.	Reports/NAS/HNAS/File System/
Node Capacity (6.4)	Information about node capacity and configuration over the past month.	Reports/NAS/HNAS/Node/
Node CPU Load (6.8)	Information about CPU workloads (usage rate) per node over the past 24 hours.	Reports/NAS/HNAS/Node/
Node CPU Load Summary (6.8)	Information about the workload (usage rate) on each CPU on a node over the past 24 hours.	Reports/NAS/HNAS/Node/
Node CPU SMP Load (6.8)	Information about CPU workloads (usage rate) in SMP mode per node over the past 24 hours.	Reports/NAS/HNAS/Node/
Node Disk Read Latency (6.4)	Information about the disk read-latency time per node over the past 24 hours.	Reports/NAS/HNAS/Node/
Node Disk Stripe Write Latency (6.4)	Information about the disk stripe-write latency time per node over the past 24 hours.	Reports/NAS/HNAS/Node/

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Report name	Displayed information	Storage location
Node Disk Write Latency (6.4)	Information about the disk write latency time per node over the past 24 hours.	Reports/NAS/HNAS/Node/
Node Ethernet Throughput RX (6.4)	The amount of Ethernet data received per second per node over the past 24 hours.	Reports/NAS/HNAS/Node/
Node Ethernet Throughput TX (6.4)	The amount of Ethernet data sent per second per node over the past 24 hours.	Reports/NAS/HNAS/Node/
Node Fibre Channel Throughput RX (6.4)	The amount of Fibre Channel data received per second per node over the past 24 hours.	Reports/NAS/HNAS/Node/
Node Fibre Channel Throughput TX (6.4)	The amount of Fibre Channel data sent per second per node over the past 24 hours.	Reports/NAS/HNAS/Node/
Node File System Data Transfer Rate (6.4)	The data transfer rate of each file system managed by a node over the past 24 hours.	Reports/NAS/HNAS/Node/
Node File System Load (6.4)	Information about the load on the file systems (usage rate) per node over the past 24 hours.	Reports/NAS/HNAS/Node/
Node File System Total Ops/sec (6.4)	The number of operations performed per second on each file system managed by a node over the past 24 hours.	Reports/NAS/HNAS/Node/
Node FPGA Load (6.4)	Information about FPGA loads (usage rate) per	Reports/NAS/HNAS/Node/

Report name	Displayed information	Storage location
	node over the past 24 hours.	
Node FSI Cache Usage (6.4)	Usage of the File System Independent Cache of nodes over the past 24 hours.	Reports/NAS/HNAS/Node/
Node Heap Usage (6.4)	Heap-cache usage per node over the past 24 hours.	Reports/NAS/HNAS/Node/
Node HSSI Throughput RX (6.8)	Amount of HSSI received for each node over the past 24 hours.	Reports/NAS/HNAS/Node/
Node HSSI Throughput TX (6.8)	Amount of HSSI transmitted for each node over the past 24 hours.	Reports/NAS/HNAS/Node/
Node NVRAM Waited Allocs (6.4)	The number of times a node waited for memory allocation over the past 24 hours.	Reports/NAS/HNAS/Node/
Node Ops/sec (6.4)	Information about the number of operations per second per node over the past 24 hours.	Reports/NAS/HNAS/Node/
Node Ops/sec (6.6)	Information about the total number of operations performed on a node per second over the past 24 hours.	Reports/NAS/HNAS/Node/
Node Running Bossock Fibers (6.4)	The number of threads that manage the network sockets running on a node over the past 24 hours.	Reports/NAS/HNAS/Node/

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Hitachi Tuning Manager Hardware Reports Reference

Report name	Displayed information	Storage location
Node Running Pi-Tcp-Socks Rcv Fibers (6.6)	The number of threads that manage the network sockets running on a node over the past 24 hours.	Reports/NAS/HNAS/Node/
SMU Capacity (6.4)	Information about SMU/NAS Manager capacity and configuration over the past month.	Reports/NAS/HNAS/SMU/
Storage Pool Capacity (6.4)	Information about storage pool capacity and configuration over the past month.	Reports/NAS/HNAS/Storage Pool/
System Drive Capacity (6.4)	Information about system drive capacity and configuration over the past month.	Reports/NAS/HNAS/System Drive/

EVS Configuration (6.4)

Overview

The EVS Configuration (6.4) report displays the EVS configuration information for the last month.

Storage location

Reports/NAS/HNAS/EVS/

Record

HNAS EVS Configuration (PD_HEC)

Fields

Field name	Description
EVS ID	The ID of the EVS.
EVS Name	The name of the EVS.

Field name	Description
IP Address	The enumeration of the IP addresses assigned to the EVS.
Node Name	The name of the node.
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.

Drilldown reports (field level)

Report name	Description
Node Capacity (6.4)	Displays information about the capacity of the node by which the selected EVS is managed. To display this report, click the Node/Cluster Name field.

File System Capacity (6.4)

Overview

The `File System Capacity (6.4)` report shows information about the capacity and configuration of file systems over the past month.

Storage location

`Reports/NAS/HNAS/File System/`

Record

HNAS File System Configuration (`PD_HFSC`)

Fields

Field name	Description
Capacity	The capacity of the file system (in gigabytes).
EVS ID	The ID of the EVS.
File System Name	The name of the file system.
Free %	The percentage of free space in the file system.
Free Capacity	The amount of free space in the file system (in gigabytes).
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.
Storage Pool Name	The name of the storage pool to which the file system belongs.
Used Capacity	The amount of space used in the file system (in gigabytes).

Drilldown reports (field level)

Report name	Description
EVS Configuration (6.4)	Displays the EVS to which the selected file system belongs. To display this report, click the EVS ID field.
Storage Pool Capacity (6.4)	Displays the storage pools that make up the selected file system. To display this report, click the Storage Pool Name field.

File System Read Transfer Rate (6.4)

Overview

The `File System Read Transfer Rate (6.4)` report shows the read transfer rate per second of a file system over the past 24 hours.

Storage location

`Reports/NAS/HNAS/File System/`

Record

HNAS File System Summary (`PI_HFSS`)

Fields

Field name	Description
File System Name	The name of the file system.
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.
Read Transfer Rate	The read transfer rate per second of the file system (in megabytes per second).

File System Total Ops/sec (6.4)

Overview

The `File System Total Ops/sec (6.4)` report shows information about the number of operations performed per second on a file system over the past 24 hours.

Storage location

`Reports/NAS/HNAS/File System/`

Record

HNAS File System Summary (`PI_HFSS`)

Fields

Field name	Description
File System Name	The name of the file system.
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.
Total Ops/sec	The number of operations per second performed on the file system (in operations per second).

File System Write Transfer Rate (6.4)

Overview

The `File System Write Transfer Rate (6.4)` report shows the write transfer rate per second of a file system over the past 24 hours.

Storage location

`Reports/NAS/HNAS/File System/`

Record

HNAS File System Summary (`PI_HFSS`)

Fields

Field name	Description
File System Name	The name of the file system.
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.
Write Transfer Rate	The write transfer rate per second of the file system (in megabytes per second).

Node Capacity (6.4)

Overview

The `Node Capacity (6.4)` report shows information about the capacity and configuration of nodes over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node Configuration (`PD_HNC`)

Fields

Field name	Field name
Cluster Mode	The mode of the cluster.
File System Free Capacity	The total amount of free space in the file systems that are being managed by the node (in gigabytes).
File System Used Capacity	The total amount of space used in the file systems that are being managed by the node (in gigabytes).
Node Name	The name of the node.
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.

Node CPU Load (6.8)

Overview

The `Node CPU Load (6.8)` report shows information about CPU workloads (usage rate) per node over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node Summary (`PI_HNS`)

Fields

Field name	Description
CPU Load % Averaged Over 1sec	Average CPU load (%) of the latest 1 second.
CPU Load % Averaged Over 10sec	Average CPU load (%) of the latest 10 seconds.
Node Name	Name of the node.
Node/Cluster Name	Name of the cluster or node.

Field name	Description
Node/Cluster UUID	UUID of the cluster or node.

Node CPU Load Summary (6.8)

Overview

The `Node CPU Load Summary (6.8)` report shows information about the workload (usage rate) on each CPU on a node over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node CPU Summary (`PI_HNCS`)

Fields

Field name	Description
CPU Number	Number of the CPU.
Load %	CPU load (%).
Node Name	Name of the node.
Node/Cluster Name	Name of the cluster or node.
Node/Cluster UUID	UUID of the cluster or node.

Node CPU SMP Load (6.8)

Overview

The `Node CPU SMP Load (6.8)` report shows information about CPU workloads (usage rate) in SMP mode per node over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node Summary (`PI_HNS`)

Fields

Field name	Description
CPU SMP Load %	CPU load (%) in SMP mode.
Node Name	Name of the node.
Node/Cluster Name	Name of the cluster or node.
Node/Cluster UUID	UUID of the cluster or node.

Node Disk Read Latency (6.4)

Overview

The `Node Disk Read Latency (6.4)` report shows the disk read-latency time per node over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node Summary (`PI_HNS`)

Fields

Field name	Description
Disk Read Latency	The total disk read-latency time (in microseconds)
Node Name	The name of the node.
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.

Node Disk Stripe Write Latency (6.4)

Overview

The `Node Disk Stripe Write Latency (6.4)` report shows the disk stripe-write latency time per node over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node Summary (`PI_HNS`)

Fields

Field name	Description
Disk Stripe Write Latency	The total disk stripe-write latency time (in microseconds).
Node Name	The name of the node.
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.

Node Disk Write Latency (6.4)

Overview

The `Node Disk Write Latency (6.4)` report shows the disk write latency time per node over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node Summary (`PI_HNS`)

Fields

Field name	Description
Disk Write Latency	The total disk write-latency time (in microseconds).
Node Name	The name of the node.
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.

Node Ethernet Throughput RX (6.4)

Overview

The `Node Ethernet Throughput RX (6.4)` report shows the amount of Ethernet data received per second per node over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node Summary (`PI_HNS`)

Fields

Field name	Description
Ethernet Throughput RX	The amount of Ethernet data received per second (in megabits per second).
Node Name	The name of the node.
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.

Node Ethernet Throughput TX (6.4)

Overview

The `Node Ethernet Throughput TX (6.4)` report shows the amount of Ethernet data sent per second per node over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node Summary (`PI_HNS`)

Fields

Field name	Field name
Ethernet Throughput TX	The amount of Ethernet data sent per second (in megabits per second).
Node Name	The name of the node.
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.

Node Fibre Channel Throughput RX (6.4)

Overview

The `Node Fibre Channel Throughput RX (6.4)` report shows the amount of Fibre Channel data received per second per node over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node Summary (`PI_HNS`)

Fields

Field name	Description
Fibre Channel Throughput RX	The amount of Fibre Channel data received per second (in megabits per second).
Node Name	The name of the node.
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.

Node Fibre Channel Throughput TX (6.4)

Overview

The `Node Fibre Channel Throughput TX (6.4)` report shows the amount of Fibre Channel data sent per second per node over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node Summary (`PI_HNS`)

Fields

Field name	Description
Fibre Channel Throughput TX	The amount of Fibre Channel data sent per second (in megabits per second).
Node Name	The name of the node.

Field name	Description
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.

Node File System Data Transfer Rate (6.4)

Overview

The `Node File System Data Transfer Rate (6.4)` report displays the data transfer rate per second for each file system managed by a node over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node Summary (`PI_HNS`)

Fields

Field name	Description
File System Data Transfer Rate	The total of the read transfer rate and write transfer rate per second of each file system managed by the node (in megabytes per second).
Node Name	The name of the node.
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.

Node File System Load (6.4)

Overview

The `Node File System Load (6.4)` report shows information about the load on the file systems (usage rate) per node over the past 24 hours.

The `Node File System Load (6.4)` report shows information about the file system load per node over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node Summary (`PI_HNS`)

Fields

Field name	Description
FS Load %	The load on (usage rate of) the file systems (in percent).
Node Name	The name of the node.
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.

Node File System Total Ops/sec (6.4)

Overview

The `Node File System Total Ops/sec (6.4)` report displays the number of operations per second performed on each file system managed by a node over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node Summary (`PI_HNS`)

Fields

Field name	Description
File System Total Ops/sec	The total number of operations per second performed on each file system managed by the node (in operations per second).
Node Name	The name of the node.
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.

Node FPGA Load (6.4)

Overview

The `Node FPGA Load (6.4)` report shows information about FPGA loads (usage rate) per node over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node Summary (`PI_HNS`)

Fields

Field name	Description
FPGA Load %	The load on (usage rate of) the FPGA (in percent).
Node Name	The name of the node.
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.

Node FSI Cache Usage (6.4)

Overview

The `Node FSI Cache Usage (6.4)` report shows the File System Independent Cache usage per node over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node Summary (`PI_HNS`)

Fields

Field name	Description
FSI Cache Usage	The usage rate of the File System Independent Cache (in percent).
Node Name	The name of the node.
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.

Node Heap Usage (6.4)

Overview

The `Node Heap Usage (6.4)` report shows the heap usage per node over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node Summary (`PI_HNS`)

Fields

Field name	Description
Heap Cache Usage	The heap usage rate (in percent).
Node Name	The name of the node.
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.

Node HSSI Throughput RX (6.8)

Overview

The `Node HSSI Throughput RX (6.8)` report shows the amount of HSSI received for each node over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node HSSI Summary (`PI_HNHS`)

Fields

Field name	Description
HSSI Number	Number of the HSSI.
Throughput RX	Amount of HSSI data received per second (Mb per second).
Node Name	Name of the node.
Node/Cluster Name	Name of the cluster or node.

Field name	Description
Node/Cluster UUID	UUID of the cluster or node.

Node HSSI Throughput TX (6.8)

Overview

The `Node HSSI Throughput TX (6.8)` report shows the amount of HSSI transmitted for each node over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node HSSI Summary (`PI_HNHS`)

Fields

Field name	Description
HSSI Number	Number of the HSSI.
Throughput TX	Amount of HSSI data sent per second (Mb per second).
Node Name	Name of the node.
Node/Cluster Name	Name of the cluster or node.
Node/Cluster UUID	UUID of the cluster or node.

Node NVRAM Waited Allocs (6.4)

Overview

The `Node NVRAM Waited Allocs (6.4)` report shows the number of times a node waited for memory allocation over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node Summary (`PI_HNS`)

Fields

Field name	Description
Node Name	The name of the node.
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.
NVRAM Waited Allocs	The cumulative number of times a node waited for memory allocation after the node started.

Node Ops/sec (6.4)

Overview

The `Node Ops/sec (6.4)` report shows information about the number of operations performed per second per node over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node Summary (`PI_HNS`)

Fields

Field name	Description
FTP Ops/sec	The number of FTP operations performed per second (in operations per second).
I-SCSI Ops/sec	The number of iSCSI operations performed per second (in operations per second).
NFS Ops/sec	The number of NFS operations performed per second (in operations per second).
Node Name	The name of the node.
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.
SMB Ops/sec	The number of SMB operations performed per second (in operations per second).
SMB2 Ops/sec	The number of SMB2 operations performed per second (in operations per second).

Node Ops/sec (6.6)

Overview

The `Node Ops/sec (6.6)` report shows information about the total number of operations performed on a node per second over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node Summary (`PI_HNS`)

Fields

Field name	Description
FTP Ops/sec	The number of FTP operations performed per second (in operations per second).
I-SCSI Ops/sec	The number of iSCSI operations performed per second (in operations per second).
NFS Ops/sec	The number of NFS operations performed per second (in operations per second).
Node Name	The name of the node.
Node Ops/sec	The total number of operations performed on a node per second (in operations per second)
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.
SMB Ops/sec	The number of SMB operations performed per second (in operations per second).
SMB2 Ops/sec	The number of SMB2 operations performed per second (in operations per second).

Node Running Bossock Fibers (6.4)

Overview

The `Node Running Bossock Fibers (6.4)` report shows the number of threads that manage the network sockets running on a node over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node Summary (`PI_HNS`)

Fields

Field name	Description
Node Name	The name of the node.
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.
Running Bossock Fibers	The number of threads that manage the network sockets running on the node.

Node Running Pi-Tcp-Socks Rcv Fibers (6.6)

Overview

The `Node Running Pi-Tcp-Socks Rcv Fibers (6.6)` report shows the number of threads that manage the network sockets running on a node over the past 24 hours.

Storage location

`Reports/NAS/HNAS/Node/`

Record

HNAS Node Summary (`PI_HNS`)

Fields

Field name	Description
Node Name	The name of the node.
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.
Running Pi-Tcp-Socks Rcv Fibers	The number of threads that manage the network sockets running on the node.

SMU Capacity (6.4)

Overview

The `SMU Capacity (6.4)` report displays the SMU/NAS Manager capacity and configuration information for the last month.

Storage location

`Reports/NAS/HNAS/SMU/`

Record

HNAS SMU Configuration (`PD_HSMU`)

Fields

Field name	Description
File System Capacity	The total capacity of the file systems that are being managed by the SMU/NAS Manager (in gigabytes).
Host Name	The host name of the SMU/NAS Manager.
IP Address	The IP address of the SMU/NAS Manager.
Num of Clusters	The number of clusters that are being managed by the SMU/NAS Manager.
Num of Nodes	The number of nodes that are being managed by the SMU/NAS Manager.

Drilldown reports (field level)

Report name	Description
Node Capacity (6.4)	Shows the nodes that are being managed by the SMU/NAS Manager. To display this report, click the Num of Nodes field.

Storage Pool Capacity (6.4)

Overview

The `Storage Pool Capacity (6.4)` report displays the storage pool capacity and configuration information for the last month.

Storage location

`Reports/NAS/HNAS/Storage Pool/`

Record

HNAS Storage Pool Configuration (`PD_HPLC`)

Fields

Field name	Description
Capacity	The capacity of the storage pool (in gigabytes).
Free %	The percentage of free space in the storage pool.
Free Capacity	The amount of free space in the storage pool (in gigabytes).
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.
Num of System Drives	The number of system drives that make up the storage pool.
Storage Pool Name	The name of the storage pool.
Used Capacity	The amount of space used in the storage pool (in gigabytes).

Drilldown reports (field level)

Report name	Description
File System Capacity (6.4)	Shows information about the capacity of the file systems that use the selected storage pool. To display this report, click the Used Capacity field.
System Drive Capacity (6.4)	Shows information about the capacity of the system drives that make up the selected storage pool. To display this report, click the Num of System Drives field.

System Drive Capacity (6.4)

Overview

The `System Drive Capacity (6.4)` report shows information about the capacity and configuration of system drives over the past month.

Storage location

`Reports/NAS/HNAS/System Drive/`

Record

HNAS System Drive Configuration (`PD_HSDC`)

Fields

Field name	Description
Capacity	The capacity of the system drive (in gigabytes).

Field name	Description
LDEV Number	The logical device number of the storage system from which the system drive is connected.
Node/Cluster Name	The name of the cluster or node.
Node/Cluster UUID	The UUID of the cluster or node.
Serial Number	The serial number of the storage system from which the system drive is connected.
Storage Pool Name	The name of the storage pool that uses the system drive.
Storage System Name	The name of the storage system from which the system drive is connected.
System Drive ID	The ID of the system drive.

Drilldown reports (field level)

Report name	Description
Storage Pool Capacity (6.4)	Shows information about the capacity of the storage pool that uses the selected system drive. To display this report, click the Storage Pool Name field.

2

Working with Records

This chapter describes the contents of the records collected by Agents. With Performance Reporter, you can use predefined solution set reports or user defined reports to view the records collected by Agents. For details about the solution set reports provided by each Agent, see Chapter 1, Working with the Solution Set on page 1-1.

☐ Data Model Version

☐ Format of Record Explanations

☐ List of Common Key Fields

☐ Field Values

☐ Fields Added When Data Is Stored in a Performance Database

☐ Notes on Collecting Records

☐ Agent for RAID Records

☐ Agent for RAID Records (collection by using a TCP/IP connection)

☐ Agent for SAN Switch Records

☐ Agent for NAS Records (for Hitachi Data Ingestor)

☐ Records associated with Agent for NAS (for NAS Platform monitoring)

Data Model Version

The definitions of an Agent's records and fields are collectively called a *data model*. Each Agent and its data model have a specific version number, as listed in the following table.

The data model version of each Agent can be viewed from Agent properties in the Agents window of Performance Reporter.

Table 2-1 Version Numbers for Each Agent and Its Data Model

Agent Name	Agent Version	Data Model Version
Agent for RAID	8.6	10.0
Agent for SAN Switch	8.6	5.0
Agent for NAS	8.6	6.8

For the data model versions that correspond to Agent versions earlier than the versions indicated in the above table, see the appendix in the *Tuning Manager Agent Administration Guide*.

For details about the data model, see the chapter in the *Tuning Manager Agent Administration Guide* that provides an overview of the data handled by the Tuning Manager series programs.

Format of Record Explanations

This chapter describes the records for the Agents in alphabetical order. Each record explanation contains the items shown below. Explanations and items specific to each Agent are provided under the Agent name.

Note: The record explanations use abbreviations and generic names to represent the storage systems supported by Agent for RAID. For details about the abbreviations used for the storage systems, see Abbreviations Used for Storage Systems on page 1-46.

Function

Provides an overview of the performance data that is stored in the record and includes important notes.

Default and Changeable Values

Consists of a table that lists default values of the performance data collection conditions that are defined for the record and indicates whether the user can change the values.

If **No** is indicated in the **Changeable?** column, do not change the default value. Such a record does not support operations when using non-default values.

The *Default and Changeable Values* table for each record consists of the items below. For details about the following items, see the chapter that explains how to manage data by using a Performance database in the *Tuning Manager Agent Administration Guide*:

- `Collection Interval` (see *Note 1*)

  Indicates the performance data collection interval (in seconds). The default value is recommended. To change the value, specify one of the following:

  - 0
  - A value from 60 to 3,600 that is a multiple of 60 and is a divisor of 3,600
  - A value from 3,600 to 86,400 that is a multiple of 3,600 and is a divisor of 86,400

  If a value other than those described above is specified, performance data might not be stored properly. If 0 is specified, performance data will not be collected.

Note: If you want to change the `Collection Interval` value of Agent for RAID, specify a value defined as a changeable value for each record.

For VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, and Virtual Storage Platform series, if you use a TCP/IP connection to collect performance data and specify a value greater than 7,200 seconds (two hours) for Collection Interval, there will be a period in which data cannot be collected. You can collect data for a maximum of two hours before the point in time when the data collection starts. For details about the range of performance data that can be collected by using a TCP/IP connection, see the description about the collection method in the *Tuning Manager Installation Guide*.

- `Collection Offset` (see *Note 1*)

  Indicates the offset value (in seconds) used to shift the start time for collecting performance data for each record. If a number of records collect data at the same time, the load on the hardware and programs to be monitored might greatly increase. This offset value can be used to disperse the load caused by the collection. To change this value, specify a value from 0 to 32,767 (in seconds, and within the range specified for `Collection Interval`), considering the load caused by the collection processing.

- `Log` (see *Note 1*)

  Indicates whether to collect performance data to be stored in the Performance database. Specify one of the following values:

  - `Yes`: Collect (however, if `Collection Interval` is set to `0`, performance data is not collected)
  - `No`: Do not collect

- `LOGIF` (see *Note 1*)

  Indicates conditions for storing collected performance data in the Performance database.

- `Sync Collection With` (in Agent for RAID)

  Indicates a record that is synchronized during performance data collection. When a value is specified for `Sync Collection With`, you cannot change the values of `Collection Interval` and `Collection Offset`.

Note: *1:* On the Tuning Manager server, to display the performance data collected by an Agent, you must specify a value that satisfies both of the following conditions for each item:

- Specification conditions required for the Agent (which are explained here)
- Specification conditions required for the Tuning Manager server

For details about the specification conditions required for the Tuning Manager server, see the chapter that describes preparation for polling in the *Tuning Manager Server Administration Guide*.

Key Fields

Indicates fields that work as keys to identify an instance of a multi-instance record, in *view-name* (*manager-name*) format. There are two types of key fields: those common to all records, and those unique to a record. *Key Fields* only indicates the fields unique to the record. For details about key fields common to all records, see .

Lifetime

Indicates the period during which consistency is guaranteed for the performance data that is collected in the record. For details about the lifetime, see the chapter that provides an overview of the data handled by the Tuning Manager series programs in the *Tuning Manager Agent Administration Guide*.

Record Size

Here, the record size indicates the amount of performance data that can be collected and stored in a record at one time for the Store database. In a multi-instance record, values are given for both the fixed part and variable part. For other kinds of records, the value for the variable part is always 0. Estimate the Store database size by using these values. For details about how to estimate this size, see the *Hitachi Command Suite System Requirements*.

For details about how to estimate the record size and the amount used exclusively by the disk when Hybrid Store is used, see the *Hitachi Command Suite System Requirements*.

Fields

Provides a table that describes the fields of each record. The table contains the following items:

Reserved fields are indicated by "--" in columns other than the View Name (Manager Name) column or the Description column.

- View Name (Manager Name):

    - View Name:
    Indicates the field name displayed by Performance Reporter.

    - Manager Name:
    Indicates the field name used in the programs of the Tuning Manager series.

- Description:
Explanation of the value stored in the field

- Sum Rule:
Indicates the method (summarization rules) to be used by Agent Store when summarizing data. For details about summarization rules, see Summarization Rules on page 2-7.

- Format:
Data type of the field value, such as `char` or `float`. For details about data types, see List of Data Types on page 2-10.

- Delta:
If this item is `Yes`, you can switch the display of the real-time report from a differential value to a cumulative value. If this item is `No`, you cannot switch the value. For details about delta, see Delta on page 2-11.

- Supported Storage (in Agent for RAID):
For each midrange storage series (Midrange) and enterprise storage series (Enterprise) listed below, if a field is supported, `supported` is displayed. If a field is not supported, `not supported` is displayed. Cautionary notes have been added in cases where a particular model or models in a series do not support a particular field, even though the field is designated as `supported` for that series.

    The following is a list of the midrange and enterprise storage series.

    - Midrange storage systems
    HUS100 series
    Hitachi SMS series
    Hitachi AMS2000 series
    Hitachi AMS/WMS series

    - Enterprise storage systems
    VSP Gx00 models (See **Note**)
    VSP Fx00 models (See **Note**)
    VSP Nx00 models (See **Note**)
    HUS VM (See **Note**)
    VSP 5000 series
    VSP G1000
    VSP G1500
    VSP F1500

Virtual Storage Platform series
Universal Storage Platform V/VM series

Note: In this manual, VSP Gx00 models, VSP Fx00 models, VSP Nx00 models and HUS VM are treated as enterprise storage systems.

- Unsupported (in Agent for SAN Switch):

  Indicates the ports of unsupported nodes and switches, and the connection destinations specified when the instance was created.

  Two hyphens (--) indicate that the field can be used for all ports and connection destinations that are supported by Agent for SAN Switch.

- Data Source:

  Source of the obtained value. If the field value is the result of a calculation based on the values of other fields, the formula used is shown in the **Data Source** column. For example, if the **Data Source** column of a field shows `READ_IO_COUNT` / `INTERVAL`, the value of the `READ_IO_COUNT` field of this record is divided by the value of the `INTERVAL` field (of the same record), and the resulting value is stored in this field.

  "--" means that the method used to obtain the field value or the source of the value is not disclosed.

List of Common Key Fields

lists key fields that are common to all records. For details about key fields specific to particular records, see the descriptions of those records.

Table 2-2 Common Key Fields

View Name (Manager Name)	Description
Agent Host (DEVICEID)	Names of the instance and host on which the Agent is running
Agent Instance (PROD_INST)	Instance name of the Agent
Agent Type (PRODID)	Product ID of the Agent
Date (DATE)	Record creation date (in GMT)
Date and Time (DATETIME)	Combination of the DATE and TIME fields
Drawer Type (DRAWER_TYPE)	Drawer type. Valid values are as follows: m: Minute H: Hour

View Name (Manager Name)	Description
	D: Day
	W: Week
	M: Month
	Y: Year
Record Type (INPUT_RECORD_TYPE)	A 4-byte identifier indicating the record type
Time (TIME)	The time when the record was created (in GMT)

Field Values

This section describes the values stored in the fields.

Summarization Rules

In the Performance database, records of the PI record type store data that is collected at the intervals specified in Collection Interval and data that is summarized for a predefined specific time period (such as a minute, hour, day, week, month, or year). The summarization type to be used is defined for each field. Summarized data is stored as data for the hour at which collection of data to be summarized over a specific time period started. For example, if data is to be summarized hourly, the summarization of the data collected from 01:00 to 01:59 will be stored in the database as the data for 01:00. This definition is called a *summarization rule*.

Some summarization rules require intermediate data to be held during the data summarization period. In this case, fields for holding intermediate data are added to the records in the Performance database. These fields are called *added fields*. Some of the added fields are displayed as record fields in Performance Reporter. The added fields that are displayed in Performance Reporter can be displayed as fields in historical reports.

Note: Fields in each record described in this chapter are called *existing fields* to distinguish them from the added fields that are created during summarization processing.

The names of added fields are determined as follows:

- Names for added fields that are stored in the Performance database:
  A suffix is added to the Manager name of the corresponding existing field.
- Names for added fields that are displayed in Performance Reporter:
  A suffix is added to the View name of the corresponding existing field.

The following table lists the suffixes added to the Manager names and to the corresponding View names, and describes the data stored in each field.

Table 2-3 Suffixes for Added Fields

Suffix Added to the Manager Name	Suffix Added to the View Name	Stored Data
_TOTAL	(Total)	Sum of the values of the field in the records collected within the summarization period
_TOTAL_SEC	(Total)	Sum of the values of the field in the records collected within the summarization period (when the data type of the field is utime)
_COUNT	--	Number of records collected during the summarization period
_HI	(Max)	Maximum value of the field in the records collected within the summarization period
_LO	(Min)	Minimum value of the field in the records collected within the summarization period
_OV	(OV)	The number of times that the sum of the values of the field in the records collected within the summarization period overflowed. The value is determined by using the following formula: (*sum-of-field-values*) / (*maximum-value-for-existing-field* + 1) *Note:* Numbers after the decimal point are discarded.

Legend:

   --: No added field

[Table 2-4 Summarization Rules on page 2-8](#) describes summarization rules.

Table 2-4 Summarization Rules

Name of Summarization Rule	Description
COPY	The value of the field in the latest record collected within the summarization period is stored as is.
AVG	The average of the field values collected within the summarization period is stored in the Performance database. The average value is determined by using the following formula: (*sum-of-field-values*) / (*number-of-records-collected*) Added fields (Performance database): _TOTAL _TOTAL_SEC (when the data type of the field is utime) _COUNT

Name of Summarization Rule	Description
	Added field (Performance Reporter) (See **Note 1** and **Note 2**): • (Total)
ADD	The sum of the field values collected within the summarization period is stored in the Performance database.
ADDBI	The lower bytes of the sum of the field values collected within the summarization period are stored in the Performance database. The maximum value is extended to 256 times the maximum value in the ADD rule. The value is determined by using the following formula: (*sum-of-field-values*) % (*maximum-value-for-existing-field*) In the above formula, % indicates that there is a remainder. Added field (Performance database): • _OV Added field (Performance Reporter) (See **Note 1** and **Note 2**): • (OV)
HI	The maximum of the field values collected within the summarization period is stored in the Performance database.
LO	The minimum of the field values collected within the summarization period is stored in the Performance database.
HILO	The maximum, minimum, and average values of the data obtained within the summarization period are stored in the Performance database. For the existing fields, the average value is stored in the Performance database. The average value is determined by using the following formula: (*sum-of-field-values*) / (*number-of-records-collected*) Added fields (Performance database): • _HI • _LO • _TOTAL • _TOTAL_SEC (when the data type of the field is utime) • _COUNT Added fields (Performance Reporter) (See **Note 1** and **Note 2**): • (Max) • (Min) • (Total)
%	The average of the field values collected within the summarization period is stored in the Performance database. This rule is mainly applied to the percentage-type fields. The average value is determined by using the following formula: (*sum-of-field-values*) / (*number-of-records-collected*) Added fields (Performance database):

Name of Summarization Rule	Description
	• `_TOTAL` • `_TOTAL_SEC` (when the data type of the field is `utime`) • `_COUNT`
HI_%	The average of the field values within the summarization period is stored. The maximum value of the field values within the summarization period is stored in the additional field_HI. The formula for calculating the average is as follows: (*sum-of-field-values*) / (*number-of-records-collected*) Added fields (Performance database): • `_TOTAL` • `_COUNT` • `_HI`
R	The average of the field values collected within the summarization period is stored in the Performance database. This rule is mainly applied to fields that indicate amounts per second. The average value is determined by using the following formula: (*sum-of-field-values*) / (*number-of-records-collected*) For real-time reports for which delta is specified, a special calculation method, dividing the difference by the interval, is used. Added fields (Performance database): • `_TOTAL` • `_TOTAL_SEC` (when the data type of the field is `utime`) • `_COUNT` Added field (Performance Reporter) (See **Note 1** and **Note 2**): • (Total)
--	This indicates that no data is summarized.

Note: *1:* For `utime` type fields whose Manager names contain the character string `_AVG`, the (Total) fields that are added in Performance Reporter cannot be used for historical reports.

Note: *2:* For fields whose Manager names contain any of the following character strings, the (Total) fields that are added in Performance Reporter cannot be used for historical reports:
`_PER_`, `PCT`, `PERCENT`, `_AVG`, `_RATE_TOTAL`

List of Data Types

lists the data types for field values and the corresponding C and C++ data types. The values shown in the *Format*

column of each field table are those shown below in the *Field* column under *Data Type*.

Table 2-5 Data Types

Data Type		Bytes	Description
Field	C or C++		
char(n)	char[ ]	Number in parentheses	Character data with a length of *n* bytes
double	double	8	Numeric value (1.7E±308 (15 digits))
float	float	4	Numeric value (3.4E±38 (7 digits))
long	long	4	Numeric value (-2,147,483,648 to 2,147,483,647)
short	short	2	Numeric value (-32,768 to 32,767)
string(n)	char[ ]	Number in parentheses	Character string with a length of *n* bytes. The last character is null.
time_t	unsigned long	4	Numeric value (0 to 4,294,967,295)
timeval	Various structures	8	Numeric value (first 4 bytes are seconds, next 4 bytes are microseconds)
ulong	unsigned long	4	Numeric value (0 to 4,294,967,295)
utime	Various structures	8	Numeric value (first 4 bytes are seconds, next 4 bytes are microseconds)
word	unsigned short	2	Numeric value (0 to 65,535)
(Not applicable)	unsigned char	1	Numeric value (0 to 255)

Delta

The difference between the values of the previously collected data and currently collected data for the performance data of a field is called *delta*. The data source of the field is the information that is managed as cumulative values.

For example, suppose a field whose data source is a counter for I/O processing, where the counter value obtained during the first collection is 3 and the counter value obtained during the second collection is 7. The output value of this field at the second collection is 7 (the counter value at the second collection) if the delta attribute is not applied to the field or 4 (the difference between the first value and the second value) if the delta attribute is applied to the field.

Values displayed in Performance Reporter vary as indicated in Table 2-6 Values Displayed in Performance Reporter (For Real-Time Reports for which the Delta Value Is Set to Be Displayed or Historical Reports) on page 2-12 and Table 2-7 Values Displayed in Performance Reporter (For Real-Time Reports for which the Delta Value Is Not Set to Be Displayed) on page 2-13.

Note: In the title of Table 2-6 Values Displayed in Performance Reporter (For Real-Time Reports for which the Delta Value Is Set to Be Displayed or Historical Reports) on page 2-12, "the Delta Value Is Set to Be Displayed" indicates that one of the following settings is configured in Performance Reporter:

- The **Indicate delta value** check box is selected in the New Report > Indication Settings (Realtime) window.
- The **Indicate delta value** check box is selected in the Show Options window for a real-time report.
- `TRUE` is assigned to the `indicate-delta-value` attribute of `realtime-indication-settings`, in the parameter file passed as an argument to the `jpcrdef create` command.

The values listed in Table 2-6 Values Displayed in Performance Reporter (For Real-Time Reports for which the Delta Value Is Set to Be Displayed or Historical Reports) on page 2-12 will be evaluated when operations are monitored by using alarms.

Table 2-6 Values Displayed in Performance Reporter (For Real-Time Reports for which the Delta Value Is Set to Be Displayed or Historical Reports)

Record Type	Delta	Data Source	Does the Data Source Include Fields for Which (Delta = Yes)?	Displayed Value or Value Evaluated by Alarm Monitoring
PI	Yes	Not available	Not applicable	Difference
		Available	No	Difference in the results calculated based on the value at the time of collection
			Yes	Result of calculation based on difference
	No	Not available	Not applicable	Value at the time of collection
		Available	No	Result of calculation based on the value at the time of collection
			Yes	Result of calculation based on difference
PD	No	Not available	Not applicable	Value at the time of collection

Record Type	Delta	Data Source	Does the Data Source Include Fields for Which (Delta = Yes)?	Displayed Value or Value Evaluated by Alarm Monitoring
		Available	No	Result of calculation based on the value at the time of collection
			Yes	

📄 **Note:** In the title of Table 2-7 Values Displayed in Performance Reporter (For Real-Time Reports for which the Delta Value Is Not Set to Be Displayed) on page 2-13, "the Delta Value Is Not Set to Be Displayed" indicates that one of the following settings is made in Performance Reporter:

- The **Indicate delta value** check box is not selected in the New Report > Indication Settings(Realtime) window.
- The **Indicate delta value** check box is not selected in the Show Options window for a real-time report.
- `FALSE` is assigned to the `indicate-delta-value` attribute of `realtime-indication-settings`, in the parameter file passed as an argument to the `jpcrdef create` command.

Table 2-7 Values Displayed in Performance Reporter (For Real-Time Reports for which the Delta Value Is Not Set to Be Displayed)

Record Type	Delta	Data Source	Does the Data Source Include Fields for Which (Delta = Yes)?	Displayed Value
PI	Yes	Not available	Not applicable	Value at the time of collection
		Available	No	Result of calculation based on the value at the time of collection
			Yes	
	No	Not available	Not applicable	Value at the time of collection
		Available	No	Result of calculation based on the value at the time of collection
			Yes	
PD	No	Not available	Not applicable	Value at the time of collection
		Available	No	Result of calculation based on the value at the time of collection
			Yes	

Please review the following points about the collection of performance data:

- Performance data is not collected at the time you use Performance Reporter to set Collection Interval.

- Because historical data of the `PI` record type includes data (such as delta values) that requires differences from data obtained during the previous collection, data from two or more collections is required. This means that the time required to store historical data in a Performance database (from the time the Agent service is started or the time that Collection Interval is set by using Performance Reporter) is, at a maximum, twice the time that is set for Collection Interval.

  For example, if you start an Agent whose performance data collection interval is set to 300 seconds (5 minutes) at 6:32 PM, the first data collection will start at 6:35 PM. However, the record to be stored in the Performance database is not created at this time because the data required for calculating the difference does not exist. At the next data collection (which starts at 6:40 PM), historical data will be created based on the data collected at 6:35 PM and 6:40 PM, and then stored in the Performance database.

- Starting with the first collection, a real-time report displays data values. Note, however, that `0` is displayed as the first collected value in reports requiring previously collected data. The values displayed from the second and subsequent data collections vary depending on the report.

- If you change the time on a computer on which an Agent is installed, the following performance data is collected:

  - When the time on a computer is changed to a time that is earlier than the last time the Agent collected performance data:

    The performance data that was previously collected from the new set time to the last collection time is overwritten.

  - When the time on a computer is changed to a time that is later than the present time:

    The performance data ranging from the currently set time to the new set time is not collected.

  For details about the procedure for changing the computer time after installing Tuning Manager server or Agent, see the *Tuning Manager Server Administration Guide*.

Value of the Interval Field

The value of the Interval field varies depending on the report type collected by the Agent.

Agent for RAID and SAN Switch

- Real-time reports:

  The value of Interval is `0` for the first record. One of the following values set by Performance Reporter is applied to records collected at subsequent intervals:

  - The value specified for **Initial value** of **Refresh interval** in the New Report > Indication Settings (Realtime) window

- The value specified for the `initial-value` attribute of `refresh-interval` in the parameter file that is specified as an argument for the `jpcrdef create` command

  The following formula is used to determine the value:

  Interval-field-value = Record-Time-field-value - Record-Time-field-value-for-previous-collection

- Historical reports:

  The value of the Interval field is the same as the value specified for `Collection Interval`. The following formula is used to determine the value:

  Interval-field-value = Record-Time-field-value - Record-Time-field-value-for-previous-collection

Agent for NAS

- Real-time reports

  If delta values are defined to be displayed in Performance Reporter, the value of Interval is `0` for the first record. One of the following values set by Performance Reporter is applied to records collected at subsequent intervals:

  - The value specified for **Initial value** of **Refresh interval** in the New Report > Indication Settings (Realtime) window
  - The value specified for the `initial-value` attribute of `refresh-interval` in the parameter file that is specified as an argument for the `jpcrdef create` command

  The following formula is used to determine the value:

  Interval-field-value = time-elapsed-since-NAS-system-startup-for-current-data-collection - time-elapsed-since-NAS-system-startup-for-previous-data-collection

  If delta values are not defined to be displayed in Performance Reporter, the value of the interval is equal to the time that has elapsed since NAS system startup.

- Historical reports

  The value of the Interval field is the same as the value specified for Collection Interval. The following formula is used to determine the value:

  Interval-field-value = time-that-has-elapsed-since-NAS-system-startup-for-current-data-collection - time-elapsed-since-NAS-system-startup-for-previous-data-collection

Fields Added When Data Is Stored in a Performance Database

Performance data that was collected by an Agent is stored in its Performance database. This section describes the fields that are added to every record and the fields that are output when data in the Performance database is exported.

For details about the fields that are added to the Performance database according to summarization rules, see Summarization Rules on page 2-7.

Fields Added for All Records

The following table lists the fields that are added when data is stored in a Performance database. These fields are supported for all monitored targets of each Agent.

Table 2-8 Fields that Are Added When Data Is Stored in a Performance Database

View Name (Manager Name)	Description	Format	Delta
Agent Host (`DEVICEID`)	Names of the instance and host on which the Agent is running. The format is as follows: *instance-name*[*host-name*]	`string(256)`	No
Agent Instance (`PROD_INST`)	Instance name of the Agent	`string(256)`	No
Agent Type (`PRODID`)	Product ID of the Agent (1-byte identifier)	`char`	No
Date (`DATE`)	Record creation date (in GMT). See **Note 1** and **Note 2**.	`char(3)`	No
Date and Time (`DATETIME`)	Combination of the Date (`DATE`) and Time (`TIME`) fields. See **Note 1**.	`char(6)`	No
Drawer Type (`DRAWER_TYPE`)	For a record of the `PI` record type, the data summarization type	`char`	No
GMT Offset (`GMT_ADJUST`)	Difference (in seconds) between GMT and the local time	`long`	No
Time (`TIME`)	Record creation time (in GMT). See **Note 1** and **Note 2**.	`char(3)`	No

Note: 1: When performance data is displayed in the Performance Reporter reports, the Date field is displayed in *YYYYMMDD* format, the Date and Time field is displayed in *YYYYMMDD hh:mm:ss* format, and the Time field is displayed in *hh:mm:ss* format.

Note: 2: Records of the `PI` record type summarize data from a specified period of time. The value set for this field indicates the beginning of that period. The following table lists the values set for each record type.

Table 2-9 Values Set for Each PI Record Type

Type	Values Set for Each Record Type
Minute	The beginning (0th second) of the minute in which the record was created
Hour	The beginning (0th minute and 0th second) of the hour in which the record was created
Day	The beginning (0th hour, 0th minute, and 0th second, AM) of the day in which the record was created
Week	The beginning (0th hour, 0th minute, and 0th second, AM on Monday) of the week in which the record was created
Month	The beginning (0th hour, 0th minute, and 0th second, AM on the 1st day) of the month in which the record was created
Year	The beginning (0th hour, 0th minute, and 0th second, AM on January 1st) of the year in which the record was created

Fields Output When Data in a Store Database Is Exported

After executing the `jpcctrl dump` command to export data stored in a Store database, the following fields are output. These fields are also added when data is stored in a Store database, but they cannot be displayed as fields in a report because they are not displayed in Performance Reporter. They are used by Agents for internal processing, so do not use them.

- *record-ID*_DATE_F
- *record-ID*_DEVICEID_F
- *record-ID*_DRAWER_TYPE_F
- *record-ID*_DRAWER_COUNT
- *record-ID*_DRAWER_COUNT_F
- *record-ID*_INST_SEQ
- *record-ID*_PRODID_F
- *record-ID*_PROD_INST_F
- *record-ID*_RECORD_TYPE
- *record-ID*_RECORD_TYPE_F
- *record-ID*_SEVERITY
- *record-ID*_SEVERITY_F
- *record-ID*_TIME_F
- *record-ID*_UOWID
- *record-ID*_UOWID_F
- *record-ID*_UOW_INST
- *record-ID*_UOW_INST_F
- *record-ID_manager-name*_SEC

- *record-ID_manager-name*_MSEC

Notes on Collecting Records

The following are notes on collecting records. For notes specific to each record, which are not provided here, see the explanation of each record in

Agent for RAID

Correspondence Between Microcode Versions for Storage Systems and Agent for RAID Functionality

Before running Agent for RAID, check the microcode version of the storage system. Depending on the version, some Agent for RAID functions cannot be used.

The following table shows the Agent for RAID functions that can be used with each storage system microcode version.

Table 2-10 Correspondence Between Microcode Versions for Storage Systems and Agent for RAID Functionality

Storage	Microcode Version	Correspondence to Agent for RAID Functionality
Hitachi AMS/WMS series • Hitachi AMS200 • Hitachi AMS500 • Hitachi AMS1000 • Hitachi WMS100	0710 or later	This is the required microcode version when using Agent for RAID to monitor Hitachi AMS200 or Hitachi AMS500 storage.
	0720/A or later	This is the required microcode version when using Agent for RAID to monitor Hitachi WMS100 storage.
	0731/A or later	This is the required microcode version when using Agent for RAID to monitor Hitachi AMS1000 storage.
	0740/A or later	This is the required microcode version when using Agent for RAID to monitor Hitachi BR150 or BR50 storage.
Hitachi AMS2000 series • Hitachi AMS2100(H/W Rev. 0100) • Hitachi AMS2300(H/W Rev. 0100)	0832 or later	This is the required microcode version when using Agent for RAID to monitor Hitachi AMS2100 (H/W Rev. 0100) or Hitachi AMS2300 (H/W Rev. 0100) storage.
	0840 or later	Agent for RAID v6.2 or later can securely communicate with the storage systems.
	0843 or later	This is the required microcode version when using Agent for RAID to monitor Hitachi AMS2500 (H/W Rev. 0100) storage.

Storage	Microcode Version	Correspondence to Agent for RAID Functionality
• Hitachi AMS2500(H/W Rev. 0100)	0860 or later	Agent for RAID v6.2 or later can use IPv6 to communicate with the storage systems.
• Hitachi AMS2100(H/W Rev. 0200) • Hitachi AMS2300(H/W Rev. 0200) • Hitachi AMS2500(H/W Rev. 0200)	0890 or later	This is the required microcode version when using Agent for RAID to monitor Hitachi AMS2100 (H/W Rev. 0200), Hitachi AMS2300 (H/W Rev. 0200), or Hitachi AMS2500 (H/W Rev. 0200) storage.

		The following field information can be obtained in Agent for RAID v6.4 or later:
		
		• `PI_LDE` record:
		  - Interval (`INTERVAL`)
		  - LDEV Number (`LDEV_NUMBER`)
		  - Random Read I/O /sec (`RANDOM_READ_IO_RATE`)
		  - Random Read Xfer /sec (`RANDOM_READ_XFER_RATE`)
		  - Random Write I/O /sec (`RANDOM_WRITE_IO_RATE`)
		  - Random Write Xfer /sec (`RANDOM_WRITE_XFER_RATE`)
		  - Record Time (`RECORD_TIME`)
		  - Record Type (`INPUT_RECORD_TYPE`)
		  - Sequential Read I/O /sec (`SEQUENTIAL_READ_IO_RATE`)
		  - Sequential Read Xfer /sec (`SEQUENTIAL_READ_XFER_RATE`)
		  - Sequential Write I/O /sec (`SEQUENTIAL_WRITE_IO_RATE`)
		  - Sequential Write Xfer /sec (`SEQUENTIAL_WRITE_XFER_RATE`)
		• `PI_LDS` record:
		  - Random Total I/O /sec (`RANDOM_TOTAL_IO_RATE`)
		  - Random Total Xfer /sec (`RANDOM_TOTAL_XFER_RATE`)
		  - Sequential Total I/O /sec (`SEQUENTIAL_TOTAL_IO_RATE`)
		  - Sequential Total Xfer /sec (`SEQUENTIAL_TOTAL_XFER_RATE`)
		• `PI_RGS` record:
		  - Random Read I/O % (`RANDOM_READ_IO_PCT`)
		  - Random Read I/O /sec (`RANDOM_READ_IO_RATE`)

Storage	Microcode Version	Correspondence to Agent for RAID Functionality
		- Random Read Xfer % (`RANDOM_READ_XFER_PCT`)
		- Random Read Xfer /sec (`RANDOM_READ_XFER_RATE`)
		- Random Total I/O /sec (`RANDOM_TOTAL_IO_RATE`)
		- Random Total Xfer /sec (`RANDOM_TOTAL_XFER_RATE`)
		- Random Write I/O % (`RANDOM_WRITE_IO_PCT`)
		- Random Write I/O /sec (`RANDOM_WRITE_IO_RATE`)
		- Random Write Xfer % (`RANDOM_WRITE_XFER_PCT`)
		- Random Write Xfer /sec (`RANDOM_WRITE_XFER_RATE`)
		- Sequential Read I/O % (`SEQUENTIAL_READ_IO_PCT`)
		- Sequential Read I/O /sec (`SEQUENTIAL_READ_IO_RATE`)
		- Sequential Read Xfer % (`SEQUENTIAL_READ_XFER_PCT`)
		- Sequential Read Xfer /sec (`SEQUENTIAL_READ_XFER_RATE`)
		- Sequential Total I/O /sec (`SEQUENTIAL_TOTAL_IO_RATE`)
		- Sequential Total Xfer /sec (`SEQUENTIAL_TOTAL_XFER_RATE`)
		- Sequential Write I/O % (`SEQUENTIAL_WRITE_IO_PCT`)
		- Sequential Write I/O /sec (`SEQUENTIAL_WRITE_IO_RATE`)
		- Sequential Write Xfer % (`SEQUENTIAL_WRITE_XFER_PCT`)
		- Sequential Write Xfer /sec (`SEQUENTIAL_WRITE_XFER_RATE`)
	0893/B or later	This is the required microcode version when using Agent for RAID to monitor a Hitachi AMS2010 storage model in which an iSCSI port is installed.
	0897/C or later	This is the required microcode version when using Agent for RAID to monitor a Hitachi AMS2010 storage model in which an 8 Gbps FC port is installed.
Hitachi SMS series • Hitachi SMS100	1843 or later	This is the required microcode version when using Agent for RAID to monitor Hitachi SMS100 storage.

Storage	Microcode Version	Correspondence to Agent for RAID Functionality
	1860 or later	Agent for RAID v6.2 or later can use the IPv6 protocol to communicate with the storage systems.
	1890 or later	The following field information can be obtained in Agent for RAID v6.4 or later: • `PI_LDE` record: - Interval (`INTERVAL`) - LDEV Number (`LDEV_NUMBER`) - Random Read I/O /sec (`RANDOM_READ_IO_RATE`) - Random Read Xfer /sec (`RANDOM_READ_XFER_RATE`) - Random Write I/O /sec (`RANDOM_WRITE_IO_RATE`) - Random Write Xfer /sec (`RANDOM_WRITE_XFER_RATE`) - Record Time (`RECORD_TIME`) - Record Type (`INPUT_RECORD_TYPE`) - Sequential Read I/O /sec (`SEQUENTIAL_READ_IO_RATE`) - Sequential Read Xfer /sec (`SEQUENTIAL_READ_XFER_RATE`) - Sequential Write I/O /sec (`SEQUENTIAL_WRITE_IO_RATE`) - Sequential Write Xfer /sec (`SEQUENTIAL_WRITE_XFER_RATE`) • `PI_LDS` record: - Random Total I/O /sec (`RANDOM_TOTAL_IO_RATE`) - Random Total Xfer /sec (`RANDOM_TOTAL_XFER_RATE`) - Sequential Total I/O /sec (`SEQUENTIAL_TOTAL_IO_RATE`) - Sequential Total Xfer /sec (`SEQUENTIAL_TOTAL_XFER_RATE`) • `PI_RGS` record: - Random Read I/O % (`RANDOM_READ_IO_PCT`) - Random Read I/O /sec (`RANDOM_READ_IO_RATE`) - Random Read Xfer % (`RANDOM_READ_XFER_PCT`) - Random Read Xfer /sec (`RANDOM_READ_XFER_RATE`)

Storage	Microcode Version	Correspondence to Agent for RAID Functionality
		- Random Total I/O /sec (RANDOM_TOTAL_IO_RATE)
		- Random Total Xfer /sec (RANDOM_TOTAL_XFER_RATE)
		- Random Write I/O % (RANDOM_WRITE_IO_PCT)
		- Random Write I/O /sec (RANDOM_WRITE_IO_RATE)
		- Random Write Xfer % (RANDOM_WRITE_XFER_PCT)
		- Random Write Xfer /sec (RANDOM_WRITE_XFER_RATE)
		- Sequential Read I/O % (SEQUENTIAL_READ_IO_PCT)
		- Sequential Read I/O /sec (SEQUENTIAL_READ_IO_RATE)
		- Sequential Read Xfer % (SEQUENTIAL_READ_XFER_PCT)
		- Sequential Read Xfer /sec (SEQUENTIAL_READ_XFER_RATE)
		- Sequential Total I/O /sec (SEQUENTIAL_TOTAL_IO_RATE)
		- Sequential Total Xfer /sec (SEQUENTIAL_TOTAL_XFER_RATE)
		- Sequential Write I/O % (SEQUENTIAL_WRITE_IO_PCT)
		- Sequential Write I/O /sec (SEQUENTIAL_WRITE_IO_RATE)
		- Sequential Write Xfer % (SEQUENTIAL_WRITE_XFER_PCT)
		- Sequential Write Xfer /sec (SEQUENTIAL_WRITE_XFER_RATE)
HUS100 series • HUS150 • HUS130 • HUS110	0910 or later	This is the required microcode version when using Agent for RAID is to monitor HUS150, HUS130, and HUS110 storage.
Universal Storage Platform V/VM series • USP V • USP VM	60-01 or later	This is the required microcode version when using Agent for RAID.
	60-03-03 or later	Performance information can be acquired about the I/O data going to and coming from TPF.
Virtual Storage Platform series • VSP	70-01 or later	This is the required microcode version when using Agent for RAID. The following field information can be obtained.

Storage	Microcode Version	Correspondence to Agent for RAID Functionality
		• PD_PLC record - Pool Name (POOL_NAME)
	70-02 or later	The following field information can be obtained. • PD_PLTS record: - Avg I/O /sec (AVG_IO_RATE)

	70-02-71 or later	The obtained values for the following field information have been improved:
		
		• PI_LDE record:
		
		  - Busy % (BUSY_RATE)
		
		  - Max Busy % (MAX_BUSY_RATE)
		
		• PI_LDE1 record:
		
		  - Busy % (BUSY_RATE)
		
		  - Max Busy % (MAX_BUSY_RATE)
		
		• PI_LDE2 record:
		
		  - Busy % (BUSY_RATE)
		
		  - Max Busy % (MAX_BUSY_RATE)
		
		• PI_LDE3 record:
		
		  - Busy % (BUSY_RATE)
		
		  - Max Busy % (MAX_BUSY_RATE)
		
		• PI_RGS record:
		
		  - Busy % (BUSY_RATE)
		
		  - Max Busy % (MAX_BUSY_RATE)

	70-03 or later	The information in the following records can be obtained: • PD_PLR record • PD_PLTR record • PI_PLTI record • PI_VVTI record

	70-05 or later	The following field information can be obtained.
		
		• PI_PRCS record
		
		  - Buffer IO % (BUFFER_IO_RATE)
		
		  - BUFFER_IO_COUNT (BUFFER_IO_COUNT)
		
		  - Max Buffer IO % (MAX_BUFFER_IO_RATE)
		
		  - Max Buffer IO Count (MAX_BUFFER_IO_COUNT)
		
		  - MAX_BUFFER_LENGTH (MAX_BUFFER_LENGTH)

Storage	Microcode Version	Correspondence to Agent for RAID Functionality
	70-06-08 or later	The information in the following records can be obtained: • `PI_JNLS` record
	70-06-20 or later	The problem that an incorrect value is displayed on the Resource ID field of the PD_UMS record when the resource is the external volume has been fixed.
	70-06-33 or later	If Hybrid Store is used as the performance database, the information in the following records can be obtained by using a TCP/IP connection: • `PD_PDX` record • `PD_UMSX` record • `PI_CCMS` record • `PI_CHAC` record • `PI_CHDR` record • `PI_CLMX` record • `PI_DKAC` record • `PI_DKDR` record • `PI_ELDS` record • `PI_EVGS` record • `PI_HBAS` record • `PI_HWSP` record • `PI_JNLX` record • `PI_LDSX` record • `PI_LDTC` record • `PI_LDU` record • `PI_LDUR` record • `PI_LSP` record • `PI_LTSP` record • `PI_LUSP` record • `PI_MPCS` record • `PI_MPS` record • `PI_PTSX` record • `PI_RGSX` record • `PI_RGU` record • `PI_SCPS` record • `PI_SCS` record
VSP 5000 series • VSP 5100 • VSP 5500	09-01 or later	This is the required microcode version when using Agent for RAID to monitor VSP 5100, VSP 5500, VSP 5100H, VSP 5500H storage.

Storage	Microcode Version	Correspondence to Agent for RAID Functionality
• VSP 5100H • VSP 5500H		
VSP G1000	08-01 or later	This is the required microcode version when using Agent for RAID to monitor VSP G1000 storage.
	80-01-40 or later	The problem that an incorrect value is displayed on the Resource ID field of the PD_UMS record when the resource is the external volume has been fixed.
	80-02 or later	The following field information can be obtained. • `PI` record - CHA Cache Path Usage % (`CHA_CACHE_PATH_USAGE_RATE`) - DKA Cache Path Usage % (`DKA_CACHE_PATH_USAGE_RATE`)
	80-03 or later	The performance values of the following fields for ports for mainframes can be obtained: • `PI_PTS` record - Avg I/O /sec (`AVG_IO_RATE`) - Avg Xfer /sec (`AVG_XFER_RATE`) - Max I/O /sec (`MAX_IO_RATE`) - Max Xfer /sec (`MAX_XFER_RATE`) - Min I/O /sec (`MIN_IO_RATE`) - Min Xfer /sec (`MIN_XFER_RATE`) • `PI_CHS` record - Avg I/O /sec (`AVG_IO_RATE`) - Avg Xfer /sec (`AVG_XFER_RATE`) The performance values of the following fields for LDEVs, parity groups, or pools for mainframes can be obtained: • `PI_LDA` record - Read Mbytes (`READ_MBYTES`) - Read Xfer /sec (`READ_XFER_RATE`) - Write Mbytes (`WRITE_MBYTES`) - Write Xfer /sec (`WRITE_XFER_RATE`) • `PI_LDS` record, `PI_LDS1` record, `PI_LDS2` record and `PI_LDS3` record - Read Mbytes (`READ_MBYTES`) - Read Response Rate (`READ_RESPONSE_RATE`) - Read Total Response (`READ_TOTAL_RESPONSE`)

Storage	Microcode Version	Correspondence to Agent for RAID Functionality
		- Read Xfer /sec (`READ_XFER_RATE`) - Total Response Rate (`TOTAL_RESPONSE_RATE`) - Write Mbytes (`WRITE_MBYTES`) - Write Response Rate (`WRITE_RESPONSE_RATE`) - Write Total Response (`WRITE_TOTAL_RESPONSE`) - Write Xfer /sec (`WRITE_XFER_RATE`) • `PI_PLS` record - Read Response Rate (`READ_RESPONSE_RATE`) - Read Xfer /sec (`READ_XFER_RATE`) - Write Response Rate (`WRITE_RESPONSE_RATE`) - Write Xfer /sec (`WRITE_XFER_RATE`) • `PI_RGS` record - Read Mbytes (`READ_MBYTES`) - Read Response Rate (`READ_AVG_RESPONSE`) - Read Total Response (`READ_TOTAL_RESPONSE`) - Read Xfer % (`READ_XFER_PCT`) - Read Xfer /sec (`READ_XFER_RATE`) - Total Response Rate (`TOTAL_RESPONSE_RATE`) - Write Mbytes (`WRITE_MBYTES`) - Write Response Rate (`WRITE_AVG_RESPONSE`) - Write Total Response (`WRITE_TOTAL_RESPONSE`) - Write Xfer % (`WRITE_XFER_PCT`) - Write Xfer /sec (`WRITE_XFER_RATE`)
	80-03-31 or later	If Hybrid Store is used as the performance database, the information in the following records can be obtained by using a TCP/IP connection: • `PD_PDX` record • `PD_UMSX` record • `PI_CCMS` record • `PI_CHAC` record • `PI_CHDR` record • `PI_CLMX` record

Storage	Microcode Version	Correspondence to Agent for RAID Functionality
		• `PI_DKAC` record • `PI_DKDR` record • `PI_ELDS` record • `PI_EVGS` record • `PI_HBAS` record • `PI_HWSP` record • `PI_JNLX` record • `PI_LDSX` record • `PI_LDTC` record • `PI_LDU` record • `PI_LDUR` record • `PI_LSP` record • `PI_LTSP` record • `PI_LUSP` record • `PI_MPCS` record • `PI_MPS` record • `PI_MPTS` record • `PI_PTSX` record • `PI_RGSX` record • `PI_RGU` record • `PI_SCPS` record • `PI_SCS` record
	80-04 or later	The following field information can be obtained. • `PD_PLC` record - FMC Capacity Used (`FMC_CAPACITY_USED`) - FMC Pool Capacity Compression (`FMC_POOL_CAPACITY_COMP`) - FMC Pool Capacity Saving (`FMC_POOL_CAPACITY_SAVING`) - FMC Pool Capacity Saving % (`FMC_POOL_CAPACITY_SAVING_RATE`) - FMC Pool Compression Ratio (`FMC_POOL_CAPACITY_COMP_RATIO`) - Physical Capacity Free (`PHYSICAL_CAPACITY_FREE`) - Physical Capacity Total (`PHYSICAL_CAPACITY_TOTAL`) - Physical Capacity Usage % (`PHYSICAL_CAPACITY_USAGE_RATE`)

Storage	Microcode Version	Correspondence to Agent for RAID Functionality
		- Physical Capacity Used (`PHYSICAL_CAPACITY_USED`) - Physical FMC Capacity Used (`PHYSICAL_FMC_CAPACITY_USED`) - Pool Capacity Expansion % (`POOL_CAPACITY_EXPANSION_RATE`) • `PD_PLTC` record - FMC Capacity Expansion % (`FMC_CAPACITY_EXPANSION_RATE`) - FMC Pool Capacity Free (`FMC_POOL_CAPACITY_FREE`) - FMC Pool Capacity Saving (`FMC_POOL_CAPACITY_SAVING`) - FMC Pool Capacity Saving % (`FMC_POOL_CAPACITY_SAVING_RATE`) - FMC Pool Capacity Total (`FMC_POOL_CAPACITY_TOTAL`) - FMC Pool Capacity Usage % (`FMC_POOL_CAPACITY_USAGE_RATE`) - FMC Pool Capacity Used (`FMC_POOL_CAPACITY_USED`) - Physical FMC Capacity Free (`PHYSICAL_FMC_CAPACITY_FREE`) - Physical FMC Capacity Total (`PHYSICAL_FMC_CAPACITY_TOTAL`) - Physical FMC Capacity Usage % (`PHYSICAL_FMC_CAP_USAGE_RATE`) - Physical FMC Capacity Used (`PHYSICAL_FMC_CAPACITY_USED`)
	80-04-20 or later	The following problem will be corrected: The values for the following fields are incorrect if the Dynamic Provisioning pool includes the reserved page capacity: • `PD_PLC` record - Physical Capacity Free (`PHYSICAL_CAPACITY_FREE`) - Physical Capacity Usage % (`PHYSICAL_CAPACITY_USAGE_RATE`) - Physical Capacity Used (`PHYSICAL_CAPACITY_USED`)
	80-04-25 or later	Measures will be taken for the following problem: If parity groups are created by using flash drives,you cannot evaluate load information by using the Busy % (BUSY_RATE) field or Max Busy % (MAX_BUSY_RATE) field. • `PI_LDE` record

Storage	Microcode Version	Correspondence to Agent for RAID Functionality
		• `PI_LDE1` record • `PI_LDE2` record • `PI_LDE3` record • `PI_LDU` record • `PI_RGS` record • `PI_RGU` record

	80-05 or later	The following field information can be obtained.
		• `PD_PLC` record
		  - Data Saving (`DATA_SAVING`)
		  - DKC Saving Capacity (`DKC_SAVING_CAPACITY`)
		• `PD_VVC` record
		  - Data Saving (`DATA_SAVING`)

	80-05-41 or later	The following field information can be obtained. • `PD_VVC` record - Deduplication Mode (`DEDUP_MODE`)

	80-06-21 or later	The following field information can be obtained.
		• `PD_PLC` record
		  - Data Volume Used Capacity (`DATA_VOLUME_USED_CAPACITY`)
		  - DKC Compression Capacity (`DKC_COMP_CAPACITY`)
		  - DKC Compression Ratio (`DKC_COMP_RATIO`)
		  - DKC Deduplication Capacity (`DKC_DUP_CAPACITY`)
		  - DKC Deduplication Ratio (`DKC_DUP_RATIO`)
		  - DKC Pre-Process Capacity (`DKC_PRE_PROC_CAPACITY`)
		  - DKC Reclaim Capacity (`DKC_RECLAIM_CAPACITY`)
		  - DKC Saving Ratio (`DKC_SAVING_RATIO`)
		  - DKC System Capacity (`DKC_SYSTEM_CAPACITY`)
		  - FMC Capacity Total (`FMC_CAPACITY_TOTAL`)
		  - FMC Pool Capacity Reclaim (`FMC_POOL_CAPACITY_RECLAIM`)
		  - Physical FMC Capacity Total(`PHYSICAL_FMC_CAPACITY_TOTAL`)

Storage	Microcode Version	Correspondence to Agent for RAID Functionality
		- Saving Capacity (`SAVING_CAPACITY`)
		- Saving Ratio (`SAVING_RATIO`)
	80-06-41 or later	The following field information can be obtained. • `PD_PLC` record - Auto Expansion (`AUTO_EXPANSION`)
VSP G1500	80-05 or later	This is the required microcode version when using Agent for RAID to monitor VSP G1500 stoage.
	80-05-41 or later	The following field information can be obtained. • `PD_VVC` record - Deduplication Mode (`DEDUP_MODE`)

	80-06-21 or later	The following field information can be obtained.
		 • `PD_PLC` record
		    - Data Volume Used Capacity (`DATA_VOLUME_USED_CAPACITY`)
		    - DKC Compression Capacity (`DKC_COMP_CAPACITY`)
		    - DKC Compression Ratio (`DKC_COMP_RATIO`)
		    - DKC Deduplication Capacity (`DKC_DUP_CAPACITY`)
		    - DKC Deduplication Ratio (`DKC_DUP_RATIO`)
		    - DKC Pre-Process Capacity (`DKC_PRE_PROC_CAPACITY`)
		    - DKC Reclaim Capacity (`DKC_RECLAIM_CAPACITY`)
		    - DKC Saving Ratio (`DKC_SAVING_RATIO`)
		    - DKC System Capacity (`DKC_SYSTEM_CAPACITY`)
		    - FMC Capacity Total (`FMC_CAPACITY_TOTAL`)
		    - FMC Pool Capacity Reclaim (`FMC_POOL_CAPACITY_RECLAIM`)
		    - Physical FMC Capacity Total(`PHYSICAL_FMC_CAPACITY_TOTAL`)
		    - Saving Capacity (`SAVING_CAPACITY`)
		    - Saving Ratio (`SAVING_RATIO`)

	80-06-41 or later	The following field information can be obtained. • `PD_PLC` record

Storage	Microcode Version	Correspondence to Agent for RAID Functionality
		- Auto Expansion (`AUTO_EXPANSION`)
VSP F1500	80-05 or later	This is the required microcode version when using Agent for RAID to monitor VSP F1500 storage.
	80-05-41 or later	The following field information can be obtained. • `PD_VVC` record - Deduplication Mode (`DEDUP_MODE`)

	80-06-21 or later	The following field information can be obtained.
		• `PD_PLC` record
		  - Data Volume Used Capacity (`DATA_VOLUME_USED_CAPACITY`)
		  - DKC Compression Capacity (`DKC_COMP_CAPACITY`)
		  - DKC Compression Ratio (`DKC_COMP_RATIO`)
		  - DKC Deduplication Capacity (`DKC_DUP_CAPACITY`)
		  - DKC Deduplication Ratio (`DKC_DUP_RATIO`)
		  - DKC Pre-Process Capacity (`DKC_PRE_PROC_CAPACITY`)
		  - DKC Reclaim Capacity (`DKC_RECLAIM_CAPACITY`)
		  - DKC Saving Ratio (`DKC_SAVING_RATIO`)
		  - DKC System Capacity (`DKC_SYSTEM_CAPACITY`)
		  - FMC Capacity Total (`FMC_CAPACITY_TOTAL`)
		  - FMC Pool Capacity Reclaim (`FMC_POOL_CAPACITY_RECLAIM`)
		  - Physical FMC Capacity Total(`PHYSICAL_FMC_CAPACITY_TOTAL`)
		  - Saving Capacity (`SAVING_CAPACITY`)
		  - Saving Ratio (`SAVING_RATIO`)

	80-06-41 or later	The following field information can be obtained. • `PD_PLC` record - Auto Expansion (`AUTO_EXPANSION`)
HUS VM	73-01 or later	This is the required microcode version when using Agent for RAID to monitor HUS VM storage.

Storage	Microcode Version	Correspondence to Agent for RAID Functionality
		The following field information can be obtained. • `PD_PLC` record - Pool Name (`POOL_NAME`)

	73-02 or later	The following field information can be obtained.
		
		• `PI_PRCS` record
		
		  - Buffer IO % (`BUFFER_IO_RATE`)
		
		  - BUFFER_IO_COUNT (`BUFFER_IO_COUNT`)
		
		  - Max Buffer IO % (`MAX_BUFFER_IO_RATE`)
		
		  - Max Buffer IO Count (`MAX_BUFFER_IO_COUNT`)
		
		  - MAX_BUFFER_LENGTH (`MAX_BUFFER_LENGTH`)

	73-03-02 or later	The information in the following records can be obtained: • `PI_JNLS` record
	73-03-09 or later	The problem that an incorrect value is displayed on the Resource ID field of the PD_UMS record when the resource is the external volume has been fixed.
	73-03-40 or later	If Hybrid Store is used as the performance database, the information in the following records can be obtained by using a TCP/IP connection: • `PD_PDX` record • `PD_UMSX` record • `PI_CBMB` record • `PI_CLMX` record • `PI_CPS` record • `PI_DBMB` record • `PI_ELDS` record • `PI_EVGS` record • `PI_HBAS` record • `PI_HWSP` record • `PI_JNLX` record • `PI_LDSX` record • `PI_LDTC` record • `PI_LDU` record • `PI_LDUR` record • `PI_LSP` record

Storage	Microcode Version	Correspondence to Agent for RAID Functionality
		• `PI_LTSP` record
		• `PI_LUSP` record
		• `PI_MBDR` record
		• `PI_MPS` record
		• `PI_PTSX` record
		• `PI_RGSX` record
		• `PI_RGU` record
		• `PI_SCPS` record
		• `PI_SCS` record
VSP G200, G400, G600, G800 VSP F400, F600, F800	83-01 or later	This is the required microcode version when using Agent for RAID to monitor VSP G200, G400, G600, G800 or VSP F400, F600, F800 storage.
	83-02-01 or later	If Hybrid Store is used as the performance database, the information in the following records can be obtained by using a TCP/IP connection: • `PD_PDX` record • `PI_ELDS` record • `PI_EVGS` record • `PI_HBAS` record • `PI_HWSP` record • `PI_JNLX` record • `PI_LDSX` record • `PI_LDTC` record • `PI_LDU` record • `PI_LDUR` record • `PI_LSP` record • `PI_LTSP` record • `PI_LUSP` record • `PI_MPS` record • `PI_PTSX` record • `PI_RGSX` record • `PI_RGU` record • `PI_SCPS` record
	83-03 or later	If VSP F400, F600, or F800 is being monitored, VSP F400, VSP F600, or VSP F800 is displayed as the product name of the storage system in the execution results of the `jpctdchkinst` and `jpctdlistraid` commands and in the following fields. • `PD` record

Storage	Microcode Version	Correspondence to Agent for RAID Functionality
		- DKC Name (`DKC_NAME`) • `PD_PDX` record - DKC Name (`DKC_NAME`)

		The following field information can be obtained.
		• `PD_PLC` record
		  - FMC Capacity Used (`FMC_CAPACITY_USED`)
		  - FMC Pool Capacity Compression (`FMC_POOL_CAPACITY_COMP`)
		  - FMC Pool Capacity Saving (`FMC_POOL_CAPACITY_SAVING`)
		  - FMC Pool Capacity Saving % (`FMC_POOL_CAPACITY_SAVING_RATE`)
		  - FMC Pool Compression Ratio (`FMC_POOL_CAPACITY_COMP_RATIO`)
		  - Physical Capacity Free (`PHYSICAL_CAPACITY_FREE`)
		  - Physical Capacity Total (`PHYSICAL_CAPACITY_TOTAL`)
		  - Physical Capacity Usage % (`PHYSICAL_CAPACITY_USAGE_RATE`)
		  - Physical Capacity Used (`PHYSICAL_CAPACITY_USED`)
		  - Physical FMC Capacity Used (`PHYSICAL_FMC_CAPACITY_USED`)
		  - Pool Capacity Expansion % (`POOL_CAPACITY_EXPANSION_RATE`)
		• `PD_PLTC` record
		  - FMC Capacity Expansion % (`FMC_CAPACITY_EXPANSION_RATE`)
		  - FMC Pool Capacity Free (`FMC_POOL_CAPACITY_FREE`)
		  - FMC Pool Capacity Saving (`FMC_POOL_CAPACITY_SAVING`)
		  - FMC Pool Capacity Saving % (`FMC_POOL_CAPACITY_SAVING_RATE`)
		  - FMC Pool Capacity Total (`FMC_POOL_CAPACITY_TOTAL`)
		  - FMC Pool Capacity Usage % (`FMC_POOL_CAPACITY_USAGE_RATE`)
		  - FMC Pool Capacity Used (`FMC_POOL_CAPACITY_USED`)
		  - Physical FMC Capacity Free (`PHYSICAL_FMC_CAPACITY_FREE`)

Storage	Microcode Version	Correspondence to Agent for RAID Functionality
		- Physical FMC Capacity Total (PHYSICAL_FMC_CAPACITY_TOTAL)
		- Physical FMC Capacity Usage % (PHYSICAL_FMC_CAP_USAGE_RATE)
		- Physical FMC Capacity Used (PHYSICAL_FMC_CAPACITY_USED)
	83-03-20 or later	The following problem will be corrected: The values for the following fields are incorrect if the Dynamic Provisioning pool includes the reserved page capacity: • PD_PLC record - Physical Capacity Free (PHYSICAL_CAPACITY_FREE) - Physical Capacity Usage % (PHYSICAL_CAPACITY_USAGE_RATE) - Physical Capacity Used (PHYSICAL_CAPACITY_USED)
	83-04 or later	The following field information can be obtained. • PD_PLC record - Data Saving (DATA_SAVING) - DKC Saving Capacity (DKC_SAVING_CAPACITY) • PD_VVC record - Data Saving (DATA_SAVING)
	83-04-20 or later	Measures will be taken for the following problem: If parity groups are created by using flash drives,you cannot evaluate load information by using the Busy % (BUSY_RATE) field or Max Busy % (MAX_BUSY_RATE) field. • PI_LDE record • PI_LDE1 record • PI_LDE2 record • PI_LDE3 record • PI_LDU record • PI_RGS record • PI_RGU record
	83-04-41 or later	The following field information can be obtained. • PD_VVC record - Deduplication Mode (DEDUP_MODE)

Storage	Microcode Version	Correspondence to Agent for RAID Functionality
VSP N400, N600, N800	83-06-01 or later	This is the required microcode version when using Agent for RAID to monitor VSP N400, N600, N800 storage.

VSP G350, G370, G700, G900
 	
VSP F350, F370, F700, F900
	88-01-03 or later	This version of microcode is required to use Agent for RAID to monitor the VSP G350, G370, G700, or G900 storage systems and the VSP F350, F370, F700, or F900 storage systems.
		
		The following field information can be obtained.
		
		• `PD_PLC` record
		  - Auto Expansion (`AUTO_EXPANSION`)
		  - Data Volume Used Capacity (`DATA_VOLUME_USED_CAPACITY`)
		  - DKC Compression Capacity (`DKC_COMP_CAPACITY`)
		  - DKC Compression Ratio (`DKC_COMP_RATIO`)
		  - DKC Deduplication Capacity (`DKC_DUP_CAPACITY`)
		  - DKC Deduplication Ratio (`DKC_DUP_RATIO`)
		  - DKC Pre-Process Capacity (`DKC_PRE_PROC_CAPACITY`)
		  - DKC Reclaim Capacity (`DKC_RECLAIM_CAPACITY`)
		  - DKC Saving Ratio (`DKC_SAVING_RATIO`)
		  - DKC System Capacity (`DKC_SYSTEM_CAPACITY`)
		  - FMC Capacity Total (`FMC_CAPACITY_TOTAL`)
		  - FMC Pool Capacity Reclaim (`FMC_POOL_CAPACITY_RECLAIM`)
		  - Physical FMC Capacity Total(`PHYSICAL_FMC_CAPACITY_TOTAL`)
		  - Saving Capacity (`SAVING_CAPACITY`)
		  - Saving Ratio (`SAVING_RATIO`)

	88-03-01 or later	The information in the following records can be obtained: • `PD_PEFF` record • `PD_SEFF` record
	88-03-21 or later	Measures will be taken for the following problem: You cannot evaluate load information by using the Busy % (BUSY_RATE) field or Max Busy % (MAX_BUSY_RATE) field.

Storage	Microcode Version	Correspondence to Agent for RAID Functionality
		• `PI_LDU` record • `PI_RGU` record
	88-03-23 or later	Measures will be taken for the following problem: You cannot evaluate load information by using the Busy % (BUSY_RATE) field or Max Busy % (MAX_BUSY_RATE) field. • PI_LDE record • PI_LDE1 record • PI_LDE2 record • PI_LDE3 record • PI_RGS record
	88-03-25 or later	"SSD(RI)" can be displayed as the drive type for each record and as the tier type for each record.

Range of Logical Devices That Can Be Monitored by Agent for RAID

If the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500,Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system, Agent for RAID can only monitor logical devices that have the logical device numbers listed in the following table.

Table 2-11 Logical Device Numbers of Logical Devices That Can Be Monitored by Agent for RAID

Storage System	Logical Device Number
• Universal Storage Platform V/VM series • Virtual Storage Platform series • VSP 5000 series • VSP G1000 • VSP G1500 • VSP F1500 • HUS VM • VSP Gx00 models • VSP Fx00 models	from 00:00:00 to 00:FE:FF

Storage System	Logical Device Number
• VSP Nx00 models	

Restrictions Regarding Volumes and Ports for Mainframes

- *Restrictions when monitoring volumes for mainframes*

  When a logical device has an emulation type used for mainframes, some performance information cannot be obtained. The fields for the records listed in the following table are not supported when monitoring volumes for mainframes.

Table 2-12 Records That Are Not Supported When Monitoring Volumes for Mainframes (for VSP 5000 series, VSP G1000 (80-03 or later), G1500, and VSP F1500)

Record Name (Record ID)	Field
• LDEV Summary - Extended (PI_LDE) • LDEV Summary 1 - Extended (PI_LDE1) • LDEV Summary 2 - Extended (PI_LDE2) • LDEV Summary 3 - Extended (PI_LDE3)	Random Read Xfer /sec (RANDOM_READ_XFER_RATE)
	Random Write Xfer /sec (RANDOM_WRITE_XFER_RATE)
	Sequential Read Xfer /sec (SEQUENTIAL_READ_XFER_RATE)
	Sequential Write Xfer /sec (SEQUENTIAL_WRITE_XFER_RATE)
• Logical Device Summary (PI_LDS) • Logical Device Summary 1 (PI_LDS1) • Logical Device Summary 2 (PI_LDS2) • Logical Device Summary 3 (PI_LDS3)	Random Total Xfer /sec (RANDOM_TOTAL_XFER_RATE)
	Sequential Total Xfer /sec (SEQUENTIAL_TOTAL_XFER_RATE)
RAID Group Summary (PI_RGS)	Random Read Xfer % (RANDOM_READ_XFER_PCT)
	Random Read Xfer /sec (RANDOM_READ_XFER_RATE)
	Random Total Xfer /sec (RANDOM_TOTAL_XFER_RATE)
	Random Write Xfer % (RANDOM_WRITE_XFER_PCT)
	Random Write Xfer /sec (RANDOM_WRITE_XFER_RATE)
	Sequential Read Xfer % (SEQUENTIAL_READ_XFER_PCT)
	Sequential Read Xfer /sec (SEQUENTIAL_READ_XFER_RATE)
	Sequential Total Xfer /sec (SEQUENTIAL_TOTAL_XFER_RATE)
	Sequential Write Xfer % (SEQUENTIAL_WRITE_XFER_PCT)

Record Name (Record ID)	Field
	Sequential Write Xfer /sec (`SEQUENTIAL_WRITE_XFER_RATE`)

Table 2-13 Records That Are Not Supported When Monitoring Volumes for Mainframes (for VSP G1000 (earlier than 80-03), Virtual Storage Platform series storage systems, and Universal Storage Platform V/VM series storage systems)

Record Name (Record ID)	Field
• LDEV Summary - Extended (`PI_LDE`) • LDEV Summary 1 - Extended (`PI_LDE1`) • LDEV Summary 2 - Extended (`PI_LDE2`) • LDEV Summary 3 - Extended (`PI_LDE3`)	Random Read Xfer /sec (`RANDOM_READ_XFER_RATE`)
	Random Write Xfer /sec (`RANDOM_WRITE_XFER_RATE`)
	Sequential Read Xfer /sec (`SEQUENTIAL_READ_XFER_RATE`)
	Sequential Write Xfer /sec (`SEQUENTIAL_WRITE_XFER_RATE`)
Logical Device Aggregation (`PI_LDA`)	Read Mbytes (`READ_MBYTES`)
	Read Xfer /sec (`READ_XFER_RATE`)
	Write Mbytes (`WRITE_MBYTES`)
	Write Xfer /sec (`WRITE_XFER_RATE`)
• Logical Device Summary (`PI_LDS`) • Logical Device Summary 1 (`PI_LDS1`) • Logical Device Summary 2 (`PI_LDS2`) • Logical Device Summary 3 (`PI_LDS3`)	Random Total Xfer /sec (`RANDOM_TOTAL_XFER_RATE`)
	Read Mbytes (`READ_MBYTES`)
	Read Response Rate (`READ_RESPONSE_RATE`)
	Read Total Response (`READ_TOTAL_RESPONSE`)
	Read Xfer /sec (`READ_XFER_RATE`)
	Sequential Total Xfer /sec (`SEQUENTIAL_TOTAL_XFER_RATE`)
	Total Response Rate (`TOTAL_RESPONSE_RATE`)
	Write Mbytes (`WRITE_MBYTES`)
	Write Response Rate (`WRITE_RESPONSE_RATE`)
	Write Total Response (`WRITE_TOTAL_RESPONSE`)
	Write Xfer /sec (`WRITE_XFER_RATE`)
Pool Summary (`PI_PLS`)	Read Response Rate (`READ_RESPONSE_RATE`)
	Read Xfer /sec (`READ_XFER_RATE`)
	Write Response Rate (`WRITE_RESPONSE_RATE`)
	Write Xfer /sec (`WRITE_XFER_RATE`)

Record Name (Record ID)	Field
RAID Group Summary (PI_RGS)	Random Read Xfer % (RANDOM_READ_XFER_PCT)
	Random Read Xfer /sec (RANDOM_READ_XFER_RATE)
	Random Total Xfer /sec (RANDOM_TOTAL_XFER_RATE)
	Random Write Xfer % (RANDOM_WRITE_XFER_PCT)
	Random Write Xfer /sec (RANDOM_WRITE_XFER_RATE)
	Read Mbytes (READ_MBYTES)
	Read Response Rate (READ_AVG_RESPONSE)
	Read Total Response (READ_TOTAL_RESPONSE)
	Read Xfer % (READ_XFER_PCT)
	Read Xfer /sec (READ_XFER_RATE)
	Sequential Read Xfer % (SEQUENTIAL_READ_XFER_PCT)
	Sequential Read Xfer /sec (SEQUENTIAL_READ_XFER_RATE)
	Sequential Total Xfer /sec (SEQUENTIAL_TOTAL_XFER_RATE)
	Sequential Write Xfer % (SEQUENTIAL_WRITE_XFER_PCT)
	Sequential Write Xfer /sec (SEQUENTIAL_WRITE_XFER_RATE)
	Total Response Rate (TOTAL_RESPONSE_RATE)
	Write Mbytes (WRITE_MBYTES)
	Write Response Rate (WRITE_AVG_RESPONSE)
	Write Total Response (WRITE_TOTAL_RESPONSE)
	Write Xfer % (WRITE_XFER_PCT)
	Write Xfer /sec (WRITE_XFER_RATE)

- *Restrictions when monitoring ports for mainframes*
  When a port is used for connecting to a mainframe, not all performance information can be obtained in the following storage systems: VSP G1000 (earlier than 80-03), Virtual Storage Platform series, or Universal Storage Platform V/VM series. The field values for the records listed in the table below are always 0 when monitoring ports for mainframes in the following storage systems: VSP G1000 (earlier than 80-03), Virtual Storage Platform series, or Universal Storage Platform V/VM series.

Table 2-14 Records Whose Field Values Are Always 0 When Monitoring Ports for Mainframes (for VSP G1000 (earlier than 80-03), Virtual Storage

Record Name (Record ID)	Field
Port Summary (`PI_PTS`)	Avg I/O /sec (`AVG_IO_RATE`)
	Avg Xfer /sec (`AVG_XFER_RATE`)
	Max I/O /sec (`MAX_IO_RATE`)
	Max Xfer /sec (`MAX_XFER_RATE`)
	Min I/O /sec (`MIN_IO_RATE`)
	Min Xfer /sec (`MIN_XFER_RATE`)

Performance Information Collectible When Using a Storage System Management Program

The following table lists the I/O types and whether performance information can be collected by Agent for RAID when a program for managing storage systems is used.

Table 2-15 I/O Types and Collectability of Performance Information by Agent for RAID

Program Name	I/O Type	Types of Performance Information	Whether to collect performance information of each resource subject to I/O loads		
			Logical Device	Parity Group	Port
TrueCopy (for an enterprise storage system) or Universal Replicator	I/O that occurs between a host and a P-VOL	Performance values of read/write processing	Y	Y	Y
		Usage rate	Y	Y	-
	I/O that occurs between a P-VOL and an S-VOL	Performance values of read/write processing	N	N	Initiator port : Y RCU Target port : N
		Usage rate	Y (See **Note**.)	Y (See **Note**.)	-
TrueCopy (for a midrange storage system)	I/O that occurs between a host and a P-VOL	Performance values of read/write processing	Y	Y	Y
	I/O that occurs between a P-VOL and an S-VOL	Performance value for read/write processing	N	N	N

Program Name	I/O Type	Types of Performance Information	Whether to collect performance information of each resource subject to I/O loads		
			Logical Device	Parity Group	Port
		for a P-VOL or a local port			
		Performance value for read/ write processing for a S-VOL or a local port	Y	Y	Y
ShadowImage	I/O that occurs between a host and a P-VOL	Performance values of read/ write processing	Y	Y	Y
		Usage rate	Y	Y	-
	I/O that occurs between a P-VOL and an S-VOL	Performance values of read/ write processing	N	N	-
		Usage rate	Y (See ***Note***.)	Y (See ***Note***.)	-
Copy-on-Write Snapshot/Thin Image	I/O that occurs between a host and a P-VOL	Performance values of read/ write processing	Y	Y	Y
		Usage rate	Y	Y	-
	I/O that occurs between a P-VOL and a V-VOL	Performance values of read/ write processing	N	N	-
		Usage rate	N	N	-
	I/O that occurs at a pool volume	Performance values of read/ write processing	N	N	-
		Usage rate	Y (See ***Note***.)	Y (See ***Note***.)	-
Dynamic Provisioning (for an enterprise storage system)	I/O that occurs between a host and a V-VOL	Performance values of read/ write processing	Y	N	Y
		Usage rate	N	N	-
	I/O that occurs at a pool volume	Performance values of read/ write processing	N	N	-
		Usage rate	Y (See ***Note***.)	Y (See ***Note***.)	-

Program Name	I/O Type	Types of Performance Information	Whether to collect performance information of each resource subject to I/O loads		
			Logical Device	Parity Group	Port
Dynamic Provisioning (for a midrange storage system)	I/O that occurs between a host and a V-VOL	Performance values of read/ write processing	Y	Y	Y

Legend:

Y: Can be collected

N: Cannot be collected (the value will be indefinite)

-: Not applicable

Note: When monitoring a logical device that is not mapped to a port or when monitoring a parity group to which the logical device belongs, the value of `Unassigned Open Volume Monitoring` must be `Y` or `y`.

Availability of performance data for an environment that uses VVols of VMware

The table below describes whether performance data for each resource can be obtained for an environment that uses VVols of VMware.

Table 2-16 Availability of performance data for an environment that uses VVols of VMware

Resources	Can/Cannot Collect Performance Information	Values that can be collected and those that cannot be collected
Port	Y	Each of the following values can be collected as the total value for the port: • Frequency of read and write operations from the hosts • Amount of data transferred from the hosts
LDEV(ALU)	N	The following values cannot be collected: • Frequency of read and write operations from the hosts • Amount of data transferred from the hosts • Average processing time for the write operation requests from the hosts • Logical device usage rate • Usage rate of resources within MP by logical devices
• LDEV(SLU) • Pool	Y	The following values can be collected:

Resources	Can/Cannot Collect Performance Information	Values that can be collected and those that cannot be collected
		• Frequency of read and write operations from the hosts • Amount of data transferred from the hosts • Average processing time for the write operation requests from the hosts • Usage rate of resources within MP by logical devices
	N	The usage rate of logical devices cannot be collected.
Parity group	N	The following values cannot be collected: • Frequency of read and write operations • Usage rate of parity groups
• MP • MP Blade • Cache memory	Y	The usage rate of processors that are generated by I/O operations from the hosts can be collected.

Legend:

    Y: Can be collected

    N: Cannot be collected

Whether Performance Information Is Collectible When Using Global-Active Device

The following figure shows the configuration when a global-active device is used. Also, Table 2-17 Whether Performance Information Is Collectible When Using Global-Active Device on page 2-46 shows whether performance information can be collected for each resource within the figure.

Host

Virtual storage machine

P-VOL

S-VOL

Quorum disk

Quorum disk

Storage system on the primary site

Storage system on the secondary site

Quorum disk

External storage system for a quorum disk

Legend

| T | : Target port
| I | : Initiator port
| R | : RCU Target port
| E | : External port

Figure 2-1 Configuration When Using a Global-Active Device

Table 2-17 Whether Performance Information Is Collectible When Using Global-Active Device

I/O Type	Resources	Can/Cannot Collect Performance Information	Values that can be collected	Resource location	Configuration figure number
I/O from the host	Target port	Y	Displays the I/Os from the host for both Read and Write.	Primary site/ Secondary site	1
	Logical Device	Y	Displays only the I/Os from the host for Read, and displays the sum of I/Os from the host and from the remote site for Write.	Primary site/ Secondary site	2
I/O to the remote site	Initiator port	Y	Not only the I/Os of the copy pair for a global-active device but the performance value of the entire LU connected to the port.	Primary site/ Secondary site	3
	RCU Target port	Y	In addition to the I/Os of the copy pair for a global-active device, this is a performance value of the entire LU that is connected to the port.	Primary site/ Secondary site	4
	Logical Device	Y	Displays only the I/Os from the host for Read, and displays the sum of I/Os from the host and from the remote site for Write.	Primary site/ Secondary site	5
I/O to the quorum disk	Logical device (Quorum disk)	N	Performance values cannot be collected because this is an external volume.	Primary site/ Secondary site	6
	External port	Y	In addition to the I/Os of the copy pair for a global-	Primary site/ Secondary site	7

I/O Type	Resources	Can/Cannot Collect Performance Information	Values that can be collected	Resource location	Configuration figure number
			active device, this is a performance value of the entire LU that is connected to the port.		
	Target port	Y	In addition to the I/Os of the copy pair for a global-active device, this is a performance value of the entire LU that is connected to the port.	External storage system for a quorum disk	8
	Logical device (Quorum disk)	Y	Displays the I/Os from the Quorum disk for both Read and Write.	External storage system for a quorum disk	9

Legend:
    Y: Can be collected
    N: Cannot be collected

Whether Performance Information Is Collectible When Using Compatible PAV or Compatible Hyper PAV

When Compatible PAV or Compatible Hyper PAV is used, records for base volumes can be obtained, but records for alias volumes cannot be obtained.

In addition to I/O performance information for base volumes, performance information in base volumes also contains I/O performance information for alias volumes.

Record Creation Results When Data Cannot Be Obtained

The following describes the record creation results in cases where the data to be stored in a field cannot be obtained. If an error occurs during performance data collection, or if a field that is not supported by the monitored system is included in the created record, the record creation results are as follows:

- Records are not created when any of the following conditions are met:

  ○ Agent for RAID cannot acquire the performance data to be stored in a field defined as a key field.

  ○ Agent for RAID cannot acquire the performance data to be stored in a field containing performance information about Agent for RAID.

- Agent for RAID takes longer than the time specified for `Collection Interval` while acquiring performance data.
- Records containing blank fields are created if Agent for RAID cannot acquire performance data to be stored in a character-type field that contains Agent for RAID configuration information.
- Records containing fields with a value of `0` are created when Agent for RAID cannot acquire performance data to be stored in a numeric-type field that contains Agent for RAID configuration information.

> **Note:** If the creation of records of the `PI` record type is skipped at a certain time every hour, then creating records of the `PD` record type at the same time might take a long time. For details about this problem and the solution, see the chapter in the *Tuning Manager Agent Administration Guide* that describes the error handling procedures.

Restrictions on the Number of Alarms That Can Be Evaluated

When you use Agent for RAID to collect multi-instance records, a maximum of 32,767 instances are evaluated. The 32,768th and subsequent instances are not evaluated. For details about restrictions about the number of alarms that can be evaluated, see the *Tuning Manager Agent Administration Guide* and the *Tuning Manager User Guide*. If there are 32,768 or more instances that are subject to evaluation, use the logical device definition file (`ldev filter.ini`) to specify 32,767 or less as the number of instances to be collected by Agent for RAID. For details about how to specify the logical device definition file, see the *Tuning Manager Agent Administration Guide*. The following shows the records that might have 32,768 or more instances.

Table 2-18 Records That Might Have 32,768 or More Instances

Record Name (Record ID)	Maximum Number of Instances
External LDEV Configuration (`PD_ELC`)	65,280
Logical Device Configuration (`PD_LDC`)	65,280
LUSE Configuration (`PD_LSEC`)	65,280
V-VOL Frequency Distribution (`PD_VVF`)	7,967,232
V-VOL Tier Type Configuration (`PD_VVTC`)	189,696
V-VOL Tier Type I/O Information (`PI_VVTI`)	189,696
Virtual Volume Configuration (`PD_VVC`)	65,280

When Monitoring Dynamic Provisioning V-VOLs Created by Using the Full Capacity Mode

If Dynamic Provisioning V-VOLs are monitored that were created in Full Capacity Mode and are in an HUS100 series or a Hitachi AMS2000 series storage system, the values of the fields in the Virtual Volume Configuration (`PD_VVC`) record are as follows:

- Free Capacity field: `0`
- Usage % field: `100`

If alarms have been set by using these fields, alarms might be issued continuously. To prevent this, exclude Dynamic Provisioning V-VOLs created by using the full capacity mode from the monitoring targets of alarms.

Capacity monitoring of pools

If a pool contain a parity group of FMC, or a parity group that supports accelerated compression, the logical capacity (total capacity) increases automatically#, because pool volumes are automatically added to that pool. To monitor the capacity exhaustion of a pool consisting a parity group of FMC, or a parity group that supports accelerated compression, check the physical capacity of the pool.

#

Monitor the value of the Auto Expansion (AUTO_EXPANSION) field in Pool Configuration (PD_PLC) record to check Whether to automatically add pool volumes according to the compression ratio of a parity group for which accelerated compression is enabled.

Table 2-19 Physical capacity fields corresponding to logical capacity fields

Logical capacity		Physical capacity	
Record Name	**Field Name (Manager Name)**	**Record Name**	**Field Name (Manager Name)**
PD_PLC	USAGE_RATE	PD_PLC	PHYSICAL_CAPACITY_ USAGE_RATE
PD_PLC	TOTAL_ACTUAL_CAPA CITY	PD_PLC	PHYSICAL_CAPACITY_ TOTAL
PD_PLC	FREE_CAPACITY	PD_PLC	PHYSICAL_CAPACITY_ FREE
PD_PLC	USED_CAPACITY	PD_PLC	PHYSICAL_CAPACITY_ USED
PD_PLC	POOL_CAPACITY_EXP ANSION_RATE	none	
PD_PLTC	USED_CAPACITY	PD_PLTC	PHYSICAL_FMC_CAPA CITY_USED
PD_PLTC	USAGE_RATE_IN_POO L	PD_PLTC	PD_PLTC.PHYSICAL_F MC_CAPACITY_USED / PD_PLC.PHYSICAL_CA PACITY_TOTAL * 100
PD_PLTC	USAGE_RATE_IN_TIE R	PD_PLTC	PHYSICAL_FMC_CAP_ USAGE_RATE
PD_PLTC	TOTAL_CAPACITY	PD_PLTC	PHYSICAL_FMC_CAPA CITY_TOTAL

Logical capacity		Physical capacity	
Record Name	**Field Name (Manager Name)**	**Record Name**	**Field Name (Manager Name)**
PD_PLTC	FREE_CAPACITY	PD_PLTC	PHYSICAL_FMC_CAPA CITY_FREE
PD_PLTC	FMC_CAPACITY_EXPA NSION_RATE	none	
PD_VVC	POOL_FREE_CAPACIT Y_RATE	none	

Agent for SAN Switch

Relationship Between the Timing of Configuration Information Collection and Configuration Change

Agent for SAN Switch collects performance information about switches and switch ports based on the fabric configuration information.

The fabric configuration information is updated every hour by default. After fabric configuration information is changed, Agent for SAN Switch cannot recognize the changed configuration until it obtains new configuration information.

In this case, Agent for SAN Switch does the following:

- When a switch is deleted from the fabric:
  Agent for SAN Switch outputs a message indicating that it failed to collect information required for record creation.

- When a switch is added to the fabric:
  Agent for SAN Switch does not collect performance information about the added switch until it collects new configuration information.

Interval for Collecting Records of the PI Record Type (When Monitoring Brocade Switches by Connecting to Brocade (Network Advisor SMI Agent))

When Brocade switches are monitored by connecting to Brocade (Network Advisor SMI Agent), the time required to collect data depends on the configuration of the fabric being monitored.

If collecting record data takes longer than the value specified for `Collection Interval`, record creation will be skipped, and the message KAVE00213-W will be output.

To avoid such a record creation failure, specify a value for `Collection Interval` in accordance with the fabric configuration. The following table lists the recommended values for `Collection Interval` to be specified for records of the `PI` record type for each type of fabric configuration (the number of switch ports).

Table 2-20 Recommended Collection Interval Values for Fabric Configurations (When Monitoring Brocade Switches by Connecting to Brocade (Network Advisor SMI Agent))

Number of ports on hosts and storage systems connected to switches in the fabric that contains the switches to be monitored	Collection Interval Value (Seconds)
Fewer than 50	120
50 to 99	180
100 to 299	300
300 to 699	600
700 to 999	900
1,000 to 1,299	1200
1,300 to 1,600	1800

Some historical data for records of the PI record type include data that requires differential values from the last collected data (such as delta values). Therefore, historical data needs to be collected more than twice within the collection interval of the configuration information. Note that because the configuration information is collected every hour by default, the maximum value for Collection Interval is 1,800 seconds (30 minutes) for records of the PI record type.

Interval for Collecting Records of the PI Record Type (When Monitoring Brocade Switches by Connecting to Brocade (DCFM SMI Agent))

When Brocade switches are monitored by connecting to Brocade (DCFM SMI Agent), the time required to collect data depends on the configuration of the fabric being monitored.

If collecting record data takes longer than the value specified for Collection Interval, record creation will be skipped, and the message KAVE00213-W will be output.

To avoid such a record creation failure, specify a value for Collection Interval in accordance with the fabric configuration. The following table lists the recommended values for Collection Interval to be specified for records of the PI record type for each type of fabric configuration (the number of switch ports).

Table 2-21 Recommended Collection Interval Values for Fabric Configurations (When Monitoring Brocade Switches by Connecting to Brocade (DCFM SMI Agent))

Number of ports on hosts and storage systems connected to switches in the fabric that contains the switches to be monitored	Collection Interval Value (Seconds)
Fewer than 50	120
50 to 99	180
100 to 299	300
300 to 699	600
700 to 999	900
1,000 to 1,299	1200
1,300 to 1,600	1800

Some historical data for records of the `PI` record type include data that requires differential values from the last collected data (such as delta values). Therefore, historical data needs to be collected more than twice within the collection interval of the configuration information. Note that because the configuration information is collected every hour by default, the maximum value for `Collection Interval` is 1,800 seconds (30 minutes) for records of the `PI` record type.

Interval for Collecting Records of the PI Record Type (When Monitoring Brocade Switches (B-Model) by Connecting to Brocade (SMI Agent for FOS))

When Brocade switches (B-Model) are monitored by connecting to Brocade (SMI Agent for FOS), the time required to establish sessions or collect data depends on the configuration of the fabric being monitored.

Data will not be collected during the following periods: the period immediately after the Agent Collector service has started, during which sessions are established (the period from when the message KAVF25209-I is output until the message KAVF25207-I is output), and the period during which sessions are being re-established because of a temporary failure when the service is running (the period from when the message KAVF25210-I is output until the message KAVF25208-I is output).

Also note that, if collecting record data takes longer than the value specified for `Collection Interval`, record creation will be skipped, and the message KAVE00213-W will be output.

To avoid such a record creation failure, you need to specify a value for `Collection Interval` in accordance with the fabric configuration. The following table lists the recommended values for `Collection Interval` to be specified for records of the `PI` record type for each type of fabric configuration (the number of switch ports).

Table 2-22 Recommended Collection Interval Values for Fabric Configurations (When Monitoring Brocade Switches (B-Model) by Connecting to Brocade (SMI Agent for FOS))

Number of ports on hosts and storage systems connected to switches in the fabric that contains the switches to be monitored	Collection Interval Value (Seconds)
Fewer than 50	120
50 to 99	180
100 to 299	300
300 to 699	600
700 to 1,000	900

Some historical data for records of the PI record type include data that requires differential values from the last collected data (such as delta values). Therefore, historical data needs to be collected more than twice within the collection interval of the configuration information. Note that because the configuration information is collected every hour by default, the maximum value for Collection Interval is 1,800 seconds (30 minutes) for records of the PI record type.

Interval for Collecting Records of the PI Record Type (When Monitoring Cisco Switches by Connecting to Cisco (DCNM-SAN SMI-S Agent))

When Cisco switches are monitored by connecting to Cisco (DCNM-SAN SMI-S Agent), the time required to collect data depends on the configuration of the fabric being monitored.

If the collection of data for records of the PI record type takes longer than the value specified for Collection Interval, the creation of records will be skipped, and the message KAVE00213-W will be output.

To avoid this type of failure, you need to specify a value for Collection Interval in accordance with the fabric configuration. The following table lists the recommended values for Collection Interval to be specified for records of the PI record type for each type of fabric configuration (the number of switch ports).

Table 2-23 Recommended Collection Interval Values for Fabric Configurations (When Monitoring Cisco Switches by Connecting to Cisco (DCNM-SAN SMI-S Agent))

Number of ports on hosts and storage systems connected to switches in the fabric that contains the switches to be monitored	Collection Interval Value (Seconds)
Fewer than 50	60

Number of ports on hosts and storage systems connected to switches in the fabric that contains the switches to be monitored	Collection Interval Value (Seconds)
50 to 99	120
100 to 299	180
300 to 699	600
700 to 999	900
1,000 to 1,299	1200
1,300 to 1,600	1800

Some historical data for records of the `PI` record type include data that requires differential values from the last collected data (such as delta values). Therefore, historical data needs to be collected more than twice within the collection interval of the configuration information. Note that because the configuration information is collected every hour by default, the maximum value for `Collection Interval` is 1,800 seconds (30 minutes) for records of the `PI` record type.

Interval for Collecting Records of the PI Record Type (When Monitoring Cisco Switches by Connecting to Cisco (Seed Switch))

When Cisco switches are monitored by connecting to Cisco (Seed Switch) under the following conditions, collecting performance data might take a long time.

- When the network is configured to pass through routers and firewalls
- When many switches and ports exist in the fabric
- When the load on the switches is heavy
- When multiple instances of Agent for SAN Switch are running on the same machine

If the time required to collect data exceeds the time specified for `Collection Interval`, record creation will be skipped, and the message KAVE00213-W will be output. If this message is output frequently, change the value of `Collection Interval` for records of the `PI` record type to lengthen the data collection interval.

To avoid such a record creation failure, you need to specify a value for `Collection Interval` in accordance with the fabric configuration. The following table lists the recommended values for `Collection Interval` to be specified for records of the `PI` record type for each type of fabric configuration (the number of switch ports).

Table 2-24 Recommended Collection Interval Values for Fabric Configurations (When Monitoring Cisco Switches by Connecting to Cisco (Seed Switch))

Number of ports on hosts and storage systems connected to switches in the fabric that contains the switches to be monitored	Collection Interval Value (Seconds)
Fewer than 100	60
100 to 299	180
300 to 499	300
500 to 699	360
700 to 999	720
1,000 to 1,600	900

Some historical data for records of the `PI` record type include data that requires differential values from the last collected data (such as delta values). Therefore, historical data needs to be collected more than twice within the collection interval of the configuration information. Note that because the configuration information is collected every hour by default, the maximum value for `Collection Interval` is 1,800 seconds (30 minutes) for records of the `PI` record type.

Record Creation Results When Data Cannot Be Obtained

The following describes record creation results in cases where the data to be stored in a field cannot be obtained. If an error occurs during performance data collection or if a field that is not supported by the monitored fabric is included in the created record, the record creation results are as follows:

- Records are not created when any of the following conditions are met:

  - Agent for SAN Switch cannot acquire the performance data to be stored in a field defined as a key field.
  - Agent for SAN Switch cannot acquire the performance data to be stored in a field containing performance information about Agent for SAN Switch.
  - Agent for SAN Switch cannot acquire cumulative performance data for switches that is larger than the previously collected data.
  - Agent for SAN Switch takes longer than the time specified for `Collection Interval` while acquiring performance data.

- Records are created containing blank fields when Agent for SAN Switch cannot obtain performance data to be stored in a character-type field that contains Agent for SAN Switch configuration information.

- Records are created containing fields with the value of −1 when Agent for SAN Switch cannot obtain performance data to be stored in a numeric-type field that contains Agent for SAN Switch configuration information.

- Records are created containing fields with the value of `0` when Agent for SAN Switch cannot obtain performance data to be stored in a numeric-type field that contains Agent for SAN Switch performance information.
- Records are created containing fields with the value of `Unknown` when any of the following conditions are met:
    - Agent for SAN Switch obtains performance data whose value is not within the defined range for a field whose range of storable values is defined.
    - Agent for SAN Switch fails to obtain performance data for a field whose range of storable values is defined.

Agent for NAS

Record Creation Results When Data Cannot Be Obtained

The following describes record creation results in cases where the data to be stored in a field cannot be obtained. If an error occurs during performance data collection or if a field that is not supported by the monitored system is included in the created record, the record creation results are as follows:

- Records are not created when any of the following conditions are met:
    - Agent for NAS cannot acquire the performance data to be stored in a field defined as a key field.
    - Agent for NAS takes longer than the time specified for `Collection Interval` while acquiring performance data.
- Records are created containing fields with the value of `0` if the result of calculation performed by Agent for NAS on a numeric field is negative.

  In this case, the following message is output to the common message log:

  ```
  KAVF24154-W: A record was created with a field for which a
  value of 0 was set.
  ```

  For fields that can be set to `0`, If the collected information is invalid, the value is set to `0`. is written in the field's description.

Settings When NAS Platform Is Monitored (When a Timeout has Occurred)

- For NAS Platform monitoring, if a timeout occurs while the system operates with the default settings (the KAVF24166-W message is output), in the agtn.properties file, set the values shown in the following table.

Table 2-25 Approximations for Adjusting the Timeout Values When a Timeout Occurs

Property in agtn.properties	Timeout value (Seconds)		
	Default value	Recommended value	Value that can be set
smu.ver.timeout[#]	60	100	An integer in the range from 1 to 3600
smu.conf.timeout[#]	370	1000	An integer in the range from 1 to 3600
smu.perf.timeout[#]	170	400	An integer in the range from 1 to 3600

#:

    If the agtn.properties file does not have a corresponding property line, or if a value smaller than the default value is set, the default value is used.

- If the message KAVE00213-W is output to the common message log and the problem where record creation is skipped occurs repeatedly, change the Collection Interval value to a value shown in the following table.

Table 2-26 Approximations for Adjusting the Collection Interval Values When a Timeout Occurs

Record	Collection Interval (Seconds)	
	Default value	Recommended value
PD_HSMU[#1]	3600	3600[#2]
PI_HNS[#3]	60	180

Note 1:

    PD-type records other than the PD_HSMU record that are supported by NAS Platform monitoring synchronize the collection timing with the PD_HSMU record.

Note 2:

    For PD-type records, you do not have to change the value.

Note 3:

    PI-type records other than the PI_HNS record that are supported by NAS Platform monitoring synchronize the collection timing with the PI_HNS record.

LOGIF setting

    For Hybrid Store operations, LOGIF for records cannot be used.

Agent for RAID Records

lists the records of the following storage systems that can be collected by Agent for RAID and the information that is stored in each record.

- Enterprise storage systems (when collecting records by using the command device[#])
- Midrange storage systems

\#

If VMware Fault Tolerance (VMware vSphere(R) Fault Tolerance) is used, performance data cannot be collected via command devices.

Table 2-27 Agent for RAID Records

Record Name	Record ID	Information Stored in Record
Channel Adaptor Summary	PI_CHS	Performance data indicating the aggregate value of the port performance information for each CHA in a storage system
CLPR Configuration	PD_CLPC	Performance data indicating configuration information for CLPR
CLPR Per Controller Summary	PI_CLCS	Performance data indicating the operation status of the cache memory allocated for the CLPR of the controller or controllers
CLPR Per MP Blade Summary	PI_CLMS	Performance data indicating the write pending rate and cache memory of the CLPR for each MP Blade in a storage system
CLPR Summary	PI_CLPS	Performance data indicating the operation status of the cache memory for each CLPR
External LDEV Configuration	PD_ELC	Performance data indicating configuration information for an externally connected LDEV (logical device)
Host Group Configuration	PD_HGC	This record cannot be used because it is reserved.
Host Per Host Group Configuration	PD_HHGC	This record cannot be used because it is reserved.
Journal Group Summary	PI_JNLS	Performance data indicating the operation status of the journal group
LDEV Summary - Extended	PI_LDE	Performance data indicating the execution status of random and sequential read and write operations on the logical device
LDEV Summary 1 - Extended	PI_LDE1	Performance data indicating the execution status of random and sequential read and write operations on the logical device whose logical device number is in the range 00:40:00-00:7F:FF
LDEV Summary 2 - Extended	PI_LDE2	Performance data indicating the execution status of random and sequential read and

Record Name	Record ID	Information Stored in Record
		write operations on the logical device whose logical device number is in the range 00:80:00-00:BF:FF
LDEV Summary 3 - Extended	PI_LDE3	Performance data indicating the execution status of random and sequential read and write operations on the logical device whose logical device number is in the range 00:C0:00-00:FE:FF
LDEV-WWN Priority Configuration	PD_LWPC	This record cannot be used because it is reserved.
Logical Device Aggregation	PI_LDA	Performance data indicating the values summarizing the execution status of read and write operations on the logical devices for each storage system
Logical Device Configuration	PD_LDC	Performance data indicating the configuration information of the logical device
Logical Device Summary	PI_LDS	Performance data indicating the execution status of read and write operations on the logical device
Logical Device Summary 1	PI_LDS1	Performance data indicating the execution status of read and write operations on the logical device whose logical device number is 00:40:00-00:7F:FF
Logical Device Summary 2	PI_LDS2	Performance data indicating the execution status of read and write operations on the logical device whose logical device number is 00:80:00-00:BF:FF
Logical Device Summary 3	PI_LDS3	Performance data indicating the execution status of read and write operations on the logical device whose logical device number is 00:C0:00-00:FE:FF
LUN Per Host Group Configuration	PD_LHGC	This record cannot be used because it is reserved.
LUSE Configuration	PD_LSEC	Performance data indicating configuration information for a logical device that is a LUSE
Physical Device Operation Status	PI_PDOS	Performance data indicating the operating rates of the drives in a storage system
Physical Device Summary	PI_PDS	This record cannot be used because it is reserved.
Pool Configuration	PD_PLC	Performance data indicating the operation status of the Dynamic Provisioning pool
Pool Efficiency	PD_PEFF	Performance data indicating the ratio of the total saving effect (excluding system data) achieved by the accelerated compression, capacity saving, snapshot, and provisioning for the pool.

Record Name	Record ID	Information Stored in Record
Pool Frequency Distribution	PD_PLF	Performance data indicating the page IO processing status of a Dynamic Provisioning pool.
Pool Page Relocation	PD_PLR	Performance data indicating the progress of tier relocations for Dynamic Provisioning pools that have tier management enabled
Pool Summary	PI_PLS	Performance data indicating the operation status of the Dynamic Provisioning pool
Pool Tier Page Relocation	PD_PLTR	Performance data indicating the number of pages moved by tier relocations for Dynamic Provisioning pools that have tier management enabled
Pool Tier Type Configuration	PD_PLTC	Performance data indicating the operation status for each tier type of a Dynamic Provisioning pool that has tier management enabled
Pool Tier Type I/O Information	PI_PLTI	Performance data indicating the execution status of read and write processing for each type of tier for Dynamic Provisioning pools that have tier management enabled
Pool Tier Type Operation Status	PD_PLTS	Performance data indicating the operation status for each tier type of a Dynamic Provisioning pool that has tier management enabled
Port Configuration	PD_PTC	Performance data indicating the configuration information of the port of the storage system
Port Summary	PI_PTS	Performance data indicating the read and write status of each port of the storage system
Port-WWN Priority Configuration	PD_PWPC	This record cannot be used because it is reserved.
Processor Summary	PI_PRCS	Performance data indicating the operation status of the processor installed in the storage system
RAID Group Configuration	PD_RGC	Performance data indicating configuration information for a parity group
RAID Group Summary	PI_RGS	Performance data indicating the execution status of read and write operations from and to a parity group
Storage Detail	PD	Performance data indicating detailed information about the storage system
Storage Efficiency	PD_SEFF	Performance data indicating the ratio of the total saving effect (excluding system data) achieved by the accelerated compression, capacity saving, snapshot, and provisioning for the storage system.

Record Name	Record ID	Information Stored in Record
Storage Summary	PI	Performance data indicating the operation status of the storage system
Utilization Per MP Blade Summary	PD_UMS	Performance data indicating the 20 highest activity rates for the resources allocated to each MP Blade
V-VOL Frequency Distribution	PD_VVF	Performance data indicating the page I/O processing status of the virtual volume for Dynamic Provisioning.
V-VOL Tier Type Configuration	PD_VVTC	Performance data indicating the operation status of the virtual volume for each tier type of a Dynamic Provisioning pool that has tier management enabled
V-VOL Tier Type I/O Information	PI_VVTI	Performance data indicating the execution status of read and write processing for each type of tier for Dynamic Provisioning V-VOLs that have tier management enabled
Virtual Volume Configuration	PD_VVC	Performance data indicating the operation status of the V-VOL for Dynamic Provisioning

Channel Adaptor Summary (PI_CHS)

Function

The Channel Adaptor Summary (PI_CHS) record stores performance data indicating the aggregate value of the port performance information for each CHA in a storage system.

Table 2-28 Channel Adaptor Summary (PI_CHS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes See *Note*
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

Note: This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

CHA Name (CHA_NAME)

Lifetime

From when the port is set up to when it is removed

Record Size

- Fixed part: 677 bytes
- Variable part: 52 bytes

Table 2-29 Channel Adaptor Summary (PI_CHS) Fields

Channel Adaptor Summary(PI_CHS)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midran ge	**Enterp rise**	
Avg I/O /sec (AVG_IO_RATE)	The aggregate value of the average frequency of read and write operations for the storage system port (number of times per second) for each CHA	%	float	No	Not support ed	Support ed See **Note**	--
Avg Xfer /sec (AVG_XFER_RATE)	The aggregate value of the read and write transfer speed for the storage system port (megabytes per second) for each CHA	%	float	No	Not support ed	Support ed See **Note**	--
CHA Name (CHA_NAME)	Name of the channel adapter	COPY	string(16)	No	Not support ed	Support ed	--
Interval (INTERVAL)	Interval (in seconds) at which information is collected	ADD	ulong	No	Not support ed	Support ed	--
Record Time (RECORD_TIME)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	time_t	No	Not support ed	Support ed	--
Record Type (INPUT_RECORD_ TYPE)	Record type identifier, which is always set to CHS	COPY	string(8)	No	Not support ed	Support ed	--

> **Note:** If the port type is `ESCON` or `FICON`, this value can be collected only when the storage system is VSP 5000 series, VSP G1000 (80-03 or later), G1500, or VSP F1500.

CLPR Configuration (PD_CLPC)

Function

The CLPR Configuration (`PD_CLPC`) record stores performance data indicating the CLPR configuration information. This is a multi-instance record.

Table 2-30 CLPR Configuration (PD_CLPC) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	No
Collection Offset	0	
Log	Yes	
LOGIF	(Blank)	

Key Fields

CLPR Number (`CLPR_NUMBER`)

Lifetime

From when the CLPR is defined to when it is deleted, or to when its definition is changed

Record Size

- Fixed part: 681 bytes
- Variable part: 84 bytes

Table 2-31 CLPR Configuration (PD_CLPC) Fields

CLPR Configuration (PD_CLPC)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
Cache Memory Capacity (`CACHE_MEMORY_CAPACITY`)	Amount of cache memory allocated for this CLPR (MB)	--	`ulong`	No	Supported See **Note 1**, **Note 2**	Supported	--
CLPR Name (`CLPR_NAME`)	CLPR name	--	`string(20)`	No	Not supported	Supported	--

CLPR Configuration (PD_CLPC)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
CLPR Number (CLPR_NUMBER)	CLPR number	--	string(8)	No	Supported	Supported	--
Collection Time (COLLECTION_TIME)	Time (in GMT) when the data was collected from the storage system	--	time_t	No	Supported	Supported	--
Interval (INTERVAL)	Interval (in seconds) at which information is collected	--	ulong	No	Supported	Supported	--
Record Time (RECORD_TIME)	Record creation time (in GMT)	--	time_t	No	Supported	Supported	--
Record Type (INPUT_RECORD_TYPE)	Record type identifier, which is always set to CLPC	--	string(8)	No	Supported	Supported	--
SLPR Name (SLPR_NAME)	Name of the SLPR to which this CLPR belongs	--	string(40)	No	Not supported	Supported See **Note 3**	--
SLPR Number (SLPR_NUMBER)	Number of the SLPR to which this CLPR belongs	--	string(8)	No	Not supported	Supported See **Note 3**	--

Note: _1:_ These values can be collected only when performance statistics of the monitored storage system are set to be collected.

Note: _2:_ This value indicates the capacity of the user data area not dedicated to internal control, and thus it differs somewhat from the value set in Storage Navigator Modular. For details, see the documentation for Cache Partition Manager.

Note: _3:_ Not supported by VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, or Virtual Storage Platform series.

CLPR Per Controller Summary (PI_CLCS)

Function

The CLPR Per Controller Summary (PI_CLCS) record stores performance data indicating the operation status of cache memory allocated for the CLPR of the controller or controllers. This is a multi-instance record.

Note: Even if no cache memory is allocated for a CLPR, a record for that CLPR is still generated.

Table 2-32 CLPR Per Controller Summary (PI_CLCS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes See ***Note***
Collection Offset	0	No
Log	Yes	
LOGIF	(Blank)	

Note: This value can be changed to a value from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Fields

CLPR Number (CLPR_NUMBER), Controller (CONTROLLER)

Lifetime

From when the CLPR is defined to when it is deleted, or to when its definition is changed

Record Size

- Fixed part: 677 bytes
- Variable part: 72 bytes

Table 2-33 CLPR Per Controller Summary (PI_CLCS) Fields

CLPR Per Controller Summary (PI_CLCS)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
Cache Memory Capacity (CACHE_MEMORY_CAPACITY)	Amount of cache memory allocated for the CLPR of the controller or controllers (MB)	COPY	ulong	No	Supported See ***Note 1*** and ***Note 2***	Not supported	--
Cache Memory Usage (CACHE_MEMORY_USAGE)	Of the cache memory allocated for the CLPR of the controller or controllers, the amount that is being used (MB).	COPY	ulong	No	Supported See ***Note 1***	Not supported	--

CLPR Per Controller Summary (PI_CLCS)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
	See **Note 3**.						
Cache Memory Usage % (`CACHE_MEMORY_USAGE_RATE`)	Of the cache memory allocated for the CLPR of the controller or controllers, the percentage that is being used. See **Note 3**.	%	`float`	No	Supported See **Note 1**	Not supported	(`CACHE_MEMORY_USAGE` / `CACHE_MEMORY_CAPACITY`) * 100
Cache Write Pending Usage (`CACHE_WRITE_PENDING`)	Of the cache memory allocated for the CLPR of the controller or controllers, the amount that is being used by write-pending data (MB). See **Note 3**.	COPY	`ulong`	No	Supported See **Note 1**	Not supported	--
Cache Write Pending Usage % (`CACHE_WRITE_PENDING_RATE`)	Of the cache memory allocated for the CLPR of the controller or controllers, the percentage that is being used by write-pending data. See **Note 3**.	%	`float`	No	Supported See **Note 1**	Not supported	(`CACHE_WRITE_PENDING` / `CACHE_MEMORY_CAPACITY`) * 100
CLPR Number (`CLPR_NUMBER`)	CLPR number. If the record provides a summary of the performance values of all of the cache memory included for one controller, the value of this field is `_Total`.	COPY	`string(8)`	No	Supported	Not supported	--
Controller (`CONTROLLER`)	Controller number	COPY	`string(8)`	No	Supported	Not supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Supported	Not supported	--
Max Cache Memory Usage %	Of the cache memory allocated for the CLPR of the controller or	HI	`float`	No	Supported See **Note 1**	Not supported	`CACHE_MEMORY_USAGE_RATE`

CLPR Per Controller Summary (PI_CLCS)								
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
(MAX_CACHE_MEMORY_USAGE_RATE)	controllers, the percentage that is being used. **Note:** If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.						
Max Cache Write Pending Usage % (MAX_CACHE_WRITE_PENDING_RATE)	Of the cache memory allocated for the CLPR of the controller or controllers, the percentage that is being used by write-pending data. **Note:** If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.	HI	`float`	No	Supported See **Note 1**	Not supported	`CACHE_WRITE_PENDING_RATE`
Record Time (RECORD_TIME)	Time (in GMT) when the data was collected from the storage system and the record was created	COPY	`time_t`	No	Supported	Not supported	--
Record Type (INPUT_RECORD_TYPE)	Record type identifier, which is always set to `CLCS`	COPY	`string(8)`	No	Supported	Not supported	--

Note: 1: These values can be collected only when performance statistics of the monitored storage system are set to be collected.

Note: 2: This value indicates the capacity of the user data area not dedicated to internal control, and thus it differs somewhat from the value set in Storage Navigator Modular. For details, see the documentation for Cache Partition Manager.

> **Note: *3:*** For HUS100 series, Hitachi SMS series, and Hitachi AMS2000 series storage systems, this field stores the average value of the performance data over the collection interval. For Hitachi AMS/WMS series storage systems, this field stores the value that was most recent at the time the record was created.

CLPR Per MP Blade Summary (PI_CLMS)

Function

The CLPR Per MP Blade Summary (`PI_CLMS`) record stores performance data indicating the write pending rate and cache memory of the CLPR for each MP Blade in a storage system. This is a multi-instance record.

Table 2-34 CLPR Per MP Blade Summary (PI_CLMS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes See ***Note***
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

> **Note:** This value can be changed to a value from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Fields

MP Blade ID (`MP_BLADE_ID`), CLPR Number (`CLPR_NUMBER`)

Lifetime

From the time when the MP Blade and CLPR are set up until the time they are removed

Record Size

- Fixed part: 677 bytes
- Variable part: 68 bytes

Table 2-35 CLPR Per MP Blade Summary (PI_CLMS) Fields

CLPR Per MP Blade Summary (PI_CLMS)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
Cache Memory Usage % (`CACHE_MEMORY_USAGE_RATE`)	Of the cache memory allocated for each MP blade in the CLPR, the percentage that is being used by the LDEV that is owned by the MP Blade of the MP Blade ID field.	%	`float`	No	Not supported	Supported	--
Cache Write Pending Usage % (`CACHE_WRITE_PENDING_RATE`)	Of the cache memory allocated for each MP blade in the CLPR, the percentage that is being used by the write pending data of the LDEV that is owned by the MP Blade of the MP Blade ID field.	%	`float`	No	Not supported	Supported	--
CLPR Number (`CLPR_NUMBER`)	CLPR number	COPY	`string(8)`	No	Not supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	--	`ulong`	No	Not supported	Supported	--
Max Cache Memory Usage % (`MAX_CACHE_MEMORY_USAGE_RATE`)	Of the cache memory allocated for each MP blade in the CLPR, the percentage that is being used by the LDEV that is owned by the MP Blade of the MP Blade ID field. **Note:** If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.	HI	`float`	No	Not supported	Supported	`CACHE_MEMORY_USAGE_RATE`

CLPR Per MP Blade Summary (PI_CLMS)								
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
Max Cache Write Pending Usage % (`MAX_CACHE_WRITE_PENDING_RATE`)	Of the cache memory allocated for each MP blade in the CLPR, the percentage that is being used by the write pending data of the LDEV that is owned by the MP Blade of the MP Blade ID field. ***Note:*** If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.	HI	`float`	No	Not supported	Supported	`CACHE_WRITE_PENDING_RATE`
MP Blade ID (`MP_BLADE_ID`)	• For VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, or VSP 5000 series ID that identifies the MP Unit to which the processor belongs in the storage system. • For VSP G1000, G1500, VSP F1500 or Virtual Storage Platform ID that identifies the MP Blade to which the processor belongs in the storage system.	COPY	`string(16)`	No	Not supported	Supported	--
Record Time	Time (in GMT) when the data was	--	`time_t`	No	Not supported	Supported	--

CLPR Per MP Blade Summary (PI_CLMS)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
(RECORD_TIME)	collected from the storage system and the record was created						
Record Type (INPUT_RECORD_TYPE)	Record type identifier, which is always set to CLMS	--	string(8)	No	Not supported	Supported	--

> **Note:** The value of this field cannot be collected for Universal Storage Platform V/VM series storage systems.

CLPR Summary (PI_CLPS)

Function

The CLPR Summary (PI_CLPS) record stores performance data indicating the operation status of the cache memory for each CLPR. This is a multi-instance record.

Table 2-36 CLPR Summary (PI_CLPS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes See *Note*
Collection Offset	0	No
Log	Yes	
LOGIF	(Blank)	

> **Note:** This value can be changed to a value from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Fields

CLPR Number (CLPR_NUMBER)

Lifetime

From when the CLPR is defined to when it is deleted, or to when its definition is changed

Record Size

- Fixed part: 677 bytes
- Variable part: 88 bytes

Table 2-37 CLPR Summary (PI_CLPS) Fields

CLPR Summary (PI_CLPS)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
Cache Memory Capacity (`CACHE_MEMORY_CAPACITY`)	Amount of cache memory allocated for this CLPR (MB)	COPY	`ulong`	No	Supported See **Note 1**, **Note 2**	Supported	--
Cache Memory Usage (`CACHE_MEMORY_USAGE`)	Of the cache memory allocated for this CLPR, the amount that is being used (MB). See **Note 3**.	COPY	`ulong`	No	Supported See **Note 1**	Supported	--
Cache Memory Usage % (`CACHE_MEMORY_USAGE_RATE`)	Of the cache memory allocated for this CLPR, the percentage that is being used. See **Note 3**.	%	`float`	No	Supported See **Note 1**	Supported	(`CACHE_MEMORY_USAGE` / `CACHE_MEMORY_CAPACITY`) * 100
Cache Side File Usage (`CACHE_SIDE_FILE`)	Of the cache memory allocated for this CLPR, the amount that is being used by the side file (MB)	COPY	`ulong`	No	Not supported	Supported See **Note 4**	--
Cache Side File Usage % (`CACHE_SIDE_FILE_RATE`)	Of the cache memory allocated for this CLPR, the percentage that is being used by the side file	%	`float`	No	Not supported	Supported See **Note 4**	(`CACHE_SIDE_FILE` / `CACHE_MEMORY_CAPACITY`) * 100
Cache Write Pending Usage (`CACHE_WRITE_PENDING`)	Of the cache memory allocated for this CLPR, the amount that is being used by write-pending data (MB). See **Note 3**.	COPY	`ulong`	No	Supported See **Note 1**	Supported	--
Cache Write Pending Usage %	Of the cache memory allocated for this CLPR, the	%	`float`	No	Supported See **Note 1**	Supported	(`CACHE_WRITE_PENDING` /

CLPR Summary (PI_CLPS)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
(`CACHE_WRITE_PENDING_RATE`)	percentage that is being used by write-pending data. See **Note 3**.						`CACHE_MEMORY_CAPACITY`) * 100
CLPR Number (`CLPR_NUMBER`)	CLPR number	COPY	`string(8)`	No	Supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Supported	Supported	--
Max Cache Memory Usage % (`MAX_CACHE_MEMORY_USAGE_RATE`)	Of the cache memory allocated for this CLPR, the percentage that is being used. **Note:** If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.	HI	`float`	No	Supported See **Note 1**	Supported	`CACHE_MEMORY_USAGE_RATE`
Max Cache Side File Usage % (`MAX_CACHE_SIDE_FILE_RATE`)	Of the cache memory allocated for this CLPR, the percentage that is being used by the side file. **Note:** If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.	HI	`float`	No	Not supported	Supported See **Note 4**	`CACHE_SIDE_FILE_RATE`
Max Cache Write Pending Usage % (`MAX_CACHE_WRITE_PENDING_RATE`)	Of the cache memory allocated for this CLPR, the percentage that is being used by write-pending data. **Note:** If the values of a smaller unit	HI	`float`	No	Supported See **Note 1**	Supported	`CACHE_WRITE_PENDING_RATE`

CLPR Summary (PI_CLPS)								
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
	(e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.						
Record Time (RECORD_TIME)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	time_t	No	Supported	Supported	--
Record Type (INPUT_RECORD_TYPE)	Record type identifier, which is always set to CLPS	COPY	string(8)	No	Supported	Supported	--

> **Note: _1:_** These values can be collected only when performance statistics of the monitored storage system are set to be collected.

> **Note: _2:_** This value indicates the capacity of the user data area not dedicated to internal control, and thus it differs somewhat from the value set in Storage Navigator Modular. For details, see the documentation for Cache Partition Manager.

> **Note: _3:_** For HUS100 series, Hitachi SMS series, and Hitachi AMS2000 series storage systems, this field stores the average value of the performance data over the collection interval. For Hitachi AMS/WMS series, VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, and Universal Storage Platform V/VM series storage systems, this field stores the value that was the most recent at the time the record was created.

> **Note: _4:_** Not supported by VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, or Virtual Storage Platform series storage systems.

External LDEV Configuration (PD_ELC)

Function

The External LDEV Configuration (PD_ELC) record holds performance data indicating configuration information for an externally connected LDEV (logical device). This is a multi-instance record. However, if there are no externally

connected LDEVs mapped in external storage systems, this report cannot be used.

> **Note:** If Agent for RAID has started in SLPR restricted mode, it collects only the information on externally connected LDEVs (logical devices) that belong to the monitored SLPR.

Table 2-38 External LDEV Configuration (PD_ELC) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	No
Collection Offset	0	
Log	Yes	
LOGIF	(Blank)	

Key Fields

LDEV Number (LDEV_NUMBER)

Lifetime

From when the externally connected LDEV is set up to when it is removed

Record Size

- Fixed part: 681 bytes
- Variable part: 261 bytes

Table 2-39 External LDEV Configuration (PD_ELC) Fields

External LDEV Configuration (PD_ELC)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
Collection Time (COLLECTION_TIME)	Time (in GMT) when the data was collected from the storage system	--	time_t	No	Not supported	Supported	--
DKC Name (DKC_NAME)	Product name of the externally connected storage system. See **Note 1**, **Note 2**, **Note 6** and **Note 7**.	--	string(64)	No	Not supported	Supported See **Note 3**	--
External LDEV Number	Logical device number of the	--	string(16)	No	Not supported	Supported	--

External LDEV Configuration (PD_ELC)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
(EXTERNAL_LDEV _NUMBER)	externally connected LDEV. See **Note 1** and **Note 2**.						
Interval (INTERVAL)	Interval (in seconds) at which information is collected	--	ulong	No	Not supported	Supported	--
LDEV Number (LDEV_NUMBER)	Logical device number	--	string(16)	No	Not supported	Supported	--
Product ID (PRODUCT_ID)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Record Time (RECORD_TIME)	Record creation time (in GMT)	--	time_t	No	Not supported	Supported	--
Record Type (INPUT_RECORD_ TYPE)	Record type identifier, which is always set to ELC	--	string(8)	No	Not supported	Supported	--
Serial Number (SERIAL_NUMBER)	Serial number of the externally connected storage system. See **Note 1**, **Note 2** and **Note 4**.	--	string(32)	No	Not supported	Supported See **Note 5**	--
Unit ID (UNIT_ID)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Vendor ID (VENDOR_ID)	Vendor name of the externally connected storage system	--	string(64)	No	Not supported	Supported	--

Note: 1: The following external storage systems in which externally connected LDEVs have been mapped are supported:

- HUS100 series
- Hitachi AMS2000/AMS/WMS/SMS series
- VSP Gx00 models
- VSP Fx00 models
- VSP Nx00 models
- HUS VM
- VSP 5000 series

- VSP G1000
- VSP G1500
- VSP F1500
- Virtual Storage Platform series
- Universal Storage Platform V/VM series

> **Note: 2:** If virtual IDs are set for volumes in an externally connected storage system, Agent for RAID collects the virtual ID information.

> **Note: 3:** If the externally connected storage system is a VSP Fx00 model, the value is VSP Gx00. For example, if the externally connected storage system is VSP F400, the value is VSP Gx00.

> **Note: 4:** For externally connected Hitachi SMS storage systems, the value stored in the Serial Number field will be the array ID. For details about array IDs, see the relevant Hitachi SMS series documentation.

> **Note: 5:** Not supported by HUS VM storage system.

> **Note: 6:** If the externally connected storage system is VSP G1000, in v8.5 or later, the value stored in the DKC Name field is VSP G1000 G1500 F1500.

> **Note: 7:** If the externally connected storage system is a VSP Nx00 models, the value is `VSP G400 G600`, `VSP G800`, `VSP F400 F600` or `VSP F800`.

Journal Group Summary (PI_JNLS)

Function

The Journal Group Summary (PI_JNLS) record stores performance data indicating the operation status of the journal group.

Table 2-40 Journal Group Summary (PI_JNLS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	300	Yes See **Note**
Collection Offset from Top of Minute	0	No
Log	No	Yes
LOGIF	(Blank)	No

> **Note:** This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Fields

Journal ID (`JOURNAL_ID`)

Lifetime

From when the journal group is assigned to when it is released.

Record Size

- Fixed part: 677 bytes
- Variable part: 92 bytes

Table 2-41 Journal Group Summary (PI_JNLS) Fields

Journal Group Summary (PI_JNLS)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See *Note***	
Async Copy Xfer /sec (`ASYNC_COPY_TRANSFER_RATE`)	The amount of transferred data per second (megabytes per second) for asynchronous replication in the journal group. Sub-journal groups are not supported.	%	`double`	No	Not supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	--	`ulong`	No	Not supported	Supported	--
Journal ID (`JOURNAL_ID`)	ID of the journal group	COPY	`string(8)`	No	Not supported	Supported	--
Record Time (`RECORD_TIME`)	Time (GMT) at which the record was stored	--	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to `JNLS`	--	`string(8)`	--	Not supported	Supported	--
RIO Response Rate (`RIO_RESPONSE_RATE`)	Average RIO response time (in microseconds per I/O operation) of the storage system among the journal groups	%	`double`	--	Not supported	Supported	--

Journal Group Summary (PI_JNLS)								
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source	
					Midrange	Enterprise See *Note*		
Write I/O /sec (`WRITE_IO_RATE`)	Number of write I/O operations per second (in IO/sec) to the primary storage system in the journal group. Secondary journal groups are not supported	%	`double`	No	Not supported	Supported	--	
Write Xfer /sec (`WRITE_XFER_RATE`)	Amount of data written per second (in MB/sec) to the primary storage system in the journal group. Secondary journal groups are not supported.	%	`double`	No	Not supported	Supported	--	

Note: The value of this field cannot be collected for the following storage systems: Universal Storage Platform V/VM series.

LDEV Summary - Extended (PI_LDE)

Function

The LDEV Summary - Extended (`PI_LDE`) record stores performance data indicating the execution status of random and sequential read and write operations on the logical device. This is a multi-instance record.

Note:

- If Agent for RAID has started in SLPR restricted mode, it collects only the information on logical devices that belong to the monitored SLPR.
- If the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system, Agent for RAID only collects information about logical devices whose logical device number is in the range from 00:00:00 to 00:3F:FF.

Table 2-42 LDEV Summary - Extended (PI_LDE) Default and Changeable Values

Item	Default Value	Changeable?
Log	Yes	Yes
LOGIF	(Blank)	No
Sync Collection With	Interval Records, PI_LDS	No

Key Fields

LDEV Number (LDEV_NUMBER)

Lifetime

From when the logical device is set up to when it is removed

Record Size

- Fixed part: 677 bytes
- Variable part: 248bytes

Table 2-43 LDEV Summary - Extended (PI_LDE) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage Midrange	Supported Storage Enterprise	Data Source
Busy % (BUSY_RATE)	Usage rate of the logical device (%) See **Note 13**	%	float	No	Not supported	Supported See **Note 1**, **Note 2**, **Note 3** and **Note 4**	--
Interval (INTERVAL)	Interval (in seconds) at which information is collected	ADD	ulong	No	Supported See **Note 1** and **Note 5**	Supported	--
LDEV Number (LDEV_NUMBER)	Logical device number See **Note 6**	COPY	string(16)	No	Supported See **Note 1** and **Note 5**	Supported	--
Max Busy % (MAX_BUSY_RATE)	Usage rate of the logical device (%). If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is	HI	float	No	Not supported	Supported See **Note 1**, **Note 2**, **Note 3** and **Note 4**	BUSY_RATE

LDEV Summary - Extended (PI_LDE)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
	stored rather than the average value. See **Note 13**						
Random Read I/O /sec (`RANDOM_READ_IO_RATE`)	Frequency of random read operations (times per second)	%	`float`	No	Supported See **Note 1** and **Note 5**	Supported	--
Random Read Xfer /sec (`RANDOM_READ_XFER_RATE`)	Transfer rate of random read operations (megabytes per second)	%	`float`	No	Supported See **Note 1** and **Note 5**	Supported See **Note 7**	--
Random Write I/O /sec (`RANDOM_WRITE_IO_RATE`)	Frequency of random write operations (times per second)	%	`float`	No	Supported See **Note 1** and **Note 5**	Supported	--
Random Write Xfer /sec (`RANDOM_WRITE_XFER_RATE`)	Transfer rate of random write operations (megabytes per second)	%	`float`	No	Supported See **Note 1** and **Note 5**	Supported See **Note 7**	--
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Supported See **Note 1** and **Note 5**	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to `LDE`	COPY	`string(8)`	No	Supported See **Note 1** and **Note 5**	Supported	--
Sequential Read I/O /sec (`SEQUENTIAL_READ_IO_RATE`)	Frequency of sequential read operations (times per second)	%	`float`	No	Supported See **Note 1** and **Note 5**	Supported	--
Sequential Read Xfer /sec (`SEQUENTIAL_READ_XFER_RATE`)	Transfer rate of sequential read operations (megabytes per second)	%	`float`	No	Supported See **Note 1** and **Note 5**	Supported See **Note 7**	--
Sequential Write I/O /sec (`SEQUENTIAL_WRITE_IO_RATE`)	Frequency of sequential write operations (times per second)	%	`float`	No	Supported See **Note 1** and **Note 5**	Supported	--

LDEV Summary - Extended (PI_LDE)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
Sequential Write Xfer /sec (SEQUENTIAL_WRITE_XFER_RATE)	Transfer rate of sequential write operations (megabytes per second)	%	float	No	Supported See **Note 1** and **Note 5**	Supported See **Note 7**	--
Virtual DKC Name (VIRTUAL_DKC_NAME)	Product name of the virtual storage machine to which the logical device belongs See **Note 14**.	COPY	string(32)	No	Not supported	Supported See **Note 8**, **Note 9**, **Note 10** and **Note 11**	--
Virtual LDEV Number (VIRTUAL_LDEV_NUMBER)	Virtualized logical-device number associated with the logical device	COPY	string(16)	No	Not supported	Supported See **Note 8**, **Note 9** and **Note 12**	--
Virtual Serial Number (VIRTUAL_SERIAL_NUMBER)	Serial number of the virtual storage machine associated with the logical device	COPY	string(32)	No	Not supported	Supported See **Note 8**, **Note 9** and **Note 10**	--

Note: 1: For the following storage systems, these values can be collected only when performance statistics are set to be collected from the storage system to be monitored:

- HUS100 series
- Hitachi SMS series
- Hitachi AMS2000 series

Note: 2: If the logical device is an externally connected LDEV, the field value will always be 0.

Note: 3: For the following storage systems, the field value is always 0 when the logical device is a Copy-on-Write Snapshot V-VOL, or a Thin Image V-VOL:

- VSP Gx00 models
- VSP Fx00 models
- VSP Nx00 models
- HUS VM
- VSP 5000 series
- VSP G1000

- VSP G1500
- VSP F1500
- Virtual Storage Platform series
- Universal Storage Platform V/VM series

Note: *4:* For the following storage systems, the field value is always `0` when the logical device is a Dynamic Provisioning V-VOL:

- VSP Gx00 models
- VSP Fx00 models
- VSP Nx00 models
- HUS VM
- VSP 5000 series
- VSP G1000
- VSP G1500
- VSP F1500
- Virtual Storage Platform series
- Universal Storage Platform V/VM series

Note: *5:* Not supported by Hitachi AMS/WMS series storage systems.

Note: *6:* If the logical device is a component of a LUSE, `LDEV_NUMBER` indicates the following value:

- For HUS100 series, Hitachi SMS series, or Hitachi AMS2000 series storage systems:

  Logical device number of the main logical unit

- For HUS VM, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage systems:

  Logical device number of the first logical device of the LUSE

Each performance information field contains statistics on random and sequential read or write operations performed on the entire logical device group that makes up the LUSE. No record is created for individual logical devices included in the LUSE. If the LUSE consists of externally connected logical devices or of V-VOLs for Copy-on-Write Snapshot/Thin Image or Dynamic Provisioning, and no LU path is set for the LUSE, the LUSE is not recognized as a LUSE, and records are created for individual logical devices.

Note: *7:* This field is not supported for logical devices for which the mainframe emulation type is set.

Note: *8:*
If the logical device does not belong to an virtual storage machine, the field value will be NULL.

Note: *9:* The value of this field cannot be collected for the following storage systems: HUS VM, Virtual Storage Platform series, and Universal Storage Platform V/VM series.

Note: *10:*
If the logical device that composes a copy pair of global-active device is not virtualized, the field value will be NULL.

Note: *11:*
If the virtual storage machine is VSP F400, F600, F800, VSP N400, N600, N800, the value is VSP G400, G600, G800. For example, if the virtual storage machine is VSP F800, the value is VSP G800.

Note: *12:*
If either of the following applies to the logical device, the field value will be NULL.

- The logical device that is part of a copy pair of a global-active device is not virtualized.
- A virtualized logical device number is not set.

Note: *13:* For storage systems other than VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, VSP 5000 series, VSP G1000, G1500, VSP F1500, if storage systems use parity groups created from flash drives (FMD, FMC, or SSD), you cannot judge the load status from the usage rate of the parity group. Because of the characteristics of flash drives, larger values might be displayed regardless of the load status.

Note: *14:*
If the virtual storage machine is VSP G1000, in v8.5 or later, the value stored in the Virtual DKC Name field is VSP G1000 G1500 F1500.

LDEV Summary 1 - Extended (PI_LDE1)

Function

The LDEV Summary 1 - Extended (`PI_LDE1`) record stores performance data indicating the execution status of random and sequential read and write operations on a logical device whose logical device number is in the range from 00:40:00 to 00:7F:FF. This is a multi-instance record.

This record is created if a logical device whose logical device number is in the range from 00:40:00 to 00:7F:FF, exists in a VSP G370, G700, G900, VSP F370, F700, F900, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system.

Note: If Agent for RAID has started in SLPR restricted mode, it collects only the information on logical devices that belong to the monitored SLPR.

Item	Default Value	Changeable?
Log	Yes	Yes
LOGIF	(Blank)	No
Sync Collection With	Interval Records, PI_LDS	No

Key Fields

LDEV Number (LDEV_NUMBER)

Lifetime

From when the logical device is set up to when it is removed

Record Size

- Fixed part: 677 bytes
- Variable part: 248 bytes

Table 2-45 LDEV Summary 1 - Extended (PI_LDE1) Fields

LDEV Summary 1 - Extended (PI_LDE1)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
Busy % (BUSY_RATE)	Usage rate of the logical device (%) See **Note 11**	%	float	No	Not supported	Supported See **Note 2**, **Note 3** and **Note 4**	--
Interval (INTERVAL)	Interval (in seconds) at which information is collected	ADD	ulong	No	Not supported	Supported	--
LDEV Number (LDEV_NUMBER)	Logical device number	COPY	string(16)	No	Not supported	Supported	--
Max Busy % (MAX_BUSY_RATE)	Usage rate of the logical device (%). If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is	HI	float	No	Not supported	Supported See **Note 2**, **Note 3** and **Note 4**	BUSY_RATE

LDEV Summary 1 - Extended (PI_LDE1)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
	stored rather than the average value. See *Note 11*						
Random Read I/O /sec (`RANDOM_READ_I O_RATE`)	Frequency of random read operations (times per second)	%	`float`	No	Not supported	Supported	--
Random Read Xfer /sec (`RANDOM_READ_X FER_RATE`)	Transfer rate of random read operations (megabytes per second)	%	`float`	No	Not supported	Supported See *Note 5*	--
Random Write I/O /sec (`RANDOM_WRITE_ IO_RATE`)	Frequency of random write operations (times per second)	%	`float`	No	Not supported	Supported	--
Random Write Xfer /sec (`RANDOM_WRITE_ XFER_RATE`)	Transfer rate of random write operations (megabytes per second)	%	`float`	No	Not supported	Supported See *Note 5*	--
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_ TYPE`)	Record type identifier, which is always set to `LDE1`	COPY	`string(8)`	No	Not supported	Supported	--
Sequential Read I/O /sec (`SEQUENTIAL_RE AD_IO_RATE`)	Frequency of sequential read operations (times per second)	%	`float`	No	Not supported	Supported	--
Sequential Read Xfer /sec (`SEQUENTIAL_RE AD_XFER_RATE`)	Transfer rate of sequential read operations (megabytes per second)	%	`float`	No	Not supported	Supported See *Note 5*	--
Sequential Write I/O /sec (`SEQUENTIAL_WR ITE_IO_RATE`)	Frequency of sequential write operations (times per second)	%	`float`	No	Not supported	Supported	--

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LDEV Summary 1 - Extended (PI_LDE1)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
Sequential Write Xfer /sec (`SEQUENTIAL_WR ITE_XFER_RATE`)	Transfer rate of sequential write operations (megabytes per second)	%	`float`	No	Not supported	Supported See *Note 5*	--
Virtual DKC Name (`VIRTUAL_DKC_N AME`)	Product name of the virtual storage machine to which the logical device belongs. See *Note 12*.	COPY	`string(32)`	No	Not supported	Supported See *Note 6*, *Note 7*, *Note 8* and *Note 9*	--
Virtual LDEV Number (`VIRTUAL_LDEV_ NUMBER`)	Virtualized logical-device number associated with the logical device.	COPY	`string(16)`	No	Not supported	Supported See *Note 6*, *Note 7* and *Note 10*	--
Virtual Serial Number (`VIRTUAL_SERIA L_NUMBER`)	Serial number of the virtual storage machine associated with the logical device.	COPY	`string(32)`	No	Not supported	Supported See *Note 6*, *Note 7* and *Note 8*	--

Note: *1:* Not supported by VSP G200, G350, G400, G600, G800, VSP F350, F400, F600, F800, VSP N400, N600, N800, or HUS VM storage systems.

Note: *2:* If the logical device is an externally connected LDEV, the field value will always be `0`.

Note: *3:* If the logical device is a Copy-on-Write Snapshot V-VOL, or a Thin Image V-VOL, the field value will always be `0`.

Note: *4:* If the logical device is a Dynamic Provisioning V-VOL, the field value will always be `0`.

Note: *5:* This field is not supported for logical devices for which the mainframe emulation type is set.

Note: *6:* If the logical device does not belong to an virtual storage machine, the field value will be NULL.

Note: *7:* The value of this field cannot be collected for the following storage systems: HUS VM, Virtual Storage Platform series, and Universal Storage Platform V/VM series.

Note: *8:*
If the logical device that composes a copy pair of global-active device is not virtualized, the field value will be NULL.

Note: *9:*
If the virtual storage machine is VSP F400, F600, F800, VSP N400, N600, N800, the value is VSP G400, G600, G800. For example, if the virtual storage machine is VSP F800, the value is VSP G800.

Note: *10:*
If either of the following applies to the logical device, the field value will be NULL.

- The logical device that is part of a copy pair of a global-active device is not virtualized.

- A virtualized logical device number is not set.

Note: *11:*For storage systems other than VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, VSP 5000 series, VSP G1000, G1500, VSP F1500, if storage systems use parity groups created from flash drives (FMD, FMC, or SSD), you cannot judge the load status from the usage rate of the parity group. Because of the characteristics of flash drives, larger values might be displayed regardless of the load status.

Note: *12:*
If the virtual storage machine is VSP G1000, in v8.5 or later, the value stored in the Virtual DKC Name field is VSP G1000 G1500 F1500.

LDEV Summary 2 - Extended (PI_LDE2)

Function

The LDEV Summary 2 - Extended (`PI_LDE2`) record stores performance data indicating the execution status of random and sequential read and write operations on a logical device whose logical device number is in the range from 00:80:00 to 00:BF:FF. This is a multi-instance record.

This record is created if a logical device whose logical device number is in the range from 00:80:00 to 00:BF:FF, exists in a VSP G700, G900, VSP F700, F900, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system.

Note: If Agent for RAID has started in SLPR restricted mode, it collects only the information on logical devices that belong to the monitored SLPR.

Table 2-46 LDEV Summary 2 - Extended (PI_LDE2) Default and Changeable Values

Item	Default Value	Changeable?
Log	Yes	Yes

Item	Default Value	Changeable?
`LOGIF`	(Blank)	No
`Sync Collection With`	Interval Records, `PI_LDS`	No

Key Fields

LDEV Number (`LDEV_NUMBER`)

Lifetime

From when the logical device is set up to when it is removed

Record Size

- Fixed part: 677 bytes
- Variable part: 248 bytes

Table 2-47 LDEV Summary 2 - Extended (PI_LDE2) Fields

LDEV Summary 2 - Extended (PI_LDE2)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise** See *Note 1*	
Busy % (`BUSY_RATE`)	Usage rate of the logical device (%) See *Note 11*	%	`float`	No	Not supported	Supported See *Note 2*, *Note 3* and *Note 4*	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not supported	Supported	--
LDEV Number (`LDEV_NUMBER`)	Logical device number	COPY	`string(16)`	No	Not supported	Supported	--
Max Busy % (`MAX_BUSY_RATE`)	Usage rate of the logical device (%). If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value. See *Note 11*	HI	`float`	No	Not supported	Supported See *Note 2*, *Note 3* and *Note 4*	`BUSY_RATE`
Random Read I/O /sec	Frequency of random read	%	`float`	No	Not supported	Supported	--

LDEV Summary 2 - Extended (PI_LDE2)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See *Note 1***	
(RANDOM_READ_I O_RATE)	operations (times per second)						
Random Read Xfer /sec (RANDOM_READ_X FER_RATE)	Transfer rate of random read operations (megabytes per second)	%	float	No	Not supported	Supported See ***Note 5***	--
Random Write I/O /sec (RANDOM_WRITE_ IO_RATE)	Frequency of random write operations (times per second)	%	float	No	Not supported	Supported	--
Random Write Xfer /sec (RANDOM_WRITE_ XFER_RATE)	Transfer rate of random write operations (megabytes per second)	%	float	No	Not supported	Supported See ***Note 5***	--
Record Time (RECORD_TIME)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	time_t	No	Not supported	Supported	--
Record Type (INPUT_RECORD_ TYPE)	Record type identifier, which is always set to LDE2	COPY	string(8)	No	Not supported	Supported	--
Sequential Read I/O /sec (SEQUENTIAL_RE AD_IO_RATE)	Frequency of sequential read operations (times per second)	%	float	No	Not supported	Supported	--
Sequential Read Xfer /sec (SEQUENTIAL_RE AD_XFER_RATE)	Transfer rate of sequential read operations (megabytes per second)	%	float	No	Not supported	Supported See ***Note 5***	--
Sequential Write I/O /sec (SEQUENTIAL_WR ITE_IO_RATE)	Frequency of sequential write operations (times per second)	%	float	No	Not supported	Supported	--
Sequential Write Xfer /sec (SEQUENTIAL_WR ITE_XFER_RATE)	Transfer rate of sequential write operations (megabytes per second)	%	float	No	Not supported	Supported See ***Note 5***	--

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LDEV Summary 2 - Extended (PI_LDE2)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
Virtual DKC Name (`VIRTUAL_DKC_N AME`)	Product name of the virtual storage machine to which the logical device belongs See **Note 12**.	COPY	`string(32)`	No	Not supported	Supported See **Note 6**, **Note 7**, **Note 8** and **Note 9**	--
Virtual LDEV Number (`VIRTUAL_LDEV_ NUMBER`)	Virtualized logical-device number associated with the logical device	COPY	`string(16)`	No	Not supported	Supported See **Note 6**, **Note 7** and **Note 10**	--
Virtual Serial Number (`VIRTUAL_SERIA L_NUMBER`)	Serial number of the virtual storage machine to which the logical device belongs	COPY	`string(32)`	No	Not supported	Supported See **Note 6**, **Note 7** and **Note 8**	--

Note: *1:* Not supported by VSP G200, G350, G370, G400, G600, G800, VSP F350, F370, F400, F600, F800, VSP N400, N600, N800, or HUS VM storage systems.

Note: *2:* If the logical device is an externally connected LDEV, the field value will always be `0`.

Note: *3:* If the logical device is a Copy-on-Write Snapshot V-VOL, or a Thin Image V-VOL, the field value will always be `0`.

Note: *4:* If the logical device is a Dynamic Provisioning V-VOL, the field value will always be `0`.

Note: *5:* This field is not supported for logical devices for which the mainframe emulation type is set.

Note: *6:* If the logical device does not belong to an virtual storage machine, the field value will be NULL.

Note: *7:* The value of this field cannot be collected for the following storage systems: HUS VM, Virtual Storage Platform series, and Universal Storage Platform V/VM series.

Note: *8:*
If the logical device that composes a copy pair of global-active device is not virtualized, the field value will be NULL.

Note: *9:*
If the virtual storage machine is VSP F400, F600, F800, VSP N400, N600, N800, the value is VSP G400, G600, G800. For example, if the virtual storage machine is VSP F800, the value is VSP G800.

Note: *10:*
If either of the following applies to the logical device, the field value will be NULL.

- The logical device that is part of a copy pair of a global-active device is not virtualized.
- A virtualized logical device number is not set.

Note: *11:*For storage systems other than VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, VSP 5000 series, VSP G1000, G1500, VSP F1500, if storage systems use parity groups created from flash drives (FMD, FMC, or SSD), you cannot judge the load status from the usage rate of the parity group. Because of the characteristics of flash drives, larger values might be displayed regardless of the load status.

Note: *12:*
If the virtual storage machine is VSP G1000, in v8.5 or later, the value stored in the Virtual DKC Name field is VSP G1000 G1500 F1500.

LDEV Summary 3 - Extended (PI_LDE3)

Function

The LDEV Summary 3 - Extended (`PI_LDE3`) record stores performance data indicating the execution status of random and sequential read and write operations on a logical device whose logical device number is in the range from 00:C0:00 to 00:FE:FF. This is a multi-instance record.

This record is created if a logical device whose logical device number is in the range from 00:C0:00 to 00:FE:FF, exists in a VSP G900, VSP F900, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system.

Note: If Agent for RAID has started in SLPR restricted mode, it collects only the information on logical devices that belong to the monitored SLPR.

Table 2-48 LDEV Summary 3 - Extended (PI_LDE3) Default and Changeable Values

Item	Default Value	Changeable?
Log	Yes	Yes
LOGIF	(Blank)	No
Sync Collection With	Interval Records, PI_LDS	No

Key Fields

LDEV Number (`LDEV_NUMBER`)

Lifetime

From when the logical device is set up to when it is removed

Record Size

- Fixed part: 677 bytes
- Variable part: 248 bytes

Table 2-49 LDEV Summary 3 - Extended (PI_LDE3) Fields

LDEV Summary 3 - Extended (PI_LDE3)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise** See *Note 1*	
Busy % (`BUSY_RATE`)	Usage rate of the logical device (%) See *Note 11*	%	`float`	No	Not supported	Supported See *Note 2*, *Note 3* and *Note 4*	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not supported	Supported	--
LDEV Number (`LDEV_NUMBER`)	Logical device number	COPY	`string(16)`	No	Not supported	Supported	--
Max Busy % (`MAX_BUSY_RATE`)	Usage rate of the logical device (%). If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value. See *Note 11*	HI	`float`	No	Not supported	Supported See *Note 2*, *Note 3* and *Note 4*	`BUSY_RATE`
Random Read I/O /sec (`RANDOM_READ_IO_RATE`)	Frequency of random read operations (times per second)	%	`float`	No	Not supported	Supported	--
Random Read Xfer /sec (`RANDOM_READ_XFER_RATE`)	Transfer rate of random read operations (megabytes per second)	%	`float`	No	Not supported	Supported See *Note 5*	--

LDEV Summary 3 - Extended (PI_LDE3)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See _Note 1_**	
Random Write I/O /sec (`RANDOM_WRITE_IO_RATE`)	Frequency of random write operations (times per second)	%	`float`	No	Not supported	Supported	--
Random Write Xfer /sec (`RANDOM_WRITE_XFER_RATE`)	Transfer rate of random write operations (megabytes per second)	%	`float`	No	Not supported	Supported See _Note 5_	--
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to `LDE3`	COPY	`string(8)`	No	Not supported	Supported	--
Sequential Read I/O /sec (`SEQUENTIAL_READ_IO_RATE`)	Frequency of sequential read operations (times per second)	%	`float`	No	Not supported	Supported	--
Sequential Read Xfer /sec (`SEQUENTIAL_READ_XFER_RATE`)	Transfer rate of sequential read operations (megabytes per second)	%	`float`	No	Not supported	Supported See _Note 5_	--
Sequential Write I/O /sec (`SEQUENTIAL_WRITE_IO_RATE`)	Frequency of sequential write operations (times per second)	%	`float`	No	Not supported	Supported	--
Sequential Write Xfer /sec (`SEQUENTIAL_WRITE_XFER_RATE`)	Transfer rate of sequential write operations (megabytes per second)	%	`float`	No	Not supported	Supported See _Note 5_	--
Virtual DKC Name (`VIRTUAL_DKC_NAME`)	Product name of the virtual storage machine to which the logical device belongs See _Note 12_.	COPY	`string(32)`	No	Not supported	Supported See _Note 6_, _Note 7_, _Note 8_ and _Note 9_	--
Virtual LDEV Number	Virtualized logical-device number	COPY	`string(16)`	No	Not supported	Supported	--

LDEV Summary 3 - Extended (PI_LDE3)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
(VIRTUAL_LDEV_NUMBER)	associated with the logical device					See *Note 6*, *Note 7* and *Note 10*	
Virtual Serial Number (VIRTUAL_SERIAL_NUMBER)	Serial number of the virtual storage machine to which the logical device belongs	COPY	string(32)	No	Not supported	Supported See *Note 6*, *Note 7* and *Note 8*	--

Note: *1:* Not supported by VSP G200, G350, G370, G400, G600, G700, G800, VSP F350, F370, F400, F600, F700, F800, VSP N400, N600, N800, or HUS VM storage systems.

Note: *2:* If the logical device is an externally connected LDEV, the field value will always be 0.

Note: *3:* If the logical device is a Copy-on-Write Snapshot V-VOL, or a Thin Image V-VOL, the field value will always be 0.

Note: *4:* If the logical device is a Dynamic Provisioning V-VOL, the field value will always be 0.

Note: *5:* This field is not supported for logical devices for which the mainframe emulation type is set.

Note: *6:* If the logical device does not belong to an virtual storage machine, the field value will be NULL.

Note: *7:* The value of this field cannot be collected for the following storage systems: HUS VM, Virtual Storage Platform series, and Universal Storage Platform V/VM series.

Note: *8:*
If the logical device that composes a copy pair of global-active device is not virtualized, the field value will be NULL.

Note: *9:*
If the virtual storage machine is VSP F400, F600, F800, VSP N400, N600, N800, the value is VSP G400, G600, G800. For example, if the virtual storage machine is VSP F800, the value is VSP G800.

Note: *10:*
If either of the following applies to the logical device, the field value will be NULL.

- The logical device that is part of a copy pair of a global-active device is not virtualized.
- A virtualized logical device number is not set.

Note: *11:*For storage systems other than VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, VSP 5000 series, VSP G1000, G1500, VSP F1500, if storage systems use parity groups created from flash drives (FMD, FMC, or SSD), you cannot judge the load status from the usage rate of the parity group. Because of the characteristics of flash drives, larger values might be displayed regardless of the load status.

Note: *12:*
If the virtual storage machine is VSP G1000, in v8.5 or later, the value stored in the Virtual DKC Name field is VSP G1000 G1500 F1500.

Logical Device Aggregation (PI_LDA)

Function

The Logical Device Aggregation (`PI_LDA`) record stores the performance data indicating the values summarizing the execution status of read and write operations on the logical devices for each storage system.

Note:

- If Agent for RAID has started in SLPR restricted mode, it stores summarized results for the operation status of the monitored SLPR.
- If the logical devices were excluded from the monitoring targets during the setup of Agent for RAID instance environment, information about those logical devices will not be applied to this record.

Table 2-50 Logical Device Aggregation (PI_LDA) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	300	Yes See **Note**
Collection Offset	0	No
Log	Yes	
LOGIF	(Blank)	

Note: The following values can be set:

- For Hybrid Store or Store database version 2.0:
  A value from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.
- For Store database version 1.0:

A value from 300 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Note, however, that if you set a value smaller than the default value for `Collection Interval`, the KAVE00227-W message might be output repeatedly to the common message log.

For details about how to resolve this problem, see the *Tuning Manager Agent Administration Guide*.

Key Fields

None

Lifetime

From when the instance is created to when it is deleted

Record Size

- Fixed part: 937 bytes
- Variable part: 0 bytes

Table 2-51 Logical Device Aggregation (PI_LDA) Fields

Logical Device Aggregation (PI_LDA)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
Interval (INTERVAL)	Interval (in seconds) at which information is collected	ADD	ulong	No	Supported	Supported	--
LDEV Count (LDEV_COUNT)	Total number of logical devices that can be monitored by Agent for RAID. A LUSE is counted as one logical device.	%	ulong	No	Supported	Supported	--
Monitored LDEV Count (MONITORED_LDEV_COUNT)	Number of logical devices currently monitored by Agent for RAID. If the logical devices to be monitored are specified in the logical device definition file (ldev_filter.ini), the number of those logical devices is stored in	%	ulong	No	Supported	Supported	--

Logical Device Aggregation (PI_LDA)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
	this field. Note that a LUSE is counted as one logical device.						
Read Hit % (`READ_HIT_RATE`)	Cache hit rate of read operations	%	`double`	No	Supported See **Note 1**	Supported	(`READ_HIT_IO_COUNT` / `READ_IO_COUNT`) * 100
Read Hit I/O Count (`READ_HIT_IO_COUNT`)	Number of times the cache is hit for read operations	ADD	`double`	Yes	Supported See **Note 1**	Supported	--
Read I/O /sec (`READ_IO_RATE`)	Frequency of read operations (number of times per second)	%	`double`	No	Supported See **Note 1**	Supported	`READ_IO_COUNT` / `INTERVAL`
Read I/O Count (`READ_IO_COUNT`)	Number of read operations	ADD	`double`	Yes	Supported See **Note 1**	Supported	--
Read Mbytes (`READ_MBYTES`)	Read data transfer size (MB)	ADD	`double`	Yes	Supported See **Note 2**	Supported See **Note 3**	--
Read Response Rate (`READ_RESPONSE_RATE`)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Read Total Response (`READ_TOTAL_RESPONSE`)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Read Xfer /sec (`READ_XFER_RATE`)	Read transfer speed (MB per second)	%	`double`	No	Supported See **Note 2**	Supported See **Note 3**	`READ_MBYTES` / `INTERVAL`
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Supported	Supported	--
Record Type	Record type identifier, which is always set to `LDA`	COPY	`string(8)`	No	Supported	Supported	--

Logical Device Aggregation (PI_LDA)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
(`INPUT_RECORD_TYPE`)							
Write Hit % (`WRITE_HIT_RATE`)	Cache hit rate of write operations	%	`double`	No	Supported See ***Note 1***	Not supported	(`WRITE_HIT_IO_COUNT` / `WRITE_IO_COUNT`) * 100
Write Hit I/O Count (`WRITE_HIT_IO_COUNT`)	Number of times the cache is hit for write operations	ADD	`double`	Yes	Supported See ***Note 1***	Not supported	--
Write I/O /sec (`WRITE_IO_RATE`)	Frequency of write operations (number of times per second)	%	`double`	No	Supported See ***Note 1***	Supported	`WRITE_IO_COUNT` / `INTERVAL`
Write I/O Count (`WRITE_IO_COUNT`)	Number of write operations	ADD	`double`	Yes	Supported See ***Note 1***	Supported	--
Write Mbytes (`WRITE_MBYTES`)	Write data transfer size (MB)	ADD	`double`	Yes	Supported See ***Note 2***	Supported See ***Note 3***	--
Write Response Rate (`WRITE_RESPONSE_RATE`)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Write Total Response (`WRITE_TOTAL_RESPONSE`)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Write Xfer /sec (`WRITE_XFER_RATE`)	Write transfer speed (number of MB per second)	%	`double`	No	Supported See ***Note 2***	Supported See ***Note 3***	`WRITE_MBYTES` / `INTERVAL`

📄 **Note: *1:*** For the following storage systems, these values can be collected only when performance statistics are set to be collected from the storage system to be monitored:

- HUS100 series
- Hitachi SMS series
- Hitachi AMS2000 series
- Hitachi AMS/WMS series

Note: *2:* These values can be collected only when performance statistics of the monitored storage system are set to be collected.

Note: *3:* For logical devices for which the mainframe emulation type is set, this value can be collected only when the storage system is VSP 5000 series, VSP G1000 (80-03 or later), G1500, or VSP F1500.

Logical Device Configuration (PD_LDC)

Function

The Logical Device Configuration (`PD_LDC`) record stores the performance data indicating the configuration information of the logical device. This is a multi-instance record.

Note: If Agent for RAID has started in SLPR restricted mode, it collects only the information on logical devices that belong to the monitored SLPR.

Table 2-52 Logical Device Configuration (PD_LDC) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	No
Collection Offset	0	
Log	Yes	
LOGIF	(Blank)	

Key Fields

LDEV Number (`LDEV_NUMBER`)

Lifetime

From when the logical device is set up to when it is removed

Record Size

- Fixed part: 681 bytes
- Variable part: 506 bytes

Table 2-53 Logical Device Configuration (PD_LDC) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage Midrange	Supported Storage Enterprise	Data Source
Logical Device Configuration (PD_LDC)							
CLPR Number (`CLPR_NUMBER`)	Number of the CLPR to which the logical device has been assigned	--	`string(8)`	No	Supported	Supported	--
Collection Time (`COLLECTION_TIME`)	Time (in GMT) when the data was collected from the storage system	--	`time_t`	No	Supported	Supported	--
Emulation Type (`EMULATION_TYPE`)	Emulation type of the logical device For an environment that uses VVols of VMware, depending on whether the logical device is ALU or SLU, the following values are added to the end of the emulation type value. • For ALU: "-A" • For SLU: "-S"	--	`string(64)`	No	Not supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	--	`ulong`	No	Supported	Supported	--
LDEV Attribute (`LDEV_ATTRIBUTE`)	This field cannot be used because it is reserved.	--	--	--	--	--	--
LDEV Location (`LDEV_LOCATION`)	Whether the logical device is an externally connected LDEV: • Internal • External	--	`string(16)`	No	Supported	Supported	--
LDEV Name (`LDEV_NAME`)	Nickname set for the logical device	--	`string(64)`	No	--	Supported See **Note 2**	--
LDEV Number (`LDEV_NUMBER`)	Logical device number See **Note 1**	--	`string(16)`	No	Supported	Supported	--

Logical Device Configuration (PD_LDC)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
LDEV Status (`LDEV_STATUS`)	This field cannot be used because it is reserved.	--	--	--	--	--	--
LU Property (`LU_PROPERTY`)	This field cannot be used because it is reserved.	--	--	--	--	--	--
LU Property2 (`LU_PROPERTY2`)	This field cannot be used because it is reserved.	--	--	--	--	--	--
LUSE Volume (`LUSE_VOLUME`)	Information indicating whether the logical device is a component of a LUSE. • LUSE	--	`string(16)`	No	Supported	Supported	--
MP Blade (`MP_BLADE`)	• For VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM , or VSP 5000 series storage system: Character string that identifies the MP Unit that has ownership rights to the logical device. • For VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems: Character string that identifies the MP Blade that has ownership rights to the logical device.	--	`string(16)`	No	Not supported	Supported See **Note 2**	--
PDEV Number (`PDEV_NUMBER`)	This field cannot be used because it is reserved.	--	--	--	--	--	--

Logical Device Configuration (PD_LDC)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
Pool ID (POOL_ID)	ID of the Dynamic Provisioning pool to which the logical device belongs. A value is stored in this field only when the logical device is a Dynamic Provisioning V-VOL, Thin Image V-VOL, or a Dynamic Provisioning pool volume. (See **Note 3**) However, the value for Thin Image V-VOL is stored in this field only when the V-VOL is associated with the Dynamic Provisioning pool.	--	string(8)	No	Supported See **Note 4**	Supported	--
RAID Group Number (RAID_GROUP_NUMBER)	Parity group number of the logical device	--	string(64)	No	Supported See **Note 5** and **Note 6**	Supported See **Note 5**, **Note 6** and **Note 7**	--
RAID Level (RAID_LEVEL)	RAID level of logical device	--	unsigned char	No	Supported See **Note 8** and **Note 9**	Supported See **Note 8**, **Note 9** and **Note 10**	--
RAID Type (RAID_TYPE)	Combination of the RAID level and HDU of the logical device. **Example:** RAID5(3D+1P)	--	string(32)	No	Supported See **Note 5** and **Note 6**	Supported See **Note 5**, **Note 6** and **Note 7**	--
Record Time (RECORD_TIME)	Time (in GMT) when the record was stored	--	time_t	No	Supported	Supported	--
Record Type (INPUT_RECORD_TYPE)	Record type identifier, which is always set to LDC	--	string(8)	No	Supported	Supported	--
Replication Attribute	This field cannot be used because it is reserved.	--	--	--	--	--	--

Logical Device Configuration (PD_LDC)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
(REPLICATION_A TTRIBUTE)							
SLPR Number (SLPR_NUMBER)	Number of the SLPR to which the logical device belongs	--	string(8)	No	Not supported	Supported See **Note 11**	--
Virtual DKC Name (VIRTUAL_DKC_N AME)	Product name of the virtual storage machine to which the logical device belongs See **Note 17**.	--	string(32)	No	--	Supported See **Note 12**, **Note 13**, **Note 14** and **Note 15**	--
Virtual LDEV Number (VIRTUAL_LDEV_ NUMBER)	Virtualized logical-device number associated with the logical device	--	string(16)	No	--	Supported See **Note 12**, **Note 13** and **Note 16**	--
Virtual Serial Number (VIRTUAL_SERIA L_NUMBER)	Serial number (in decimal) of the virtual storage machine to which the logical device belongs	--	string(32)	No	--	Supported See **Note 12**, **Note 13** and **Note 14**	--
Volume Type (VOLUME_TYPE)	Information that indicates whether the logical device is a Dynamic Provisioning V-VOL, Thin Image V-VOL or Dynamic Provisioning pool volume. If the logical device is a V-VOL for Dynamic Provisioning or Thin Image pair, information is stored in this field only when the VVOL is associated with the Dynamic Provisioning pool. • V-VOL • POOL See **Note 3**.	--	string(16)	No	Supported See **Note 4**	Supported	--

Note: *1:* If the logical device is a component of a LUSE, this field only stores the record for the following logical device:

- For HUS100 series, or Hitachi AMS2000/AMS/WMS/SMS series storage systems:
  Main logical unit

- For HUS VM, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage systems:
  First logical device of the LUSE

If the LUSE consists of externally connected logical devices or of V-VOLs for Copy-on-Write Snapshot/Thin Image or Dynamic Provisioning, and no LU path is set for the LUSE, the LUSE is not recognized as a LUSE, and records are created for individual logical devices. In this case, the `PD_LSEC` record is not created for individual logical devices.

Note: *2:* Not supported by Universal Storage Platform V/VM series storage systems.

Note: *3:* When the Dynamic Provisioning pool to which the logical device belongs is blocked, this field becomes empty. However, when the Dynamic Provisioning pool is blocked because the usage rate of the pool capacity is 100%, a value is stored in this field.

Note: *4:* Not supported by Hitachi SMS series, or Hitachi AMS/WMS series storage systems.

Note: *5:* For the following storage systems, the value of this field cannot be collected when the logical device is a Dynamic Provisioning V-VOL:

- HUS100 series
- Hitachi AMS2000 series
- VSP Gx00 models
- VSP Fx00 models
- VSP Nx00 models
- HUS VM
- VSP 5000 series
- VSP G1000
- VSP G1500
- VSP F1500
- Virtual Storage Platform series
- Universal Storage Platform V/VM series

Note: *6:* For the following storage systems, the value of this field cannot be collected when the logical device is a Copy-on-Write Snapshot V-VOL, or a Thin Image V-VOL:

- HUS100 series

- Hitachi SMS series
- Hitachi AMS2000 series
- VSP Gx00 models
- VSP Fx00 models
- VSP Nx00 models
- HUS VM
- VSP 5000 series
- VSP G1000
- VSP G1500
- VSP F1500
- Virtual Storage Platform series
- Universal Storage Platform V/VM series

Note: *7:* The value of this field cannot be collected if the logical device is an externally connected LDEV.

Note: *8:* For the following storage systems, the field value is always `0` when the logical device is a Copy-on-Write Snapshot V-VOL, or a Thin Image V-VOL:

- HUS100 series
- Hitachi SMS series
- Hitachi AMS2000 series
- VSP Gx00 models
- VSP Fx00 models
- VSP Nx00 models
- HUS VM
- VSP 5000 series
- VSP G1000
- VSP G1500
- VSP F1500
- Virtual Storage Platform series
- Universal Storage Platform V/VM series

Note: *9:* For the following storage systems, the field value is always `0` when the logical device is a Dynamic Provisioning V-VOL:

- HUS100 series
- Hitachi AMS2000 series
- VSP Gx00 models
- VSP Fx00 models
- VSP Nx00 models
- HUS VM

- VSP 5000 series
- VSP G1000
- VSP G1500
- VSP F1500
- Virtual Storage Platform series
- Universal Storage Platform V/VM series

Note: *10:* If the logical device is an externally connected LDEV, the field value will always be `0`.

Note: *11:* Not supported by VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, or Virtual Storage Platform series storage systems.

Note: *12:* If the logical device does not belong to an virtual storage machine, the field value will be NULL.

Note: *13:* The value of this field cannot be collected for the following storage systems: HUS VM, Virtual Storage Platform series, and Universal Storage Platform V/VM series.

Note: *14:* If the logical device that composes a copy pair of global-active device is not virtualized, the field value will be NULL.

Note: *15:* If the virtual storage machine is VSP F400, F600, F800, VSP N400, N600, N800, the value is VSP G400, G600, G800. For example, if the virtual storage machine is VSP F800, the value is VSP G800.

Note: *16:* If either of the following applies to the logical device, the field value will be NULL.

- The logical device that is part of a copy pair of a global-active device is not virtualized.
- A virtualized logical device number is not set.

Note: *17:*
If the virtual storage machine is VSP G1000, in v8.5 or later, the value stored in the Virtual DKC Name field is VSP G1000 G1500 F1500.

Logical Device Summary (PI_LDS)

Function

The Logical Device Summary (`PI_LDS`) record stores the performance data indicating the execution status of read and write operations on the logical device. This is a multi-instance record.

Note:

- If Agent for RAID has started in SLPR restricted mode, it collects only the information on logical devices that belong to the monitored SLPR.
- If the monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system, Agent for RAID only collects information about logical devices whose logical device number is in the range from 00:00:00 to 00:3F:FF.

Table 2-54 Logical Device Summary (PI_LDS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	300	Yes See **Note**
Collection Offset	0	No
Log	Yes	
LOGIF	(Blank)	

Note: The following values can be set:

- For Hybrid Store or Store database version 2.0:

  A value from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

- For Store database version 1.0:

  A value from 300 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Note, however, that if you set a value smaller than the default value for `Collection Interval`, the following problems might occur:

- The KAVE00227-W message might be continuously output to the common message log.
- The Agent Store service might remain in the Busy status.

For details about how to resolve these problems, see the *Tuning Manager Agent Administration Guide*.

Key Fields

LDEV Number (`LDEV_NUMBER`)

Lifetime

From when the logical device is set up to when it is removed

Record Size

- Fixed part: 677 bytes

- Variable part: 348 bytes

Table 2-55 Logical Device Summary (PI_LDS) Fields

Logical Device Summary (PI_LDS)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Supported	Supported	--
LDEV Number (`LDEV_NUMBER`)	Logical device number. See **Note 1**.	COPY	`string(16)`	No	Supported	Supported	--
Random Total I/O /sec (`RANDOM_TOTAL_IO_RATE`)	Frequency of random operations (sum of processing times for random read and write operations per second)	%	`float`	No	Supported See **Note 2** and **Note 3**	Supported	--
Random Total Xfer /sec (`RANDOM_TOTAL_XFER_RATE`)	Transfer rate of random operations (total megabytes for random read and write operations per second)	%	`float`	No	Supported See **Note 2** and **Note 3**	Supported See **Note 4**	--
Read Hit % (`READ_HIT_RATE`)	Cache hit rate of read operations.	%	`float`	No	Supported See **Note 5**	Supported	(`READ_HIT_IO_COUNT` / `READ_IO_COUNT`) * 100
Read Hit I/O Count (`READ_HIT_IO_COUNT`)	Number of times the cache is hit for read operations.	ADD	`ulong`	Yes	Supported See **Note 5**	Supported	--
Read I/O /sec (`READ_IO_RATE`)	Frequency of read operations (number of times per second).	%	`float`	No	Supported See **Note 5**	Supported	`READ_IO_COUNT` / `INTERVAL`
Read I/O Count (`READ_IO_COUNT`)	Number of read operations.	ADD	`ulong`	Yes	Supported See **Note 5**	Supported	--
Read Mbytes (`READ_MBYTES`)	Read data transfer size (MB).	ADD	`ulong`	Yes	Supported See **Note 2**	Supported See **Note 6**	--

Logical Device Summary (PI_LDS)								
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
Read Response Rate (READ_RESPONSE_RATE)	Average processing time for each read operation request (in microseconds).	%	float	No	Supported See *Note 2*	Supported See *Note 6*	--
Read Total Response (READ_TOTAL_RE SPONSE)	Sum of processing times for read-operation requests processed during the collection period (in microseconds).	ADD	double	Yes	Supported See *Note 2*	Supported See *Note 6*	--
Read Xfer /sec (READ_XFER_RAT E)	Read data transfer rate (MB per second).	%	float	No	Supported See *Note 2*	Supported See *Note 6*	READ_MB YTES / INTERVA L
Record Time (RECORD_TIME)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	time_t	No	Supported	Supported	--
Record Type (INPUT_RECORD_ TYPE)	Record type identifier, which is always set to LDS	COPY	string(8)	No	Supported	Supported	--
Sequential Total I/O /sec (SEQUENTIAL_TO TAL_IO_RATE)	Frequency of sequential operations (sum of processing times for sequential read and write operations per second)	%	float	No	Supported See *Note 2* and *Note 3*	Supported	--
Sequential Total Xfer /sec (SEQUENTIAL_TO TAL_XFER_RATE)	Transfer rate of sequential operations (total megabytes for sequential read and write operations per second)	%	float	No	Supported See *Note 2* and *Note 3*	Supported See *Note 4*	--
Total Response Rate (TOTAL_RESPONS E_RATE)	Average processing time for each read and write operation request (in microseconds).	% See *Note 7* HI_%	float	No	Supported See *Note 2*	Supported See *Note 6*	--

Logical Device Summary (PI_LDS)								
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
		See ***Note 8***					
Virtual DKC Name (`VIRTUAL_DKC_NAME`)	Product name of the virtual storage machine to which the logical device belongs See ***Note 14***.	COPY	`string(32)`	No	Not supported	Supported See ***Note 9***, ***Note 10***, ***Note 11*** and ***Note 12***	--
Virtual LDEV Number (`VIRTUAL_LDEV_NUMBER`)	Virtualized logical-device number associated with the logical device	COPY	`string(16)`	No	Not supported	Supported See ***Note 9***, ***Note 10*** and ***Note 13***	--
Virtual Serial Number (`VIRTUAL_SERIAL_NUMBER`)	Serial number of the virtual storage machine to which the logical device belongs	COPY	`string(32)`	No	Not supported	Supported See ***Note 9***, ***Note 10*** and ***Note 11***	--
Write Hit % (`WRITE_HIT_RATE`)	Cache hit rate of write operations.	%	`float`	No	Supported See ***Note 5***	Not supported	(`WRITE_HIT_IO_COUNT` / `WRITE_IO_COUNT`) * 100
Write Hit I/O Count (`WRITE_HIT_IO_COUNT`)	Number of times the cache is hit for write operations.	ADD	`ulong`	Yes	Supported See ***Note 5***	Not supported	--
Write I/O /sec (`WRITE_IO_RATE`)	Frequency of write operations (number of times per second).	%	`float`	No	Supported See ***Note 5***	Supported	`WRITE_IO_COUNT` / `INTERVAL`
Write I/O Count (`WRITE_IO_COUNT`)	Number of write operations.	ADD	`ulong`	Yes	Supported See ***Note 5***	Supported	--
Write Mbytes (`WRITE_MBYTES`)	Write data transfer size (MB).	ADD	`ulong`	Yes	Supported See ***Note 2***	Supported See ***Note 6***	--
Write Response Rate (`WRITE_RESPONSE_RATE`)	Average processing time for each write operation request (in microseconds).	%	`float`	No	Supported See ***Note 2***	Supported See ***Note 6***	--

Logical Device Summary (PI_LDS)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
Write Total Response (`WRITE_TOTAL_RESPONSE`)	Sum of processing times for write-operation requests processed during the collection period (in microseconds).	ADD	`double`	Yes	Supported See **Note 2**	Supported See **Note 6**	--
Write Xfer /sec (`WRITE_XFER_RATE`)	Write transfer speed (MB per second).	%	`float`	No	Supported See **Note 2**	Supported See **Note 6**	`WRITE_MBYTES` / `INTERVAL`

Note: *1:* If the logical device is a component of a LUSE, `LDEV_NUMBER` indicates the following value:

- For HUS VM, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage systems:

  Logical device number of the first logical device of the LUSE

- For HUS100 series, or Hitachi AMS2000/AMS/WMS/SMS series storage systems:

  Logical device number of the main logical unit

Each performance information field contains statistics on read or write operations performed on the entire logical device group that makes up the LUSE. No record is created for individual logical devices included in the LUSE. If the LUSE consists of externally connected logical devices or of V-VOLs for Copy-on-Write Snapshot/Thin Image or Dynamic Provisioning, and no LU path is set for the LUSE, the LUSE is not recognized as a LUSE, and records are created for individual logical devices.

Note: *2:* These values can be collected only when performance statistics of the monitored storage system are set to be collected.

Note: *3:* Not supported by Hitachi AMS/WMS series storage systems.

Note: *4:* This field is not supported for logical devices for which the mainframe emulation type is set.

Note: *5:* For the following storage systems, these values can be collected only when performance statistics are set to be collected from the storage system to be monitored:

- HUS100 series
- Hitachi SMS series
- Hitachi AMS2000 series

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- Hitachi AMS/WMS series

Note: 6: For logical devices for which the mainframe emulation type is set, this value can be collected only for when the storage system is VSP 5000 series, VSP G1000 (80-03 or later), G1500, or VSP F1500.

Note: 7: Summarization rule if a Store database is used for the Performance database.

Note: 8: Summarization rule if Hybrid Store is used for the Performance database.

Note: 9: If the logical device does not belong to an virtual storage machine, the field value will be NULL.

Note: 10: The value of this field cannot be collected for the following storage systems: HUS VM, Virtual Storage Platform series, and Universal Storage Platform V/VM series.

Note: 11:
If the logical device that composes a copy pair of global-active device is not virtualized, the field value will be NULL.

Note: 12:
If the virtual storage machine is VSP F400, F600, F800, VSP N400, N600, N800, the value is VSP G400, G600, G800. For example, if the virtual storage machine is VSP F800, the value is VSP G800.

Note: 13:
If either of the following applies to the logical device, the field value will be NULL.

- The logical device that is part of a copy pair of a global-active device is not virtualized.
- A virtualized logical device number is not set.

Note: 14:
If the virtual storage machine is VSP G1000, in v8.5 or later, the value stored in the Virtual DKC Name field is VSP G1000 G1500 F1500.

Logical Device Summary 1 (PI_LDS1)

Function

The Logical Device Summary 1 (`PI_LDS1`) record stores performance data indicating the execution status of read and write operations on the logical device whose logical device number is in the range from 00:40:00 to 00:7F:FF. This is a multi-instance record.

This record is created if a logical device whose logical device number is in the range from 00:40:00 to 00:7F:FF, exists in a VSP G370, G700, G900, VSP

F370, F700, F900, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system.

> **Note:** If Agent for RAID has started in SLPR restricted mode, it collects only the information on logical devices that belong to the monitored SLPR.

Table 2-56 Logical Device Summary 1 (PI_LDS1) Default and Changeable Values

Item	Default Value	Changeable?
`Log`	Yes	No
`LOGIF`	(Blank)	
`Sync Collection With`	Interval Records, `PI_LDS`	

Key Fields

LDEV Number (`LDEV_NUMBER`)

Lifetime

From when the logical device is set up to when it is removed

Record Size

- Fixed part: 677 bytes
- Variable part: 348 bytes

Table 2-57 Logical Device Summary 1 (PI_LDS1) Fields

Logical Device Summary 1 (PI_LDS1)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See *Note 1***	
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not supported	Supported	--
LDEV Number (`LDEV_NUMBER`)	Logical device number. See ***Note 2***.	COPY	`string(16)`	No	Not supported	Supported	--
Random Total I/O /sec (`RANDOM_TOTAL_IO_RATE`)	Frequency of random operations (sum of processing times for random read and write	%	`float`	No	Not supported	Supported	--

Logical Device Summary 1 (PI_LDS1)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
	operations per second)						
Random Total Xfer /sec (`RANDOM_TOTAL_ XFER_RATE`)	Transfer rate of random operations (total megabytes for random read and write operations per second)	%	`float`	No	Not supported	Supported See *Note 3*	--
Read Hit % (`READ_HIT_RATE`)	Cache hit rate of read operations. See *Note 2*.	%	`float`	No	Not supported	Supported	`(READ_H IT_IO_C OUNT /` `READ_IO _COUNT)` `* 100`
Read Hit I/O Count (`READ_HIT_IO_C OUNT`)	Number of times the cache is hit for read operations. See *Note 2*.	ADD	`ulong`	Yes	Not supported	Supported	--
Read I/O /sec (`READ_IO_RATE`)	Frequency of read operations (number of times per second). See *Note 2*.	%	`float`	No	Not supported	Supported	`READ_IO _COUNT /` `INTERVA L`
Read I/O Count (`READ_IO_COUNT`)	Number of read operations. See *Note 2*.	ADD	`ulong`	Yes	Not supported	Supported	--
Read Mbytes (`READ_MBYTES`)	Read data transfer size (MB). See *Note 2*.	ADD	`ulong`	Yes	Not supported	Supported See *Note 4*	--
Read Response Rate (`READ_RESPONSE _RATE`)	Average processing time for each read operation request (in microseconds). See *Note 2*.	%	`float`	No	Not supported	Supported See *Note 4*	--
Read Total Response (`READ_TOTAL_RE SPONSE`)	Sum of processing times for read-operation requests processed during the collection period (in microseconds). See *Note 2*.	ADD	`double`	Yes	Not supported	Supported See *Note 4*	--

Logical Device Summary 1 (PI_LDS1)								
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See *Note 1***	
Read Xfer /sec (`READ_XFER_RATE`)	Read data transfer rate (MB per second). See ***Note 2***.	%	`float`	No	Not supported	Supported See ***Note 4***	`READ_MB YTES` / `INTERVA L`
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_ TYPE`)	Record type identifier, which is always set to `LDS1`	COPY	`string(8)`	No	Not supported	Supported	--
Sequential Total I/O /sec (`SEQUENTIAL_TO TAL_IO_RATE`)	Frequency of sequential operations (sum of processing times for sequential read and write operations per second)	%	`float`	No	Not supported	Supported	--
Sequential Total Xfer /sec (`SEQUENTIAL_TO TAL_XFER_RATE`)	Transfer rate of sequential operations (total megabytes for sequential read and write operations per second)	%	`float`	No	Not supported	Supported See ***Note 3***	--
Total Response Rate (`TOTAL_RESPONS E_RATE`)	Average processing time for each read and write operation request (in microseconds). See ***Note 2***.	% See ***Note 5*** HI_% See ***Note 6***	`float`	No	Not supported	Supported See ***Note 4***	--
Virtual DKC Name (`VIRTUAL_DKC_N AME`)	Product name of the virtual storage machine to which the logical device belongs See ***Note 12***.	COPY	`string(32)`	No	--	Supported See ***Note 7***, ***Note 8***, ***Note 9*** and ***Note 10***	--
Virtual LDEV Number	Virtualized logical-device number	COPY	`string(16)`	No	--	Supported See ***Note 7***, ***Note 8***	--

Logical Device Summary 1 (PI_LDS1)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise** See *Note 1*	
(VIRTUAL_LDEV_NUMBER)	associated with the logical device					and *Note 11*	
Virtual Serial Number (VIRTUAL_SERIAL_NUMBER)	Serial number of the virtual storage machine to which the logical device belongs	COPY	string(32)	No	--	Supported See *Note 7*, *Note 8* and *Note 9*	--
Write Hit % (WRITE_HIT_RATE)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Write Hit I/O Count (WRITE_HIT_IO_COUNT)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Write I/O /sec (WRITE_IO_RATE)	Frequency of write operations (number of times per second). See *Note 2*.	%	float	No	Not supported	Supported	WRITE_IO_COUNT / INTERVAL
Write I/O Count (WRITE_IO_COUNT)	Number of write operations. See *Note 2*.	ADD	ulong	Yes	Not supported	Supported	--
Write Mbytes (WRITE_MBYTES)	Write data transfer size (MB). See *Note 2*.	ADD	ulong	Yes	Not supported	Supported See *Note 4*	--
Write Response Rate (WRITE_RESPONSE_RATE)	Average processing time for each write operation request (in microseconds). See *Note 2*.	%	float	No	Not supported	Supported See *Note 4*	--
Write Total Response (WRITE_TOTAL_RESPONSE)	Sum of processing times for write-operation requests processed during the collection period (in microseconds). See *Note 2*.	ADD	double	Yes	Not supported	Supported See *Note 4*	--
Write Xfer /sec (WRITE_XFER_RATE)	Write transfer speed (MB per second). See *Note 2*.	%	float	No	Not supported	Supported See *Note 4*	WRITE_MBYTES / INTERVAL

Note: *1:* Not supported by VSP G200, G350, G400, G600, G800, VSP F350, F400, F600, F800, VSP N400, N600, N800, or HUS VM storage systems.

Note: *2:* If the logical device is a component of a LUSE, the `LDEV_NUMBER` field contains the logical device number of the first logical device within the group of the logical devices that make up the LUSE. Each performance information field contains statistics on read or write operations performed on the entire logical device group that makes up the LUSE. No record is created for individual logical devices included in the LUSE.
If the LUSE consists of externally connected logical devices or of V-VOLs for Copy-on-Write Snapshot, Thin Image, or Dynamic Provisioning, and no LU path is set for the LUSE, the LUSE is not recognized as a LUSE, and records are created for individual logical devices.

Note: *3:* This field is not supported for logical devices for which the mainframe emulation type is set.

Note: *4:* For logical devices for which the mainframe emulation type is set, this value can be collected only for when the storage system is VSP 5000 series, VSP G1000 (80-03 or later), G1500, or VSP F1500.

Note: *5:* Summarization rule if a Store database is used for the Performance database.

Note: *6:* Summarization rule if Hybrid Store is used for the Performance database.

Note: *7:* If the logical device does not belong to an virtual storage machine, the field value will be NULL.

Note: *8:* The value of this field cannot be collected for the following storage systems: HUS VM, Virtual Storage Platform series, and Universal Storage Platform V/VM series.

Note: *9:*
If the logical device that composes a copy pair of global-active device is not virtualized, the field value will be NULL.

Note: *10:*
If the virtual storage machine is VSP F400, F600, F800, VSP N400, N600, N800, the value is VSP G400, G600, G800. For example, if the virtual storage machine is VSP F800, the value is VSP G800.

Note: *11:*
If either of the following applies to the logical device, the field value will be NULL.

- The logical device that is part of a copy pair of a global-active device is not virtualized.
- A virtualized logical device number is not set.

Note: *12:*
If the virtual storage machine is VSP G1000, in v8.5 or later, the value stored in the Virtual DKC Name field is VSP G1000 G1500 F1500.

Logical Device Summary 2 (PI_LDS2)

Function

The Logical Device Summary 2 (`PI_LDS2`) record stores performance data indicating the execution status of read and write operations on the logical device whose logical device number is in the range from 00:80:00 to 00:BF:FF. This is a multi-instance record.

This record is created if a logical device whose logical device number is in the range from 00:80:00 to 00:BF:FF, exists in a VSP G700, G900, VSP F700, F900, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system.

Note: If Agent for RAID has started in SLPR restricted mode, it collects only the information on logical devices that belong to the monitored SLPR.

Table 2-58 Logical Device Summary 2 (PI_LDS2) Default and Changeable Values

Item	Default Value	Changeable?
Log	Yes	No
LOGIF	(Blank)	
Sync Collection With	Interval Records, PI_LDS	

Key Fields

LDEV Number (`LDEV_NUMBER`)

Lifetime

From when the logical device is set up to when it is removed

Record Size

- Fixed part: 677 bytes
- Variable part: 348 bytes

Table 2-59 Logical Device Summary 2 (PI_LDS2) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage Midrange	Supported Storage Enterprise See *Note 1*	Data Source
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not supported	Supported	--
LDEV Number (`LDEV_NUMBER`)	Logical device number. See *Note 2*.	COPY	`string(16)`	No	Not supported	Supported	--
Random Total I/O /sec (`RANDOM_TOTAL_IO_RATE`)	Frequency of random operations (sum of processing times for random read and write operations per second)	%	`float`	No	Not supported	Supported	--
Random Total Xfer /sec (`RANDOM_TOTAL_XFER_RATE`)	Transfer rate of random operations (total megabytes for random read and write operations per second)	%	`float`	No	Not supported	Supported See *Note 3*	--
Read Hit % (`READ_HIT_RATE`)	Cache hit rate of read operations. See *Note 2*.	%	`float`	No	Not supported	Supported	(`READ_HIT_IO_COUNT` / `READ_IO_COUNT`) * 100
Read Hit I/O Count (`READ_HIT_IO_COUNT`)	Number of times the cache is hit for read operations. See *Note 2*.	ADD	`ulong`	Yes	Not supported	Supported	--
Read I/O /sec (`READ_IO_RATE`)	Frequency of read operations (number of times per second). See *Note 2*.	%	`float`	No	Not supported	Supported	`READ_IO_COUNT` / `INTERVAL`
Read I/O Count (`READ_IO_COUNT`)	Number of read operations. See *Note 2*.	ADD	`ulong`	Yes	Not supported	Supported	--
Read Mbytes (`READ_MBYTES`)	Read data transfer size (MB). See *Note 2*.	ADD	`ulong`	Yes	Not supported	Supported See *Note 4*	--

Logical Device Summary 2 (PI_LDS2)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
Read Response Rate (READ_RESPONSE _RATE)	Average processing time for each read operation request (in microseconds). See *Note 2*.	%	float	No	Not supported	Supported See *Note 4*	--
Read Total Response (READ_TOTAL_RE SPONSE)	Sum of processing times for read-operation requests processed during the collection period (in microseconds). See *Note 2*.	ADD	double	Yes	Not supported	Supported See *Note 4*	--
Read Xfer /sec (READ_XFER_RAT E)	Read data transfer rate (MB per second). See *Note 2*.	%	float	No	Not supported	Supported See *Note 4*	READ_MB YTES / INTERVA L
Record Time (RECORD_TIME)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	time_t	No	Not supported	Supported	--
Record Type (INPUT_RECORD_ TYPE)	Record type identifier, which is always set to LDS2	COPY	string(8)	No	Not supported	Supported	--
Sequential Total I/O /sec (SEQUENTIAL_TO TAL_IO_RATE)	Frequency of sequential operations (sum of processing times for sequential read and write operations per second)	%	float	No	Not supported	Supported	--
Sequential Total Xfer /sec (SEQUENTIAL_TO TAL_XFER_RATE)	Transfer rate of sequential operations (total megabytes for sequential read and write operations per second)	%	float	No	Not supported	Supported See *Note 3*	--
Total Response Rate (TOTAL_RESPONS E_RATE)	Average processing time for each read and write operation request (in microseconds).	% See *Note 5*	float	No	Not supported	Supported See *Note 4*	--

Logical Device Summary 2 (PI_LDS2)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
	See *Note 2*.	HI_% See *Note 6*					
Virtual DKC Name (VIRTUAL_DKC_N AME)	Product name of the virtual storage machine to which the logical device belongs See *Note 12*.	COPY	string(32)	No	--	Supported See *Note 7*, *Note 8*, *Note 9* and *Note 10*	--
Virtual LDEV Number (VIRTUAL_LDEV_ NUMBER)	Virtualized logical-device number associated with the logical device	COPY	string(16)	No	--	Supported See *Note 7*, *Note 8* and *Note 11*	--
Virtual Serial Number (VIRTUAL_SERIA L_NUMBER)	Serial number of the virtual storage machine to which the logical device belongs	COPY	string(32)	No	--	Supported See *Note 7*, *Note 8* and *Note 9*	--
Write Hit % (WRITE_HIT_RAT E)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Write Hit I/O Count (WRITE_HIT_IO_ COUNT)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Write I/O /sec (WRITE_IO_RATE)	Frequency of write operations (number of times per second). See *Note 2*.	%	float	No	Not supported	Supported	WRITE_I O_COUNT / INTERVA L
Write I/O Count (WRITE_IO_COUN T)	Number of write operations. See *Note 2*.	ADD	ulong	Yes	Not supported	Supported	--
Write Mbytes (WRITE_MBYTES)	Write data transfer size (MB). See *Note 2*.	ADD	ulong	Yes	Not supported	Supported See *Note 4*	--
Write Response Rate (WRITE_RESPONS E_RATE)	Average processing time for each write operation request (in microseconds).	%	float	No	Not supported	Supported See *Note 4*	--

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Logical Device Summary 2 (PI_LDS2)								
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
	See *Note 2*.						
Write Total Response (`WRITE_TOTAL_RESPONSE`)	Sum of processing times for write-operation requests processed during the collection period (in microseconds). See *Note 2*.	ADD	`double`	Yes	Not supported	Supported See *Note 4*	--
Write Xfer /sec (`WRITE_XFER_RATE`)	Write transfer speed (MB per second). See *Note 2*.	%	`float`	No	Not supported	Supported See *Note 4*	`WRITE_MBYTES` / `INTERVAL`

Note: *1:* Not supported by VSP G200, G350, G370, G400, G600, G800, VSP F350, F370, F400, F600, F800, VSP N400, N600, N800, or HUS VM storage systems.

Note: *2:* If the logical device is a component of a LUSE, the `LDEV_NUMBER` field contains the logical device number of the first logical device within the group of the logical devices that make up the LUSE. Each performance information field contains statistics on read or write operations performed on the entire logical device group that makes up the LUSE. No record is created for individual logical devices included in the LUSE.
If the LUSE consists of externally connected logical devices or of V-VOLs for Copy-on-Write Snapshot, Thin Image, or Dynamic Provisioning, and no LU path is set for the LUSE, the LUSE is not recognized as a LUSE, and records are created for individual logical devices.

Note: *3:* This field is not supported for logical devices for which the mainframe emulation type is set.

Note: *4:* For logical devices for which the mainframe emulation type is set, this value can be collected only for when the storage system is VSP 5000 series, VSP G1000 (80-03 or later), G1500, or VSP F1500.

Note: *5:* Summarization rule if a Store database is used for the Performance database.

Note: *6:* Summarization rule if Hybrid Store is used for the Performance database.

Note: *7:* If the logical device does not belong to an virtual storage machine, the field value will be NULL.

Note: 8: The value of this field cannot be collected for the following storage systems: HUS VM, Virtual Storage Platform series, and Universal Storage Platform V/VM series.

Note: 9:
If the logical device that composes a copy pair of global-active device is not virtualized, the field value will be NULL.

Note: 10:
If the virtual storage machine is VSP F400, F600, F800, VSP N400, N600, N800, the value is VSP G400, G600, G800. For example, if the virtual storage machine is VSP F800, the value is VSP G800.

Note: 11:
If either of the following applies to the logical device, the field value will be NULL.

- The logical device that is part of a copy pair of a global-active device is not virtualized.

- A virtualized logical device number is not set.

Note: 12:
If the virtual storage machine is VSP G1000, in v8.5 or later, the value stored in the Virtual DKC Name field is VSP G1000 G1500 F1500.

Logical Device Summary 3 (PI_LDS3)

Function

The Logical Device Summary 3 (`PI_LDS3`) record stores performance data indicating the execution status of read and write operations on the logical device whose logical device number is in the range from 00:C0:00 to 00:FE:FF. This is a multi-instance record.

This record is created if a logical device whose logical device number is in the range from 00:C0:00 to 00:FE:FF, exists in a VSP G900, VSP F900, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage system.

Note: If Agent for RAID has started in SLPR restricted mode, it collects only the information on logical devices that belong to the monitored SLPR.

Table 2-60 Logical Device Summary 3 (PI_LDS3) Default and Changeable Values

Item	Default Value	Changeable?
Log	Yes	No
LOGIF	(Blank)	
Sync Collection With	Interval Records, PI_LDS	

Key Fields

LDEV Number (`LDEV_NUMBER`)

Lifetime

From when the logical device is set up to when it is removed

Record Size

- Fixed part: 677 bytes
- Variable part: 348 bytes

Table 2-61 Logical Device Summary 3 (PI_LDS3) Fields

<table>
<tr><th colspan="8">Logical Device Summary 3 (PI_LDS3)</th></tr>
<tr><th rowspan="2">View Name (Manager Name)</th><th rowspan="2">Description</th><th rowspan="2">Sum Rule</th><th rowspan="2">Format</th><th rowspan="2">Delta</th><th colspan="2">Supported Storage</th><th rowspan="2">Data Source</th></tr>
<tr><th>Midrange</th><th>Enterprise See Note 1</th></tr>
<tr><td>Interval (`INTERVAL`)</td><td>Interval (in seconds) at which information is collected</td><td>ADD</td><td>`ulong`</td><td>No</td><td>Not supported</td><td>Supported</td><td>--</td></tr>
<tr><td>LDEV Number (`LDEV_NUMBER`)</td><td>Logical device number. See Note 2.</td><td>COPY</td><td>`string(16)`</td><td>No</td><td>Not supported</td><td>Supported</td><td>--</td></tr>
<tr><td>Random Total I/O /sec (`RANDOM_TOTAL_IO_RATE`)</td><td>Frequency of random operations (sum of processing times for random read and write operations per second)</td><td>%</td><td>`float`</td><td>No</td><td>Not supported</td><td>Supported</td><td>--</td></tr>
<tr><td>Random Total Xfer /sec (`RANDOM_TOTAL_XFER_RATE`)</td><td>Transfer rate of random operations (total megabytes for random read and write operations per second)</td><td>%</td><td>`float`</td><td>No</td><td>Not supported</td><td>Supported See Note 3</td><td>--</td></tr>
<tr><td>Read Hit % (`READ_HIT_RATE`)</td><td>Cache hit rate of read operations. See Note 2.</td><td>%</td><td>`float`</td><td>No</td><td>Not supported</td><td>Supported</td><td>(`READ_HIT_IO_COUNT` / `READ_IO_COUNT`) * 100</td></tr>
<tr><td>Read Hit I/O Count (`READ_HIT_IO_COUNT`)</td><td>Number of times the cache is hit for read operations. See Note 2.</td><td>ADD</td><td>`ulong`</td><td>Yes</td><td>Not supported</td><td>Supported</td><td>--</td></tr>
</table>

Logical Device Summary 3 (PI_LDS3)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See _Note 1_**	
Read I/O /sec (`READ_IO_RATE`)	Frequency of read operations (number of times per second). See _**Note 2**_.	%	`float`	No	Not supported	Supported	`READ_IO _COUNT` / `INTERVA L`
Read I/O Count (`READ_IO_COUNT )`	Number of read operations. See _**Note 2**_.	ADD	`ulong`	Yes	Not supported	Supported	--
Read Mbytes (`READ_MBYTES`)	Read data transfer size (MB). See _**Note 2**_.	ADD	`ulong`	Yes	Not supported	Supported See _**Note 4**_	--
Read Response Rate (`READ_RESPONSE _RATE`)	Average processing time for each read operation request (in microseconds). See _**Note 2**_.	%	`float`	No	Not supported	Supported See _**Note 4**_	--
Read Total Response (`READ_TOTAL_RE SPONSE`)	Sum of processing times for read-operation requests processed during the collection period (in microseconds). See _**Note 2**_.	ADD	`double`	Yes	Not supported	Supported See _**Note 4**_	--
Read Xfer /sec (`READ_XFER_RAT E`)	Read data transfer rate (MB per second). See _**Note 2**_.	%	`float`	No	Not supported	Supported See _**Note 4**_	`READ_MB YTES` / `INTERVA L`
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_ TYPE`)	Record type identifier, which is always set to `LDS3`	COPY	`string(8)`	No	Not supported	Supported	--
Sequential Total I/O /sec (`SEQUENTIAL_TO TAL_IO_RATE`)	Frequency of sequential operations (sum of processing times for sequential read and write	%	`float`	No	Not supported	Supported	--

Logical Device Summary 3 (PI_LDS3)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
	operations per second)						
Sequential Total Xfer /sec (SEQUENTIAL_TO TAL_XFER_RATE)	Transfer rate of sequential operations (total megabytes for sequential read and write operations per second)	%	float	No	Not supported	Supported See *Note 3*	--
Total Response Rate (TOTAL_RESPONS E_RATE)	Average processing time for each read and write operation request (in microseconds). See *Note 2*.	% See *Note 5* / HI_% See *Note 6*	float	No	Not supported	Supported See *Note 4*	--
Virtual DKC Name (VIRTUAL_DKC_N AME)	Product name of the virtual storage machine to which the logical device belongs See *Note 12*.	COPY	string(32)	No	--	Supported See *Note 7*, *Note 8*, *Note 9* and *Note 10*	--
Virtual LDEV Number (VIRTUAL_LDEV_ NUMBER)	Virtualized logical-device number associated with the logical device	COPY	string(16)	No	--	Supported See *Note 7*, *Note 8* and *Note 11*	--
Virtual Serial Number (VIRTUAL_SERIA L_NUMBER)	Serial number of the virtual storage machine to which the logical device belongs	COPY	string(32)	No	--	Supported See *Note 7*, *Note 8* and *Note 9*	--
Write Hit % (WRITE_HIT_RAT E)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Write Hit I/O Count (WRITE_HIT_IO_ COUNT)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Write I/O /sec (WRITE_IO_RATE)	Frequency of write operations (number of times per second).	%	float	No	Not supported	Supported	WRITE_I O_COUNT /

Logical Device Summary 3 (PI_LDS3)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
	See *Note 2*.						INTERVAL
Write I/O Count (`WRITE_IO_COUNT`)	Number of write operations. See *Note 2*.	ADD	`ulong`	Yes	Not supported	Supported	--
Write Mbytes (`WRITE_MBYTES`)	Write data transfer size (MB). See *Note 2*.	ADD	`ulong`	Yes	Not supported	Supported See *Note 4*	--
Write Response Rate (`WRITE_RESPONSE_RATE`)	Average processing time for each write operation request (in microseconds). See *Note 2*.	%	`float`	No	Not supported	Supported See *Note 4*	--
Write Total Response (`WRITE_TOTAL_RESPONSE`)	Sum of processing times for write-operation requests processed during the collection period (in microseconds). See *Note 2*.	ADD	`double`	Yes	Not supported	Supported See *Note 4*	--
Write Xfer /sec (`WRITE_XFER_RATE`)	Write transfer speed (MB per second). See *Note 2*.	%	`float`	No	Not supported	Supported See *Note 4*	`WRITE_MBYTES` / `INTERVAL`

Note: *1:* Not supported by VSP G200, G350, G370, G400, G600, G700, G800, VSP F350, F370, F400, F600, F700, F800, VSP N400, N600, N800, or HUS VM storage systems.

Note: *2:* If the logical device is a component of a LUSE, the `LDEV_NUMBER` field contains the logical device number of the first logical device within the group of the logical devices that make up the LUSE. Each performance information field contains statistics on read or write operations performed on the entire logical device group that makes up the LUSE. No record is created for individual logical devices included in the LUSE.
If the LUSE consists of externally connected logical devices or of V-VOLs for Copy-on-Write Snapshot, Thin Image, or Dynamic Provisioning, and no LU path is set for the LUSE, the LUSE is not recognized as a LUSE, and records are created for individual logical devices.

Note: *3:* This field is not supported for logical devices for which the mainframe emulation type is set.

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Note: *4:* For logical devices for which the mainframe emulation type is set, this value can be collected only for when the storage system is VSP 5000 series, VSP G1000 (80-03 or later), G1500, or VSP F1500.

Note: *5:* Summarization rule if a Store database is used for the Performance database.

Note: *6:* Summarization rule if Hybrid Store is used for the Performance database.

Note: *7:* If the logical device does not belong to an virtual storage machine, the field value will be NULL.

Note: *8:* The value of this field cannot be collected for the following storage systems: HUS VM, Virtual Storage Platform series, and Universal Storage Platform V/VM series.

Note: *9:*
If the logical device that composes a copy pair of global-active device is not virtualized, the field value will be NULL.

Note: *10:*
If the virtual storage machine is VSP F400, F600, F800, VSP N400, N600, N800, the value is VSP G400, G600, G800. For example, if the virtual storage machine is VSP F800, the value is VSP G800.

Note: *11:*
If either of the following applies to the logical device, the field value will be NULL.

- The logical device that is part of a copy pair of a global-active device is not virtualized.
- A virtualized logical device number is not set.

Note: *12:*
If the virtual storage machine is VSP G1000, in v8.5 or later, the value stored in the Virtual DKC Name field is VSP G1000 G1500 F1500.

LUSE Configuration (PD_LSEC)

Function

The LUSE Configuration (`PD_LSEC`) record holds performance data indicating configuration information for logical devices that make up the LUSE. This is a multi-instance record. This record is not created if the LUSE consists of externally connected logical devices or of V-VOLs for Copy-on-Write Snapshot/Thin Image or Dynamic Provisioning and no LU path is set for the LUSE. Also, this record is not created if no LUSE is included in the storage system.

> **Note:** If Agent for RAID has started in SLPR restricted mode, it collects only the information on logical devices that belong to the monitored SLPR.

Table 2-62 LUSE Configuration (PD_LSEC) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	No
Collection Offset	0	
Log	Yes	
LOGIF	(Blank)	

Key Fields

LDEV Number (LDEV_NUMBER)

Lifetime

From when the LUSE is set up to when it is removed

Record Size

- Fixed part: 681 bytes
- Variable part: 408 bytes

Table 2-63 LUSE Configuration (PD_LSEC) Fields

LUSE Configuration (PD_LSEC)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	**Supported Storage**		Data Source
					Midrange	Enterprise	
CLPR Number (CLPR_NUMBER)	Number of the CLPR to which the logical device has been assigned	--	string(8)	No	Supported	Supported	--
Collection Time (COLLECTION_TIME)	Time (in GMT) when the data was collected from the storage system	--	time_t	No	Supported	Supported	--
Emulation Type (EMULATION_TYPE)	Emulation type of the logical device	--	string(64)	No	Not supported	Supported	--
Interval (INTERVAL)	Interval (in seconds) at which information is collected	--	ulong	No	Supported	Supported	--

LUSE Configuration (PD_LSEC)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
LDEV Attribute (`LDEV_ATTRIBUTE`)	This field cannot be used because it is reserved.	--	--	--	--	--	--
LDEV Location (`LDEV_LOCATION`)	Whether the logical device is an externally connected LDEV: • Internal • External	--	`string(16)`	No	Supported	Supported	--
LDEV Name (`LDEV_NAME`)	This field cannot be used because it is reserved.	--	--	--	--	--	--
LDEV Number (`LDEV_NUMBER`)	Logical device number	--	`string(16)`	No	Supported	Supported	--
LDEV Status (`LDEV_STATUS`)	This field cannot be used because it is reserved.	--	--	--	--	--	--
LU Property (`LU_PROPERTY`)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Main LDEV Number (`MAIN_LDEV_NUMBER`)	Main logical device number of the LUSE that includes the logical device. See ***Note 1***.	--	`string(16)`	No	Supported	Supported	--
Pool ID (`POOL_ID`)	ID of the Dynamic Provisioning pool to which the logical device belongs. A value is stored in this field only when the logical device is a V-VOL. See ***Note 2***.	--	`string(8)`	No	Not supported	Supported	--
PDEV Number (`PDEV_NUMBER`)	This field cannot be used because it is reserved.	--	--	--	--	--	--
RAID Group Number (`RAID_GROUP_NUMBER`)	Parity group number of logical device	--	`string(64)`	No	Supported	Supported See ***Note 3***, ***Note 4***, and ***Note 5***	--
RAID Level (`RAID_LEVEL`)	RAID level of logical device	--	`unsigned char`	No	Supported	Supported	--

LUSE Configuration (PD_LSEC)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
						See *Note 6*, *Note 7*, and *Note 8*	
RAID Type (RAID_TYPE)	Combination of the RAID level and HDU of the logical device. **Example:** RAID5(3D+1P)	--	string(32)	No	Supported	Supported See *Note 3*, *Note 4*, and *Note 5*	--
Record Time (RECORD_TIME)	Record creation time (in GMT)	--	time_t	No	Supported	Supported	--
Record Type (INPUT_RECORD_ TYPE)	Record type identifier, which is always set to LSEC	--	string(8)	No	Supported	Supported	--
Replication Attribute (REPLICATION_A TTRIBUTE)	This field cannot be used because it is reserved.	--	--	--	--	--	--
SLPR Number (SLPR_NUMBER)	Number of the SLPR to which the logical device belongs	--	string(8)	No	Not supported	Supported See *Note 9*	--
Volume Type (VOLUME_TYPE)	Information that indicates whether the logical device is a V-VOL for Dynamic Provisioning. Information is stored in this field only when a V-VOL for Dynamic Provisioning is associated with the Dynamic Provisioning pool. • V-VOL See *Note 2*.	--	string(16)	No	Not supported	Supported	--

Note: *1:* The main logical device number of the LUSE that includes the logical device is as follows:

- For HUS100 series, or Hitachi AMS2000/AMS/WMS/SMS series storage systems:
  Logical device number of the main logical unit

- For HUS VM, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage systems:

   Logical device number of the first logical device

Note: *2:* When the Dynamic Provisioning pool to which the logical device belongs is blocked, this field becomes empty. However, when the Dynamic Provisioning pool is blocked because the usage rate of the pool capacity is 100%, a value is stored in this field.

Note: *3:* The value of this field cannot be collected if the logical device is externally connected.

Note: *4:* For the following storage systems, the value of this field cannot be collected when the logical device is a Copy-on-Write Snapshot V-VOL, or a Thin Image V-VOL:

- HUS VM
- Virtual Storage Platform series
- Universal Storage Platform V/VM series

Note: *5:* For the following storage systems, the value of this field cannot be collected when the logical device is a Dynamic Provisioning V-VOL:

- HUS VM
- Virtual Storage Platform series
- Universal Storage Platform V/VM series

Note: *6:* If the logical device is an externally connected LDEV, the field value will always be 0.

Note: *7:* For the following storage systems, the field value is always 0 when the logical device is a Copy-on-Write Snapshot V-VOL, or a Thin Image V-VOL:

- HUS VM
- Virtual Storage Platform series
- Universal Storage Platform V/VM series

Note: *8:* For the following storage systems, the field value is always 0 when the logical device is a Dynamic Provisioning V-VOL:

- HUS VM
- Virtual Storage Platform series
- Universal Storage Platform V/VM series

Note: *9:* Not supported by HUS VM or Virtual Storage Platform series storage systems.

Physical Device Operation Status (PI_PDOS)

Function

The Physical Device Operation Status (`PI_PDOS`) record stores performance data indicating the operation statuses of drives in a storage system. This is a multi-instance record.

Table 2-64 Physical Device Operation Status (PI_PDOS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	300	Yes See **Note**
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

Note: The following values can be set:

- For Hybrid Store or Store database version 2.0:

  A value from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

- For Store database version 1.0:

  A value from 300 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Note, however, that if you set a value smaller than the default value for `Collection Interval`, the KAVE00227-W message might be output repeatedly to the common message log.

For details about how to resolve this problem, see the *Tuning Manager Agent Administration Guide*.

Key Fields

Controller (`CONTROLLER`), HDU Number (`HDU_NUMBER`), Unit Number (`UNIT_NUMBER`)

Lifetime

From the time the drive is set up to when it is removed

Record Size

- Fixed part: 677 bytes
- Variable part: 148 bytes

Table 2-65 Physical Device Operation Status (PI_PDOS) Fields

Physical Device Operation Status (PI_PDOS)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
Avg Tag Count (`AVG_TAG_COUNT`)	Number of commands accumulated in the command queue of the drive (average value)	%	`float`	No	Supported See **Note 1** and **Note 2**	Not supported	--
Busy % (`BUSY_RATE`)	Usage rate of the drive**Note 3**	%	`float`	No	Supported See **Note 1**	Not supported	--
Controller (`CONTROLLER`)	Controller number	COPY	`string(8)`	No	Supported	Not supported	--
HDU Number (`HDU_NUMBER`)	HDU number of the drive	COPY	`string(8)`	No	Supported	Not supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Supported	Not supported	--
Max Busy % (`MAX_BUSY_RATE`)	Usage rate of the drive.**Note 3** **Note:** If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.	HI	`float`	No	Supported See **Note 1**	Not supported	`BUSY_RATE`
Max Tag Count (`MAX_TAG_COUNT`)	Number of commands accumulated (the maximum value in the previous minute) in the command queue of the drive	HI	`ulong`	No	Supported See **Note 1**	Not supported	--
Pool ID (`POOL_ID`)	ID of the Dynamic Provisioning pool to which the drive belongs. See **Note 4**.	COPY	`string(8)`	No	Supported See **Note5**	Not supported	--
RAID Group Number	Number of the parity group to which the drive belongs.	COPY	`string(64)`	No	Supported	Not supported	--

Physical Device Operation Status (PI_PDOS)								
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
(`RAID_GROUP_NUMBER`)	See **Note 6**.						
RAID Group Type (`RAID_GROUP_TYPE`)	Information indicating whether the drive belongs to a Dynamic Provisioning pool. • POOL See **Note 4**.	COPY	`string(8)`	No	Supported See **Note5**	Not supported	--
Record Time (`RECORD_TIME`)	Time(in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Supported	Not supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to `PDOS`	COPY	`string(8)`	No	Supported	Not supported	--
Unit Number (`UNIT_NUMBER`)	Unit number of the drive	COPY	`string(8)`	No	Supported	Not supported	--

> **Note: 1:** These values can be collected only when performance statistics of the monitored storage system are set to be collected.

> **Note: 2:** Not supported by Hitachi AMS/WMS series storage systems.

> **Note: 3:** If flash drives (FMD, FMC, or SSD) are included in the monitored storage systems, you will be unable to determine the status of load on the storage systems from the drives' usage rates alone. When determining the load on the drives, use the conditions below. If all of the following conditions are met, you can determine that the load on the drives is high:
>
> • The value of Busy % (BUSY_RATE) is 80 or more.
> • The value of Avg Tag Count (AVG_TAG_COUNT) is 20 or more.

> **Note: 4:** This value can be collected only when the drive belongs to a Dynamic Provisioning pool.

> **Note: 5:** Not supported by Hitachi SMS series, or Hitachi AMS/WMS series storage systems.

Note: *6:* This value can be collected only if the drive belongs to a parity group.

Pool Configuration (PD_PLC)

Function

The Pool Configuration (`PD_PLC`) record stores performance data indicating the operation status of the Dynamic Provisioning pool. This is a multi-instance record.

Note:

- Agent for RAID does not collect information about Copy-on-Write Snapshot pools and Thin Image pools.

- If the Dynamic Provisioning pool is blocked, Agent for RAID does not collect information about the Dynamic Provisioning pool. However, if the Dynamic Provisioning pool is blocked because the usage rate of the pool capacity is 100%, Agent for RAID collects information about the pool.

- If Agent for RAID has started in SLPR restricted mode, it collects only the information about the Dynamic Provisioning pool that belongs to the monitored SLPR.

Table 2-66 Pool Configuration (PD_PLC) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	21600	Yes See *Note*
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

Note: This value can be changed to a value from 3,600 to 86,400. The value must be a multiple of 3,600 and a divisor of 86,400.

Key Fields

Pool ID (`POOL_ID`)

Lifetime

From when the Dynamic Provisioning pool is set up to when it is removed

Record Size

- Fixed part: 681 bytes
- Variable part: 505 bytes

Table 2-67 Pool Configuration (PD_PLC) Fields

Pool Configuration (PD_PLC)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
Attribute (`ATTRIBUTE`)	Type of the pool. For Universal Storage Platform V/VM series, HUS100 series, or Hitachi AMS2000 series storage systems: • Dynamic Provisioning For VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems: • Dynamic Provisioning • Dynamic Provisioning (Tiering) • Data Direct Mapping	--	`string(32)`	No	Supported See **Note 1**	Supported	--
Auto Expansion (`AUTO_EXPANSION`)	Whether to automatically add pool volumes according to the compression ratio of a parity group for which accelerated compression is enabled. Enable: Automatically adds pool volumes according to the compression ratio of a parity group for which accelerated compression is enabled.	--	`string(32)`	No	Not supported	Supported See **Note 26**	--

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Pool Configuration (PD_PLC)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
	Disable: Pool volumes for which accelerated compression is enabled are not added automatically. "": This function is not supported.						
Collection Time (`COLLECTION_TI ME`)	Time(in GMT) when the data was collected from the storage system	--	`time_t`	No	Supported See ***Note 1***	Supported	--
Data Saving (`DATA_SAVING`)	Availability of deduplication function for the pool • `0x00`: Deduplication Not Available • `0x02`: Deduplication Not Available • `0x03`: Deduplication Available See ***Note 2***	--	unsigned char	No	Not supported	Supported See ***Note 3***	--
Data Volume Used Capacity (`DATA_VOLUME_U SED_CAPACITY`)	Capacity used by a virtual volume (GB) See ***Note 4***	--	`double`	No	Not supported	Supported See ***Note 5***	--
DKC Compression Capacity (`DKC_COMP_CAPA CITY`)	Capacity compressed by capacity saving (GB) See ***Note 6*** and ***Note 7***	--	`double`	No	Not supported	Supported See ***Note 5***	--
DKC Compression Ratio (`DKC_COMP_RATI O`)	Saving effect compressed by capacity saving. This is the value of N when the ratio of capacity before and after the reduction is N:1. See ***Note 7*** and ***Note 8***	--	`float`	No	Not supported	Supported See ***Note 5***	--

Pool Configuration (PD_PLC)								
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
DKC Deduplication Capacity (`DKC_DUP_CAPACITY`)	Capacity saved by deduplication of capacity saving (GB) See **Note 6** and **Note 7**	--	`double`	No	Not supported	Supported See **Note 5**	--
DKC Deduplication Ratio (`DKC_DUP_RATIO`)	Saving effect saved by deduplication of capacity saving. This is the value of N when the ratio of capacity before and after the reduction is N:1. See **Note 7** and **Note 8**	--	`float`	No	Not supported	Supported See **Note 5**	--
DKC Pre-Process Capacity (`DKC_PRE_PROC_CAPACITY`)	Capacity of data (before reduction) to be reduced by capacity saving (GB) See **Note 6**	--	`double`	No	Not supported	Supported See **Note 5**	--
DKC Reclaim Capacity (`DKC_RECLAIM_CAPACITY`)	Capacity saved by reclaiming the specified data pattern using capacity saving (GB) See **Note 6** and **Note 7**	--	`double`	No	Not supported	Supported See **Note 5**	--
DKC Saving Capacity (`DKC_SAVING_CAPACITY`)	Capacity reduced when dedupe and compression is used in a pool. See **Note 6** and **Note 9** and **Note 10**	--	double	No	Not supported	Supported See **Note 3**	--
DKC Saving Ratio (`DKC_SAVING_RATIO`)	Saving effect saved by capacity saving. This is the value of N when the ratio of capacity before and after the reduction is N:1. See **Note 8** and **Note 11**	--	`float`	No	Not supported	Supported See **Note 5**	--

Pool Configuration (PD_PLC)								
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**	
					Midrange	**Enterprise**		
DKC System Capacity (`DKC_SYSTEM_CA PACITY`)	The amount of consumed system data (GB) See **Note 6**	--	`double`	No	Not supported	Supported See **Note 5**	--	
Emulation Type (`EMULATION_TYP E`)	Emulation type of the pool	--	`string(64)`	No	Not supported	Supported	--	
FMC Capacity Total (`FMC_CAPACITY_ TOTAL`)	The total logical capacity of the pool volume for FMC or the pool volume that supports accelerated compression used in the pool (GB) See **Note 12**	--	`double`	No	Not supported	Supported See **Note 5**	--	
FMC Capacity Used (`FMC_CAPACITY_ USED`)	The logically used capacity of the pool volume for FMC or the pool volume that supports accelerated compression used in the pool (GB) See **Note 12**	--	`double`	No	Not supported	Supported See **Note 3**	--	
FMC Pool Capacity Compression ((`FMC_POOL_CAP ACITY_COMP`)	The compressed capacity with the accelerated compression function (GB) See **Note 12** and **Note 13**	--	`double`	No	Not supported	Supported See **Note 3**	--	
FMC Pool Compression Ratio (`FMC_POOL_CAPA CITY_COMP_RAT IO`)	Saving effect compressed by accelerated compression. This is the value of N when the ratio of capacity before and after the reduction is N:1. See **Note 8**	--	`float`	No	Not supported	Supported See **Note 3**	--	
FMC Pool Capacity Reclaim	The reclaimed capacity with the accelerated compression function (GB)	--	`double`	No	Not supported	Supported See **Note 5**	--	

Pool Configuration (PD_PLC)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
(FMC_POOL_CAPA CITY_RECLAIM)	See **Note 10** and **Note 12**						
FMC Pool Capacity Saving (FMC_POOL_CAPA CITY_SAVING)	The saved capacity with the accelerated compression function (GB) See **Note 12** and **Note 13** and **Note 14**	--	double	No	Not supported	Supported See **Note 3**	--
FMC Pool Capacity Saving % (FMC_POOL_CAPA CITY_SAVING _RATE)	Reduction rate (%) of capacity reduced by accelerated compression function See **Note 12** and **Note 15**	--	float	No	Not supported	Supported See **Note 3**	(FMC_PO OL_CAPA CITY_SA VING / (PHYSIC AL_CAPA CITY_US ED + FMC_POO L_CAPAC ITY_SAV ING)) * 100
Free Capacity (FREE_CAPACITY)	Unused capacity in the pool (GB). See **Note 16** and **Note 17**	--	double	No	Supported See **Note 1**	Supported	--
Interval (INTERVAL)	Interval (in seconds) at which information is collected	--	ulong	No	Supported See **Note 1**	Supported	--
Physical Capacity Free (PHYSICAL_CAPA CITY_FREE)	Total amount of free capacity in the physical capacity of the parity groups that make up the pool (GB) See **Note 18**	--	double	No	Not supported	Supported See **Note 3**	--
Physical Capacity Total (PHYSICAL_CAPA CITY_TOTAL)	Total amount of the physical capacity of the parity groups that make up the pool (GB)	--	double	No	Not supported	Supported See **Note 3**	--
Physical Capacity Usage %	Usage percentage of the physical capacity of the	--	float	No	Not supported	Supported See **Note 3**	(PHYSIC AL_CAPA CITY_US

Pool Configuration (PD_PLC)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
(`PHYSICAL_CAPACITY_USAGE_RATE`)	parity groups that make up the pool For the Dynamic Provisioning pool that stores a Thin Image snapshot data, the value includes the capacity of the snapshot data of the Thin Image pair using the pool.						`ED` / `PHYSICAL_CAPACITY_TOTAL`) * 100
Physical Capacity Used (`PHYSICAL_CAPACITY_USED`)	Total amount of used capacity in the physical capacity of the parity groups that make up the pool (GB) See **Note 18** For the Dynamic Provisioning pool that stores a Thin Image snapshot data, the value includes the capacity of the snapshot data of the Thin Image pair using the pool.	--	double	No	Not supported	Supported See **Note 3**	--
Physical FMC Capacity Total (`PHYSICAL_FMC_CAPACITY_TOTAL`)	The total physical capacity of the pool volume for FMC or the pool volume that supports accelerated compression used in the pool (GB) See **Note 12**	--	double	No	Not supported	Supported See **Note 5**	--
Physical FMC Capacity Used (`PHYSICAL_FMC_CAPACITY_USED`)	The actually used capacity of the parity group for FMC or the parity group that supports accelerated compression (GB) See **Note 12**	--	double	No	Not supported	Supported See **Note 3**	--

Pool Configuration (PD_PLC)								
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
Pool Capacity Expansion % (`POOL_CAPACITY _EXPANSION_RA TE`)	Expansion percentage of the pool capacity by using FMC Accelerated Compression See **Note 19**	--	float	No	Not supported	Supported See **Note 3**	--
Pool ID (`POOL_ID`)	ID of the pool	--	`string(8)`	No	Supported See **Note 1**	Supported	--
Pool Name (`POOL_NAME`)	Pool name	--	`string(64)`	No	Not supported	Supported	--

Pool Volume Count (`POOL_VOLUME_C OUNT`)	For VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage systems:
	
	    Number of Dynamic Provisioning pool volumes in the pool
	
	For HUS100 series or Hitachi AMS2000 series storage systems:
	
	    Number of parity groups in the pool
		--	ulong	No	Supported See **Note 1**	Supported	--

Record Time (`RECORD_TIME`)	Time(in GMT) when the record was stored	--	`time_t`	No	Supported See **Note 1**	Supported	--
Record Type (`INPUT_RECORD_ TYPE`)	Record type identifier, which is always set to `PLC`	--	`string(8)`	No	Supported See **Note 1**	Supported	--
Reserved Capacity	The capacity for the reserved pages in the pool (GB) See **Note 17**	--	double	No	Not supported	Supported See **Note 3**	--

Pool Configuration (PD_PLC)								
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
(RESERVED_CAPA CITY)							
Saving Capacity (SAVING_CAPACI TY)	The capacity saved by capacity saving or accelerate compression of the parity group (GB) See **Note 10** and **Note 20**	--	double	No	Not supported	Supported See **Note 5**	--
Saving Ratio (SAVING_RATIO)	Saving Effect saved by capacity saving or accelerate compression of the parity group. This is the value of N when the ratio of capacity before and after the reduction is N:1. See **Note 8** and **Note 21**	--	float	No	Not supported	Supported See **Note 5**	--
Status (STATUS)	Status of the pool For VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series storage systems: • NORMAL (the status is normal) • WARNING (the usage rate of the pool capacity has exceeded the value of the Threshold field or the Warning Threshold field)	--	string(64)	No	Supported See **Note 1**	Supported	--

Pool Configuration (PD_PLC)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
	• BLOCKED (the usage rate of the pool capacity is 100%, and the pool is blocked) For HUS100 series or Hitachi AMS2000 series storage systems: • Normal (the status is normal) • Early Alert Over (the usage rate of the pool capacity has exceeded the Early Alert threshold) • Depletion Alert Over (the usage rate of the pool capacity has exceeded the Depletion Alert threshold) • Capacity Depleted (the usage rate of the pool capacity is 100%)						
Threshold (THRESHOLD)	Threshold set for the percentage of used pool space See **Note 22**	--	float	No	Supported See **Note 1**	Supported	--
Total Actual Capacity (TOTAL_ACTUAL_CAPACITY)	Capacity of the pool (GB). See **Note 17** and **Note 23**	--	double	No	Supported See **Note 1**	Supported	--
Total Managed Capacity (TOTAL_MANAGED_CAPACITY)	Virtual capacity of all Dynamic Provisioning V-VOLs mapped to the pool (GB).	--	double	No	Supported See **Note 1**	Supported	--

Pool Configuration (PD_PLC)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
	See **Note 17** For the Dynamic Provisioning pool that stores a Thin Image snapshot data, the reserved capacity of the snapshot data of the Thin Image pair using the pool will be added.						
Usage % (`USAGE_RATE`)	Usage rate of the pool capacity. See **Note 17** For the Dynamic Provisioning V-VOLs for which pool areas are reserved, the percentage includes the capacity for the reserved pages. For the Dynamic Provisioning pool that stores a Thin Image snapshot data, the value includes the capacity of the snapshot data of the Thin Image pair using the pool.	--	`float`	No	Supported See **Note 1**	Supported	(`USED_C APACITY / TOTAL_A CTUAL_C APACITY`) * 100
Used Capacity (`USED_CAPACITY`)	Amount of pool capacity that is actually being used (GB). See **Note 17** and **Note 24** For the Dynamic Provisioning V-VOLs for which pool areas are reserved, the value includes the capacity for the reserved pages. For the Dynamic Provisioning pool that stores a Thin	--	`double`	No	Supported See **Note 1**	Supported	`TOTAL_A CTUAL_C APACITY - FREE_CA PACITY`

Pool Configuration (PD_PLC)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
	Image snapshot data, the value includes the capacity of the snapshot data of the Thin Image pair using the pool.						
Virtual Volume Count (`VIRTUAL_VOLUME_COUNT`)	Number of Dynamic Provisioning V-VOLs mapped to the pool	--	`ulong`	No	Supported See **Note 1**	Supported	--
Warning Threshold (`WARNING_THRESHOLD`)	Threshold set for the percentage of used pool space See **Note 25**	--	`float`	No	Supported See **Note 1**	Supported	--

Note: 1: Not supported by Hitachi SMS series, or Hitachi AMS/WMS series storage systems.

Note: 2: For both `0x00` and `0x02`, the deduplication function is disabled.

Note: 3: Not supported by HUS VM, Virtual Storage Platform series, and Universal Storage Platform V/VM series.

Note: 4: The capacity used by the deduplication system data volume is not included.

Note: 5: A value cannot be obtained for storage systems other than VSP G350, G370, G700, G900, VSP F350, F370, F700, F900, VSP 5000 series, VSP G1000 (versions 80-06-21 and later), G1500 (versions 80-06-21 and later) and VSP F1500 (versions 80-06-21 and later). If a value cannot be obtained, the value -1 is used.

Note: 6: The amount is stored only when the capacity saving function (dedupe and compression) is enabled. In other cases, the amount is 0.

Note: 7: The saved amount does not include the amount of metadata and garbage data.

Note: 8: If the data reduction function is disabled or the timing is just after a pool is created or a volume is deleted, the value might be -2 which indicates an invalid value. If the reduction is highly effective (the capacity after the reduction is close to 0), the value will be 99999.

Note: *9:*The saved capacity includes the amount of zero data reduction, metadata, and garbage data. If you are using VSP G200, G400, G600, G800, VSP F400, F600, F800, VSP N400, N600, N800, VSP G1000 (earlier than the version 80-06-21), G1500 (earlier than the version 80-06-21) or VSP F1500 (earlier than the version 80-06-21), the saved capacity does not includes the amount of zero data reduction, metadata, and garbage data.

Note: *10:*If the capacity after the reduction becomes larger than the capacity before the reduction, the value is -2, which indicates an invalid value.

Note: *11:*When the capacity saving function is used, the saving ratio is calculated against the amount of metadata and garbage data generated internally in addition to user data.

Note: *12:* The amount is stored only when the pool contains a parity group whose drive type is FMC and also Accelerated Compression is enabled. In other cases, the amount is 0.

Note: *13:*The saved capacity includes the amount of metadata reduction and garbage data reduction.

Note: *14:*The compressed capacity with the accelerated compression function for VSP G200, G400, G600, G800, VSP F400, F600, F800, VSP N400, N600, N800, VSP G1000 (earlier than version 80-06-21), G1500 (earlier than version 80-06-21) or VSP F1500 (earlier than version 80-06-21).

Note: *15:*Reduction rate (%) of capacity compressed by the accelerated compression function for VSP G200, G400, G600, G800, VSP F400, F600, F800, VSP N400, N600, N800, VSP G1000 (earlier than version 80-06-21), G1500 (earlier than version 80-06-21) or VSP F1500 (earlier than version 80-06-21).

Note: *16:*

- If the capacity saving function (dedupe and compression) is enabled, the amount is the amount of capacity after the capacity size is reduced.
- If the pool contains a parity group whose drive type is FMC and also Accelerated Compression is enabled, the amount is the amount that includes the capacity of the expanded area.

Note: *17:* This value is not exactly the same as the device capacity information that is recognized by the host because this capacity information is managed by the storage system.

Note: *18:* If the pool contains a parity group whose drive type is FMC and also Accelerated Compression is enabled, the value is the amount after compression.

Note: *19:* If the total amount of pool volumes created from parity groups whose drive type is FMC is less than the physical capacity of the FMC parity

groups, the value is always 100. If a parity group whose drive type is FMC does not exist, the value is 0.

Note: *20:* The saved capacity includes the amount of zero data reduction, metadata, garbage data, metadata reduction, and garbage data reduction.

Note: *21:* When the capacity saving function is used, the saving ratio is calculated against the amount of metadata, garbage data and parity data generated internally in addition to user data.

Note: *22:* The threshold value varies depending on the storage system that is monitored. The following gives the concept of the threshold value of each storage system.

- For VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems:

  System threshold (%) or depletion threshold (%). For the values to be displayed, see the manual of the storage system being used.

- For Universal Storage Platform V/VM series storage systems:

  Pool Threshold Value 1

- For HUS100 series or Hitachi AMS2000 series storage systems:

  Early Alert threshold

Note: *23:* If the pool contains a parity group whose drive type is FMC and also Accelerated Compression is enabled, the value is the amount that includes the capacity of the expanded area.

Note: *24:* If the settings of the capacity saving function (dedupe and compression) are enabled, the amount is the amount actually used after the size of the capacity is reduced. Note that if the pool contains a parity group whose drive type is FMC and also Accelerated Compression is enabled, the value does not include the compressed amount.

Note: *25:* The threshold value varies depending on the storage system that is monitored. The following gives the concept of the threshold value of each storage system.

- For VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems:

  User-defined threshold (%) or warning threshold (%). For the values to be displayed, see the manual of the storage system being used.

- For Universal Storage Platform V/VM series storage systems:

  Pool Threshold Value 2

- For HUS100 series or Hitachi AMS2000 series storage systems:

  Depletion Alert threshold

> **Note:** *26:* A value cannot be obtained for storage systems other than VSP G350, G370, G700, G900, VSP F350, F370, F700, F900, VSP 5000 series, VSP G1000 (versions 80-06-41 and later), G1500 (versions 80-06-41 and later) and VSP F1500 (versions 80-06-41 and later).

Pool Efficiency (PD_PEFF)

Function

The Pool Efficiency (`PD_PEFF`) record stores performance data indicating the ratio of the total saving effect (excluding system data) achieved by the accelerated compression, capacity saving, snapshot, and provisioning for the pool. This is a multi-instance record.

> **Note:** Agent for RAID does not collect information about Copy-on-Write Snapshot pools and Thin Image pools. If the Dynamic Provisioning pool is blocked, Agent for RAID does not collect information about the Dynamic Provisioning pool. However, if the Dynamic Provisioning pool is blocked because the usage rate of the pool capacity is 100%, Agent for RAID collects information about the pool.

Table 2-68 Pool Efficiency (PD_PEFF) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	Yes[#]
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

#

   The value of this item must be either a value that is a multiple of 60 and a divisor of 3,600, or is a value that is a multiple of 3,600 and a divisor of 86,400.

Key Fields

Pool ID (`POOL_ID`)

Lifetime

From when the Dynamic Provisioning pool is set up to when it is removed

Record Size

- Fixed part: 861 bytes
- Variable part: 120 bytes

Table 2-69 Pool Efficiency (PD_PEFF) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
AC Compression Ratio (`AC_COMP_RATIO`)	A ratio of the data saving effect achieved by compression of accelerated compression for a parity group. This is the value of N when the ratio of capacity before and after the reduction is N:1. See *Note 2*, *Note 3*	--	`float`	No	Not supported	Supported	--
AC Pattern Match Ratio (`AC_MATCH_RATIO`)	A ratio of the data saving effect achieved by reclaiming the specified data pattern using accelerated compression of a parity group. This is the value of N when the ratio of capacity before and after the reduction is N:1. See *Note 2*, *Note 3*	--	`float`	No	Not supported	Supported	--
AC Saving Ratio (`AC_SAVING_RATIO`)	A ratio of the data saving effect achieved by accelerated compression of a parity group. This is the value of N when the ratio of capacity before and after the reduction is N:1. See *Note 2*, *Note 3*	--	`float`	No	Not supported	Supported	--
Calculation End Time	The end date and time for calculating (UTC) See *Note 4*	--	`string(32)`	No	Not supported	Supported	--

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Pool Efficiency (PD_PEFF)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise** See *Note 1*	
(`CALCULATION_ END_TIME`)							
Calculation Start Time (`CALCULATION_ START_TIME`)	The start date and time for calculating (UTC) See *Note 4*	--	`string(32)`	No	Not supported	Supported	--
Collection Time (`COLLECTION_TI ME`)	Time (in GMT) when the data was collected from the storage system	--	`time_t`	No	Not supported	Supported	--
Data Reduction Ratio (`DATA_REDUCTIO N_ RATIO`)	A ratio of the data saving effect achieved by the capacity saving feature and accelerated compression of the parity group. This is the value of N when the ratio of capacity before and after the reduction is N:1. See *Note 2*, *Note 3*	--	`float`	No	Not supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	--	`ulong`	No	Not supported	Supported	--
Pool ID (`POOL_ID`)	ID of the pool	--	`string (8)`	No	Not supported	Supported	--
Provisioning Efficiency Rate (`PROVISIONING_ EFFICIENCY_RA TE`)	The provisioning effect (%) See *Note 2*	--	`float`	No	Not supported	Supported	--
Record Time (`RECORD_TIME`)	Time (in GMT) when the record is stored	--	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_ TYPE`)	Record type identifier, which is always set to PEFF	--	`string(8)`	No	Not supported	Supported	--
Snapshot Efficiency Ratio	A ratio of the snapshot effect.	--	`float`	No	Not supported	Supported	--

Pool Efficiency (PD_PEFF)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
(`SNAPSHOT_EFFICIENCY_RATIO`)	This is the value of N when the ratio of capacity before and after the reduction is N:1. See ***Note 2***, ***Note 3***						
Software Compression Ratio (`SOFTWARE_COMP_RATIO`)	A ratio of the data saving effect achieved by compression of the capacity saving feature. This is the value of N when the ratio of capacity before and after the reduction is N:1. See ***Note 2***, ***Note 3***	--	`float`	No	Not supported	Supported	--
Software Deduplication Ratio (`SOFTWARE_DEDUP_RATIO`)	A ratio of the data saving effect achieved by deduplication of the capacity saving feature. This is the value of N when the ratio of capacity before and after the reduction is N:1. See ***Note 2***, ***Note 3***	--	`float`	No	Not supported	Supported	--
Software Pattern Match Ratio (`SOFTWARE_MATCH_ RATIO`)	A ratio of the data saving effect achieved by reclaiming the specified data pattern using the capacity saving feature. This is the value of N when the ratio of capacity before and after the reduction is N:1. See ***Note 2***, ***Note 3***	--	`float`	No	Not supported	Supported	--

Working with Records

Pool Efficiency (PD_PEFF)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
Software Saving Ratio (`SOFTWARE_SAVING_ RATIO`)	A ratio of the data saving effect of the capacity saving feature. This is the value of N when the ratio of capacity before and after the reduction is N:1. See **Note 2**, **Note 3**	--	`float`	No	Not supported	Supported	--
Total Efficiency Ratio (`TOTAL_EFFICIENCY_ RATIO`)	A ratio of the total saving effect achieved by the accelerated compression, capacity saving, snapshot, and provisioning. This is the value of N when the ratio of capacity before and after the reduction is N:1. See **Note 2**, **Note 3**	--	`float`	No	Not supported	Supported	--

Note: *1:* A record cannot be created for storage systems other than VSP G350, G370, G700, G900, VSP F350, F370, F700, F900, VSP 5000 series.

Note: *2:* If a value cannot be obtained, the field value becomes one of the following:

- If the micro-version is earlier than 88-03-01, the value is -1.
- If the calculation is not complete, the value is -2.
- If the information is invalid, the value is -3.

Note: *3:* Under certain circumstances, the field value can display as 99999 (for example: before data has been written to newly-created pool or virtual volume).

Note: *4:* Times are displayed in yyyy-mm-dd hh:mm:ss format. If a value cannot be obtained, an empty character string ("") is displayed.

Pool Frequency Distribution(PD_PLF)

Function

The Pool Frequency Distribution (PD_PLF) record stores performance data indicating the page I/O processing status of the Dynamic Provisioning pool.

Notes:

- Information about Copy-on-Write Snapshot pools, Thin Image pools, and Dynamic Provisioning pools that do not have tier management enabled is not collected.

- If the Dynamic Provisioning pool is blocked, Agent for RAID does not collect information about the pool. However, if the Dynamic Provisioning pool is blocked because the usage rate of the pool capacity is 100%, Agent for RAID collects information about the pool.

For enterprise storage systems:

- History data is saved whenever monitoring information for the storage system is updated. If you collect records immediately after Agent for RAID starts, the system might collect the same data it collected earlier.

- Information about Dynamic Provisioning pools is not collected if monitoring information has never been collected by the storage system.

- If Agent for RAID is collecting records when the storage system is aggregating monitoring information, the collecting of records is canceled, and the KAVF18514-W message is output to the common log.

  If the KAVF18514-W message is output frequently, change the value of Collection Interval or Collection Offset so that the collection of monitoring information for Dynamic Provisioning pools and the collection of the PD_PLTS record do not occur at the same time.

  For details about how to change the Collection Interval or Collection Offset setting, see the chapter on managing operation monitoring data in the *Tuning Manager Agent Administration Guide*.

- If you stop and then restart the Agent, monitoring information that covers the same time period might be stored twice.

Table 2-70 Pool Frequency Distribution (PD_PLF) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	Yes See **Note 1**
Collection Offset from Top of Minute	0	Yes See **Note 2**
Log	Yes	Yes

Item	Default Value	Changeable?
LOGIF	(Blank)	No

> **Note: 1:** The value of this item must be either a value that is a multiple of 60 and a divisor of 3,600, or a multiple of 3,600 and a divisor of 86,400.

> **Note: 2:** The value of this item must be in the range from 0 to 32,767, without exceeding the value of `Collection Interval`.

Key Fields

Pool ID (`POOL_ID`) and Partition Number (`PARTITION_NUMBER`)

Lifetime

From the time when tiers are set up in a Dynamic Provisioning pool with tier management enabled to when they are removed

Record Size

- Fixed part: 681 bytes
- Variable part: 92 bytes

Table 2-71 Pool Frequency Distribution (PD_PLF) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange See *Note 1*	**Enterprise** See *Note 2*	
Avg Page I/O /sec (`AVG_PAGE_IO_RATE`)	Rate of page read/ write operations (per second) to and from the pool	--	`float`	No	Supported	Supported	--
Capacity (`CAPACITY`)	Capacity of the pool (GB)	--	`float`	No	Supported	Supported	--
Collection Time (`COLLECTION_TIME`)	Time (in GMT) when data was collected from the storage system	--	`time_t`	No	Supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which the information was collected	ADD	`ulong`	No	Supported	Supported	--

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange See *Note 1*	Enterprise See *Note 2*	
Monitor Collection End Time (`MONITOR_COLLE CTION_END_TIME`)	Time that collection of the monitoring information for the storage system ended. See *Note 3* and *Note 4*	--	`string( 32)`	No	Not support ed	Support ed	--
Monitor Collection Start Time (`MONITOR_COLLE CTION_START_TI ME`)	Time that collection of the monitoring information for the storage system started. See *Note 3* and *Note 4*	--	`string( 32)`	No	Not support ed	Support ed	--
Partition Number (`PARTITION_NUM BER`)	• For enterprise storage systems: Partition number (from 0 to 125) • For midrange storage systems: I/O section number (from 0 to 495)	--	`string( 8)`	No	Support ed	Support ed	--
Pool ID(`POOL_ID`)	Pool ID of the pool	--	`string( 8)`	No	Support ed	Support ed	--
Record Time (`RECORD_TIME`)	Time (in GMT) when data was collected from the storage system	COPY	`time_t`	No	Support ed	Support ed	--
Record Type (`INPUT_RECORD_ TYPE`)	Record type identifier, which is always set to `PLF`	COPY	`string( 8)`	No	Support ed	Support ed	--

Note: *1:* The values of these fields cannot be collected for the following storage systems: Hitachi SMS series, Hitachi AMS2000 series, and Hitachi AMS/WMS series.

Note: *2:* The value of this field cannot be collected for the following storage systems: Universal Storage Platform V/VM series.

Note: *3:* Times are obtained from the storage system.

> **Note: *4:*** Times are displayed in YYYY/MM/DD hh:mm:ss format.

Pool Page Relocation (PD_PLR)

Function

The Pool Page Relocation (`PD_PLR`) record stores performance data indicating the progress of tier relocations for Dynamic Provisioning pools that have tier management enabled. This is a multi-instance record.

Notes:

- Information about Copy-on-Write Snapshot pools, Thin Image pools, and Dynamic Provisioning pools that do not have tier management enabled is not collected.
- Agent for RAID does not collect information about a blocked Dynamic Provisioning pool except when the pool is blocked due to its usage rate reaching 100%.

For enterprise storage systems:

- History data is saved whenever tier relocation information for the storage system is updated. If you collect history data immediately after Agent for RAID starts, the data that was collected the last time might be saved again.
- Information about Dynamic Provisioning pools is not collected if tier relocation information has never been collected by the storage system.
- If Agent for RAID is collecting records when the storage system is aggregating monitoring information, the collecting of records is canceled, and the KAVF18514-W message is output to the common log.

    If the KAVF18514-W message is output frequently, change the value of `Collection Interval` or `Collection Offset` so that the collection of monitoring information for Dynamic Provisioning pools and the collection of the `PD_PLR` record do not occur at the same time.

    For details about how to change the `Collection Interval` or `Collection Offset` setting, see the *Tuning Manager Agent Administration Guide*.

Table 2-72 Pool Page Relocation (PD_PLR) Default and Changeable Values

Item	Default Value	Changeable?
`Collection Interval`	3600	Yes See **Note 1**
`Collection Offset`	0	Yes See **Note 2**

Item	Default Value	Changeable?
Log	Yes	Yes
LOGIF	(Blank)	No

> **Note: 1:** The value of this item must be either a value that is a multiple of 60 and a divisor of 3,600, or is a value that is a multiple of 3,600 and a divisor of 86,400.

> **Note: 2:** The value of this item must be in the range from 0 to 32,767, without exceeding the value of `Collection Interval`.

Key Fields

Pool ID (`POOL_ID`)

Lifetime

From the time when a Dynamic Provisioning pool that has tier management enabled and tiers are set up until the time they are removed

Record Size

- Fixed part: 681 bytes
- Variable part: 136 bytes

Table 2-73 Pool Page Relocation (PD_PLR) Fields

Pool Page Relocation (PD_PLR)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange See *Note 1*	**Enterprise** See *Note 2*	
Collection Time (`COLLECTION_TIME`)	Time (in GMT) that the data was collected from the storage system	--	`time_t`	No	Supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which the information was collected	--	`ulong`	No	Supported	Supported	--
Moved Pages (`MOVED PAGES`)	Number of pages moved by tier relocation	--	`ulong`	No	Supported	Supported	--
Pool ID (`POOL_ID`)	ID of the pool	--	`string(8)`	No	Supported	Supported	--

Pool Page Relocation (PD_PLR)								
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange See *Note 1*	**Enterprise** See *Note 2*	
Progress % (`PROGRESS_RATE`)	Progress of tier relocation (%). See ***Note 3***	--	`double`	No	Supported	Supported	--
Record Time (`RECORD_TIME`)	Time (in GMT) that data was collected from the storage system and the record was generated	--	`time_t`	No	Supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier. The value is always `PLR`.	--	`string(8)`	No	Supported	Supported	--
Relocation End Time (`RELOCATION_END_TIME`)	Time that tier relocation of the storage system ended See ***Note 4*** and ***Note 5***	--	`string(32)`	No	Not supported	Supported	--
Relocation Start Time (`RELOCATION_START_TIME`)	Time that tier relocation of the storage system started See ***Note 4*** and ***Note 5***	--	`string(32)`	No	Not supported	Supported	--
Relocation Status (`RELOCATION_STATUS`)	Tier relocation completion statuses • For enterprise storage systems: - Finished - Interruption • For midrange storage systems: - Stop - Relocating - Pause - (Null string)***Note 6***	--	`string(16)`	No	Supported	Supported	--
Relocation Time (`RELOCATION_TIME`)	The amount of time required for tier	--	`string(32)`	No	Not supported	Supported	--

Pool Page Relocation (PD_PLR)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange See *Note 1*	Enterprise See *Note 2*	
	relocation in the storage system See ***Note 7***						

Note: *1:* The values of these fields cannot be collected for the following storage systems: Hitachi SMS series, Hitachi AMS2000 series, and Hitachi AMS/WMS series.

Note: *2:* Not supported by Universal Storage Platform V/VM series storage systems.

Note: *3:* Depending on the current status of data placement among the tiers, the amount of time required for tier relocation (as predicted by the progress percentage) might not match the actual time required.

Note: *4:* The time of the storage system is obtained.

Note: *5:* The value is displayed in *YYYY*/*MM*/*DD hh*:*mm*:*ss* format.

Note: *6:* Indicates that the tier relocation is in an invalid status.

Note: *7:* Times are displayed in hh:mm:ss format.

Pool Summary (PI_PLS)

Function

The Pool Summary (`PI_PLS`) record stores performance data indicating the operation status of the Dynamic Provisioning pool. This is a multi-instance record.

Note:

- Agent for RAID does not collect information about Copy-on-Write Snapshot pools and Thin Image pools.
- If Agent for RAID has started in SLPR restricted mode, it collects only the information on Dynamic Provisioning pools that belong to the monitored SLPR.

Table 2-74 Pool Summary (PI_PLS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	300	Yes See **Note 1**
Collection Offset	0	Yes See **Note 2**
Log	Yes	Yes
LOGIF	(Blank)	No

> **Note: 1:** This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.
> Note, however, that if you set a value smaller than the default value for Collection Interval, the KAVE00227-W message might be output repeatedly to the common message log.
> For details about how to resolve this problem, see the *Tuning Manager Agent Administration Guide*.

> **Note: 2:** This value can be changed to any value that is valid for Collection Interval.

Key Fields

Pool ID (POOL_ID)

Lifetime

From when the Dynamic Provisioning pool is set up to when it is removed

Record Size

- Fixed part: 677 bytes
- Variable part: 108 bytes

Table 2-75 Pool Summary (PI_PLS) Fields

Pool Summary (PI_PLS)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	**Supported Storage**		Data Source
					Midrange See *Note 1*	Enterprise	
Interval (INTERVAL)	Interval (in seconds) at which information is collected	ADD	ulong	No	Supported	Supported	--

Pool Summary (PI_PLS)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange See *Note 1*	**Enterprise**	
Pool ID (`POOL_ID`)	ID of the pool	COPY	`string(8)`	No	Supported	Supported	--
Read I/O /sec (`READ_IO_RATE`)	Frequency of read operations (times per second) for virtual volumes mapped to the Dynamic Provisioning pool See *Note 2*	%	`float`	No	Supported	Supported See *Note 3*	--
Read Response Rate (`READ_RESPONSE_RATE`)	Average processing time per read request (in microseconds) for virtual volumes mapped to the Dynamic Provisioning pool See *Note 2*	%	`float`	No	Supported	Supported See *Note 4*	--
Read Xfer /sec (`READ_XFER_RATE`)	Total read data transfer rate for virtual volumes mapped to the Dynamic Provisioning pool (megabytes per second) See *Note 2*	%	`float`	No	Supported	Supported See *Note 4*	--
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to `PLS`	COPY	`string(8)`	No	Supported	Supported	--
Write I/O /sec (`WRITE_IO_RATE`)	Frequency of write operations (times per second) for virtual volumes mapped to the Dynamic Provisioning pool See *Note 2*	%	`float`	No	Supported	Supported See *Note 3*	--

Pool Summary (PI_PLS)								
View Name (Manager Name)	Description	Sum Rule	Format	Delta	**Supported Storage**		Data Source
					Midrange See *Note 1*	Enterprise	
Write Response Rate (`WRITE_RESPONSE_RATE`)	Average processing time per write request (in microseconds) for virtual volumes mapped to the Dynamic Provisioning pool See **Note 2**	%	`float`	No	Supported	Supported See **Note 4**	--
Write Xfer /sec (`WRITE_XFER_RATE`)	Total write data transfer rate for virtual volumes mapped to the Dynamic Provisioning pool (megabytes per second) See **Note 2**	%	`float`	No	Supported	Supported See **Note 4**	--

Note: *1:* The values of these fields cannot be collected for the following storage systems: Hitachi SMS series and Hitachi AMS/WMS series.

Note: *2:* Performance values do not include information about virtual volumes that are used as S-VOLs of Thin Image.

Note: *3:* For VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems, the field value is `0` when the mainframe emulation type is set for a Dynamic Provisioning pool and the `Mainframe Volume Monitoring` value for that pool is `N`.

Note: *4:* For Dynamic Provisioning pools for which the mainframe emulation type is set, this value can be collected only for when the storage system is VSP 5000 series, VSP G1000 (80-03 or later), G1500, or VSP F1500.

Pool Tier Page Relocation (PD_PLTR)

Function

The Pool Tier Page Relocation (`PD_PLTR`) record stores performance data indicating the number of pages moved by tier relocations for Dynamic Provisioning pools that have tier management enabled. This is a multi-instance record.

Notes:

- Information about Copy-on-Write Snapshot pools, Thin Image pools, and Dynamic Provisioning pools that do not have tier management enabled is not collected.
- Agent for RAID does not collect information about a blocked Dynamic Provisioning pool except when the pool is blocked due to its usage rate reaching 100%.

For enterprise storage systems:

- History data is saved whenever tier relocation information for the storage system is updated. If you collect history data immediately after Agent for RAID starts, the data that was collected the last time might be saved again.

- Information about Dynamic Provisioning pools is not collected if tier relocation information has never been collected by the storage system.

- If Agent for RAID is collecting records when the storage system is aggregating monitoring information, the collecting of records is canceled, and the KAVF18514-W message is output to the common log.

  If the KAVF18514-W message is output frequently, change the value of `Collection Interval` or `Collection Offset` so that the collection of monitoring information for Dynamic Provisioning pools and the collection of the `PD_PLTR` record do not occur at the same time.

  For details about how to change the `Collection Interval` or `Collection Offset` setting, see the *Tuning Manager Agent Administration Guide*.

Table 2-76 Pool Tier Page Relocation (PD_PLTR) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	Yes See **Note 1**
Collection Offset	0	Yes See **Note 2**
Log	Yes	Yes
LOGIF	(Blank)	No

Note: 1: The value of this item must be either a value that is a multiple of 60 and a divisor of 3,600, or a value that is a multiple of 3,600 and a divisor of 86,400.

Note: 2: The value of this item must be in the range from 0 to 32,767, without exceeding the value of `Collection Interval`.

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Key Fields

Pool ID (`POOL_ID`), Tier Type (`TIER_TYPE`)

Lifetime

From the time when a Dynamic Provisioning pool that has tier management enabled and tiers are set up until the time they are removed

Record Size

- Fixed part: 681 bytes
- Variable part: 188 bytes

Table 2-77 Pool Tier Page Relocation (PD_PLTR) Fields

Pool Tier Page Relocation (PD_PLTR)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange See *Note 1*	Enterprise See *Note 2*	
Collection Time (`COLLECTION_TIME`)	Time (in GMT) that the data was collected from the storage system	--	`time_t`	No	Supported	Supported	--
Demoted Pages (`DEMOTED_PAGES`)	Number of pages moved to lower-level tiers	--	`ulong`	No	Supported	Supported	--
Display Drive Type (`DISPLAY_DRIVE_TYPE`)	Type of the tier (display name)	--	`string(32)`	No	Not supported	Supported	--
Interval (`INTERVAL`)	Interval in seconds at which information was collected	--	`ulong`	No	Supported	Supported	--
Pool ID (`POOL_ID`)	ID of the pool	--	`string(8)`	No	Supported	Supported	--
Promoted Pages (`PROMOTED_PAGES`)	Number of pages moved to upper-level tiers	--	`ulong`	No	Supported	Supported	--
Record Time (`RECORD_TIME`)	Time (in GMT) that data was collected from the storage system and the record was generated	--	`time_t`	No	Supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier. The	--	`string(8)`	No	Supported	Supported	--

Pool Tier Page Relocation (PD_PLTR)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange See *Note 1*	**Enterprise** See *Note 2*	
	value is always `PLTR`.						
Relocation End Time (`RELOCATION_EN D_TIME`)	Time that tier relocation of the storage system ended See ***Note 3*** and ***Note 4***	--	`string(32)`	No	Not supported	Supported	--
Relocation Start Time (`RELOCATION_ST ART_TIME`)	Time that tier relocation of the storage system started See ***Note 3*** and ***Note 4***	--	`string(32)`	No	Not supported	Supported	--
Relocation Time (`RELOCATION_TI ME`)	The amount of time required for tier relocation in the storage system See ***Note 5***	--	`string(32)`	No	Not supported	Supported	--
Tier Number (`TIER_NUMBER`)	Tier number	--	`string(8)`	No	Supported	Supported	--
Tier Type (`TIER_TYPE`)	Type of the tier See ***Note 6***	--	`string(32)`	No	Supported	Supported	--

Note: *1:* The values of these fields cannot be collected for the following storage systems: Hitachi SMS series, Hitachi AMS2000 series, and Hitachi AMS/WMS series.

Note: *2:* Not supported by Universal Storage Platform V/VM series storage systems.

Note: *3:* The time of the storage system is obtained.

Note: *4:* The value is displayed in *YYYY*/*MM*/*DD hh*:*mm*:*ss* format.

Note: *5:*Times are displayed in hh:mm:ss format.

Note: *6:* For a flash drive, the field values are as follows:
"SSD SLC", "SSD MLC", "FMD", "FMC", "SSD Mixed", "SSD(RI)", "SSD NVMe"

- "FMC" is the value to be stored when the drive type is FMC, FMD DC2, or FMD HDE.
- "SSD Mixed" is the value to be stored when different types of flash drives exist.

Pool Tier Type Configuration (PD_PLTC)

Function

The Pool Tier Type Configuration (`PD_PLTC`) record stores performance data indicating the operation status for each tier type of a Dynamic Provisioning pool that has tier management enabled. This is a multi-instance record.

Notes:

○ Agent for RAID does not collect information about a Copy-on-Write Snapshot pool or a Thin Image pool, or a Dynamic Provisioning pool that has tier management disabled.

○ If the Dynamic Provisioning pool is blocked, Agent for RAID does not collect information about the pool. However, if the Dynamic Provisioning pool is blocked because the usage rate of the pool capacity is 100%, Agent for RAID collects information about the pool.

○ The capacity information for this record is not exactly the same as the device capacity information that is recognized by the host because this capacity information is managed by the storage system.

Table 2-78 Pool Tier Type Configuration (PD_PLTC) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	Yes See **Note 1**
Collection Offset	0	Yes See **Note 2**
Log	Yes	Yes
LOGIF	(Blank)	No

Note: 1: This value can be changed to a value in the range from 3,600 to 86,400. The value must be a multiple of 3,600 and a divisor of 86,400.

Note: 2: This value can be changed to a value available for `Collection Interval` and in the range from 0 to 32,767.

Key Fields

Pool ID (`POOL_ID`), Tier Type (`TIER_TYPE`)

Lifetime

From when the tier and a Dynamic Provisioning pool that has tier management enabled are set up to when it is removed

Record Size

- Fixed part: 681 bytes
- Variable part: 220 bytes

Table 2-79 Pool Tier Type Configuration (PD_PLTC) Fields

Pool Tier Type Configuration (PD_PLTC)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange See *Note 1*	**Enterprise** See *Note 2*	
Collection Time (`COLLECTION_TIME`)	Time (in GMT) that the data was collected from the storage system	--	`time_t`	No	Supported	Supported	--
Display Drive Type (`DISPLAY_DRIVE_TYPE`)	Type of the tier (display name)	--	`string(32)`	No	Not supported	Supported	--
FMC Capacity Expansion % (`FMC_CAPACITY_EXPANSION_RATE`)	Expansion percentage of the FMC capacity by using Accelerated Compression See *Note 3* and *Note 4*	--	float	No	Not supported	Supported See *Note 5*	--
FMC Pool Capacity Free (`FMC_POOL_CAPACITY_FREE`)	Total amount of free capacity in the FMC volumes that make up the tier (GB) See *Note 4* and *Note 6*	--	double	No	Not supported	Supported See *Note 5*	--
FMC Pool Capacity Saving (`FMC_POOL_CAPACITY_SAVING`)	Amount of used capacity in the tier that was reduced by FMC compression functionality (GB) See *Note 7*	--	double	No	Not supported	Supported See *Note 5*	--
FMC Pool Capacity Saving %	Percentage of used capacity in the tier that was reduced by FMC compression functionality	--	float	No	Not supported	Supported See *Note 5*	(`FMC_POOL_CAPACITY_SAVING` / `FMC_POOL_CAPAC`

Pool Tier Type Configuration (PD_PLTC)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange See *Note 1*	Enterprise See *Note 2*	
(`FMC_POOL_CAPA CITY_SAVING _RATE`)							`ITY_USE D`) * 100
FMC Pool Capacity Total (`FMC_POOL_CAPA CITY_TOTAL`)	Total amount of capacity of the FMC volumes that make up the tier (GB) See *Note 4* and *Note 6*	--	double	No	Not supported	Supported See *Note 5*	--
FMC Pool Capacity Usage % (`FMC_POOL_CAPA CITY_USAGE_RA TE`)	Usage percentage of the capacity of the FMC volumes that make up the tier See *Note 4*	--	float	No	Not supported	Supported See *Note 5*	(`FMC_PO OL_CAPA CITY_US ED` / `FMC_POO L_CAPAC ITY_TOT AL`) * 100
FMC Pool Capacity Used (`FMC_POOL_CAPA CITY_USED`)	Total amount of capacity of the FMC volumes that make up the tier that is being used by data See *Note 4* and *Note 8*	--	double	No	Not supported	Supported See *Note 5*	--
Free Capacity (`FREE_CAPACITY`)	Free capacity of the tier (GB) See *Note 6*	--	`double`	No	Supported	Supported	`PD_PLTC _TOTAL_ CAPACIT Y` - `PD_PLTC _USED_C APACITY`
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	--	`ulong`	No	Supported	Supported	--
Monitoring Mode (`MONITORING_MO DE`)	Monitoring mode • Period Mode • Continuous Mode	--	`string(32)`	No	Not supported	Supported	--
Physical FMC Capacity Free (`PHYSICAL_FMC_ CAPACITY_FREE`)	Total amount of free capacity in the physical capacity of the parity groups that make up the tier (GB)	--	double	No	Not supported	Supported See *Note 5*	--

Pool Tier Type Configuration (PD_PLTC)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange See *Note 1*	Enterprise See *Note 2*	
	See *Note 9*						
Physical FMC Capacity Total (`PHYSICAL_FMC_CAPACITY_TOTAL`)	Total amount of the physical capacity of the parity groups that make up the tier (GB)	--	double	No	Not supported	Supported See *Note 5*	--
Physical FMC Capacity Usage % (`PHYSICAL_FMC_CAP_USAGE_RATE`)	Usage percentage of the physical capacity of the parity groups that make up the tier	--	float	No	Not supported	Supported See *Note 5*	(`PHYSICAL_FMC_CAPACITY_USED` / `PHYSICAL_FMC_CAPACITY_TOTAL`) * 100
Physical FMC Capacity Used (`PHYSICAL_FMC_CAPACITY_USED`)	Total amount of used capacity in the physical capacity of the parity groups that make up the tier (GB) See *Note 9*	--	double	No	Not supported	Supported See *Note 5*	--
Pool ID (`POOL_ID`)	ID of the pool	--	string(8)	No	Supported	Supported	--
Record Time (`RECORD_TIME`)	Time (in GMT) that the record was stored	--	time_t	No	Supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to `PLTC`	--	string(8)	No	Supported	Supported	--
Tier Number (`TIER_NUMBER`)	Tier number	--	string(8)	No	Supported	Supported	--
Tier Type (`TIER_TYPE`)	Tier type See *Note 10*	--	string(32)	No	Supported	Supported	--
Total Capacity (`TOTAL_CAPACITY`)	Capacity of the tier (GB) See *Note 6*	--	double	No	Supported	Supported	--
Usage % in Pool (`USAGE_RATE_IN_POOL`)	Of the total capacity of a Dynamic Provisioning pool that has tier management	--	float	No	Supported	Supported	(`PD_PLTC_USED_CAPACITY` / `PD_PLC_TOTAL_A`

Pool Tier Type Configuration (PD_PLTC)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange See *Note 1*	Enterprise See *Note 2*	
	enabled, the percentage of the pool used by the tier (%)						CTUAL_C APACITY) * 100
Usage % in Tier (USAGE_RATE_IN _TIER)	Of the capacity of the tier, the percentage of the capacity used (%)	--	float	No	Supported	Supported	(PD_PLT C_USED_ CAPACIT Y / PD_PLTC _TOTAL_ CAPACIT Y) * 100
Used Capacity (USED_CAPACITY)	Amount of tier capacity that is actually being used (GB) See *Note 8*	--	double	No	Supported	Supported	--

Note: *1:* The values of these fields cannot be collected for the following storage systems: Hitachi SMS series, Hitachi AMS2000 series, and Hitachi AMS/WMS series.

Note: *2:* Not supported by Universal Storage Platform V/VM series storage systems.

Note: *3:* If the total amount of pool volumes created from FMC parity groups is less than the physical capacity of the FMC parity groups, the value is always 100.

Note: *4:* If a parity group whose drive type is FMC does not exist, the value is 0.

Note: *5:* Not supported by HUS VM, Virtual Storage Platform series, and Universal Storage Platform V/VM series.

Note: *6:* If the pool contains a parity group whose drive type is FMC and also Accelerated Compression is enabled, the value is the amount that includes the capacity of expanded area.

Note: *7:* A value is stored only when the pool contains a parity group whose drive type is FMC and also Accelerated Compression is enabled. In other cases, the value is 0.

Note: *8:* If the pool contains a parity group whose drive type is FMC and also Accelerated Compression is enabled, the value is the amount before compression.

Note: *9:* If the pool contains a parity group whose drive type is FMC and also Accelerated Compression is enabled, the value is the amount after compression.

Note: *10:* For a flash drive, the field values are as follows:
"SSD SLC", "SSD MLC", "FMD", "FMC", "SSD Mixed", "SSD(RI)", "SSD NVMe"

- "FMC" is the value to be stored when the drive type is FMC, FMD DC2, or FMD HDE.
- "SSD Mixed" is the value to be stored when different types of flash drives exist.

Pool Tier Type I/O Information (PI_PLTI)

Function

The Pool Tier Type I/O Information (`PI_PLTI`) record stores performance data indicating the execution status of read and write processing for each type of tier for Dynamic Provisioning pools that have tier management enabled. This is a multi-instance record.

Notes:

- Information about Copy-on-Write Snapshot pools, Thin Image pools and Dynamic Provisioning pools that do not have tier management enabled is not collected.
- Agent for RAID does not collect information about a blocked Dynamic Provisioning pool except when the pool is blocked due to its usage rate reaching 100%.

Table 2-80 Pool Tier Type I/O Information (PI_PLTI) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	900	Yes See ***Note***
Collection Offset	0	No
Log	Yes	No
LOGIF	(Blank)	No

Note: The value of this item must be a value that is a multiple of 300 and a divisor of 3,600.

Key Fields

Pool ID (`POOL_ID`), Tier Type (`TIER_TYPE`)

Lifetime

From the time when a Dynamic Provisioning pool that has tier management enabled is set up until the time when the pool is removed

Record Size

- Fixed part: 677 bytes
- Variable part: 72 bytes

Table 2-81 Pool Tier Type I/O Information (PI_PLTI) Fields

Pool Tier Type I/O Information (PI_PLTI)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See *Note 1***	
Avg I/O /sec (`AVG_IO_RATE`)	Average read and write processing rate (number of times per second) for the tier, excluding cache hits. The average number of backend I/Os for the tier is displayed. For the entire pool (when the value of the Tier Type field is `_Total`), average read and write processing rate (number of times per second) in the pool is displayed. In this case, the average total number of backend I/Os for the tiers in the pool is displayed.	AVG	`double`	No	Not supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which information was collected	ADD	`ulong`	No	Not supported	Supported	--
Pool ID (`POOL_ID`)	ID of the pool	--	`string(8)`	No	Not supported	Supported	--

Pool Tier Type I/O Information (PI_PLTI)								
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
Record Time (RECORD_TIME)	Time (in GMT) that the data was collected from the storage system and the record was generated	COPY	time_t	No	Not supported	Supported	--
Record Type (INPUT_RECORD_TYPE)	Record type identifier. The value is always PLTI.	COPY	string(8)	No	Not supported	Supported	--
Tier Number (TIER_NUMBER)	Number of the tier For the entire pool (when the value of the Tier Type field is _Total), a null string is displayed.	--	string(8)	No	Not supported	Supported	--
Tier Type (TIER_TYPE)	Type of the tier See *Note 2* When the value of this field is _Total, this record displays information about the entire pool (summary information about tiers in the pool).	--	string(32)	No	Not supported	Supported	--

Note: *1:* Not supported by Universal Storage Platform V/VM series storage systems.

Note: *2:* For a flash drive, the field values are as follows:
"SSD SLC", "SSD MLC", "FMD", "FMC", "SSD Mixed", "SSD(RI)", "SSD NVMe"

- "FMC" is the value to be stored when the drive type is FMC, FMD DC2, or FMD HDE.
- "SSD Mixed" is the value to be stored when different types of flash drives exist.

Pool Tier Type Operation Status (PD_PLTS)

Function

The Pool Tier Type Operation Status (PD_PLTS) record stores performance data indicating the operation status for each tier type of a Dynamic

Provisioning pool that has tier management enabled. This is a multi-instance record.

Notes:

- Agent for RAID does not collect information about a Copy-on-Write Snapshot pool, a Thin Image pool, or a Dynamic Provisioning pool that has tier management disabled.
- If the Dynamic Provisioning pool is blocked, Agent for RAID does not collect information about the pool. However, if the Dynamic Provisioning pool is blocked because the usage rate of the pool capacity is 100%, Agent for RAID collects information about the pool.

For enterprise storage systems:

- History data is stored only when the monitoring information for the storage system is updated. However, if you collect the record immediately after Agent for RAID starts, the same data that was collected last might be stored.
- Information about the Dynamic Provisioning pool is not collected if monitoring information has never been collected in the storage system.
- If the storage system aggregates monitoring information while Agent for RAID is collecting records, the collection of the records is canceled. In this case, the KAVF18514-W message is output to the common log.

  If the KAVF18514-W message is frequently output, change the setting of `Collection Interval` or `Collection Offset` so that the monitoring information and the `PD_PLTS` record for the Dynamic Provisioning pool are not collected at the same time.

  For details about how to change the setting of `Collection Interval` or `Collection Offset`, see the *Tuning Manager Agent Administration Guide*.

Table 2-82 Pool Tier Type Operation Status (PD_PLTS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	Yes See **Note 1**
Collection Offset	0	Yes See **Note 2**
Log	Yes	Yes
LOGIF	(Blank)	No

Note: 1: This value can be changed to a multiple of 60 that is a divisor of 3,600 or a multiple of 3,600 that is a divisor of 86,400.

Note: 2: This value can be changed to a value available for `Collection Interval` and in the range from 0 to 32,767.

Key Fields

Pool ID (`POOL_ID`), Tier Type (`TIER_TYPE`)

Lifetime

From when the tier and a Dynamic Provisioning pool that has tier management enabled are set up to when it is removed

Record Size

- Fixed part: 681 bytes
- Variable part: 160 bytes

Table 2-83 Pool Tier Type Operation Status (PD_PLTS) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange See *Note 1*	Enterprise See *Note 2*	
Avg I/O /sec (`AVG_IO_RATE`)	Frequency of I/O operations (times per second) processed by the tier within the time period defined in the storage system. See *Note 3*	--	`ulong`	No	Not supported	Supported	--
Avg IOPS Utilization % (`AVG_IOPS_UTILIZATION_RATE`)	Activity rate of the tier (%). Percentage of total I/Os that were actually processed by the tier compared to the number of I/Os that can be processed by the tier within the time period defined in the storage system. See *Note 3*	--	`float`	No	Supported	Supported	--
Collection Time (`COLLECTION_TIME`)	Time (in GMT) that the data was collected from the storage system	--	`time_t`	No	Supported	Supported	--
Display Drive Type	Type of the tier (display name)	--	`string(32)`	No	Not supported	Supported	--

Pool Tier Type Operation Status (PD_PLTS)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange See *Note 1*	Enterprise See *Note 2*	
(DISPLAY_DRIVE _TYPE)							
Interval (INTERVAL)	Interval (in seconds) at which information is collected	--	ulong	No	Supported	Supported	--
Monitor Collection End Time (MONITOR_COLLE CTION_END_TIM E)	Time that collection of the monitoring information for the storage system ended. See *Note 4* and *Note 5*	--	string(32)	No	Not supported	Supported	--
Monitor Collection Start Time (MONITOR_COLLE CTION_START_T IME)	Time that collection of the monitoring information for the storage system started. See *Note 4* and *Note 5*	--	string(32)	No	Not supported	Supported	--
Pool ID (POOL_ID)	ID of the pool	--	string(8)	No	Supported	Supported	--
Record Time (RECORD_TIME)	Time (in GMT) that the record was stored	--	time_t	No	Supported	Supported	--
Record Type (INPUT_RECORD_ TYPE)	Record type identifier, which is always set to PLTS	--	string(8)	No	Supported	Supported	--
Tier Number (TIER_NUMBER)	Tier number	--	string(8)	No	Supported	Supported	--
Tier Range I/O /sec (TIER_RANGE_IO _RATE)	Minimum I/O rate of the tier (operations per second). Pages that do not attain this minimum rate are subject to relocation to a lower-level tier. For the bottom tier, the value of this field is 0.	--	float	No	Supported	Supported	--
Tier Type (TIER_TYPE)	Tier type See *Note 6*	--	string(32)	No	Supported	Supported	--

Note: *1:* The values of these fields cannot be collected for the following storage systems: Hitachi SMS series, Hitachi AMS2000 series, and Hitachi AMS/WMS series.

Note: *2:* Not supported by Universal Storage Platform V/VM series storage systems.

Note: *3:* If the monitoring mode of the Dynamic Provisioning pool is Continuous Mode, the value is predicted based on the trends of past performance values.

Note: *4:* Times are obtained from the storage system.

Note: *5:* Times are displayed in *YYYY*/*MM*/*DD hh*:*mm*:*ss* format.

Note: *6:* For a flash drive, the field values are as follows:
"SSD SLC", "SSD MLC", "FMD", "FMC", "SSD Mixed", "SSD(RI)", "SSD NVMe"

- "FMC" is the value to be stored when the drive type is FMC, FMD DC2, or FMD HDE.
- "SSD Mixed" is the value to be stored when different types of flash drives exist.

Port Configuration (PD_PTC)

Function

The Port Configuration (`PD_PTC`) record stores the performance data indicating the configuration information of the port of the storage system. This is a multi-instance record.

Note:

- If Agent for RAID has started in SLPR restricted mode, it collects only the information on ports that belong to the monitored SLPR.
- The items in 1 and 2 below all have the same field name (`Port Number`), but the values output to the items in 1 are different from those output to the items in 2.

  1. the Port Number field of the PD_PTC record or the PI_PTS record

  2. the Port Number field of the PI_MPTS record or the PI_PTSX record

  For this reason, if you want to check whether the port information of one record matches that of another record, check the port name field (`Port Name`).

Table 2-84 Port Configuration (PD_PTC) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	No
Collection Offset	0	
Log	Yes	
LOGIF	(Blank)	

Key Fields

Port Number (PORT_NUMBER)

Lifetime

From when the port is set up to when it is removed

Record Size

- Fixed part: 681 bytes
- Variable part: 167 bytes

Table 2-85 Port Configuration (PD_PTC) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage Midrange	Supported Storage Enterprise	Data Source
AL-PA (AL_PA)	This field cannot be used because it is reserved.	--	--	--	--	--	--
CHA Name (CHA_NAME)	Name of the channel adapter	COPY	string(16)	No	--	Supported	--
Collection Time (COLLECTION_TIME)	Time (in GMT) when the data was collected from the storage system	--	time_t	No	Supported	Supported	--
Interval (INTERVAL)	Interval (in seconds) at which information is collected	--	ulong	No	Supported	Supported	--
Port Name (PORT_NAME)	Name of the storage system port	--	string(64)	No	Supported	Supported	--
Port Number (PORT_NUMBER)	Number of the storage system port	--	string(8)	No	Supported	Supported	--

Port Configuration (PD_PTC)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
Port Role (`PORT_ROLE`)	Role of the storage system port. ***Example:*** • Target • Initiator • RCU Target • External • Bidirectional • (Null string) : If the port type is `FICON`	--	`string(16)`	No	Not supported	Supported See ***Note 1***	--
Port Speed (`PORT_SPEED`)	Configured value for the speed of the storage system port	--	`string(8)`	No	Supported See ***Note 2***	Supported See ***Note 2***	--
Port Status (`PORT_STATUS`)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Port Type (`PORT_TYPE`)	Type of the storage system port	--	`string(8)`	No	Supported	Supported	--
Port WWN (`PORT_WWN`)	WWN of the storage system port	--	`string(32)`	No	Supported See ***Note 2***	Supported See ***Note 2***	--
Record Time (`RECORD_TIME`)	Time (in GMT) when the record is stored	--	`time_t`	No	Supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to `PTC`	--	`string(8)`	No	Supported	Supported	--
SLPR Number (`SLPR_NUMBER`)	Number of the SLPR to which the storage system port belongs	--	`string(8)`	No	Not supported	Supported See ***Note 3***	--

> **Note: *1:*** The value of this field cannot be collected if the type of port on the storage system is `FICON`.

> **Note: *2:*** For the following storage systems, the value of this field can be collected only when the type of the port on the storage system is `FIBRE` or `FCoE`:
> • HUS100 series

- Hitachi SMS series
- Hitachi AMS2000 series
- Hitachi AMS/WMS series
- VSP Gx00 models
- VSP Fx00 models
- VSP Nx00 models
- HUS VM
- VSP 5000 series
- VSP G1000
- VSP G1500
- VSP F1500
- Virtual Storage Platform series
- Universal Storage Platform V/VM series

Note: *3:* Not supported by VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, or Virtual Storage Platform series storage systems.

Port Summary (PI_PTS)

Function

The Port Summary (`PI_PTS`) record stores the performance data indicating the read and write status of each port of the storage system. This is a multi-instance record.

Note:

- If Agent for RAID has started in SLPR restricted mode, it collects only the information on ports that belong to the monitored SLPR.
- The items in 1 and 2 below all have the same field name (`Port Number`), but the values output to the items in 1 are different from those output to the items in 2.
  1. the Port Number field of the PD_PTC record or the PI_PTS record
  2. the Port Number field of the PI_MPTS record or the PI_PTSX record
  For this reason, if you want to check whether the port information of one record matches that of another record, check the port name field (`Port Name`).

Table 2-86 Port Summary (PI_PTS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes See ***Note***
Collection Offset	0	No

Item	Default Value	Changeable?
Log	Yes	
LOGIF	(Blank)	

Note: This value can be changed to a value from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600. In addition, the value of `Collection Interval` can be changed only when one of the following storage systems is being monitored:

- Hitachi AMS2000/AMS/WMS/SMS series
- HUS100 series
- Universal Storage Platform V/VM series
- VSP Gx00 models
- VSP Fx00 models
- VSP Nx00 models
- HUS VM
- VSP 5000 series
- VSP G1000
- VSP G1500
- VSP F1500
- Virtual Storage Platform series

Key Fields

Port Number (`PORT_NUMBER`)

Lifetime

From when the port is set up to when it is removed

Record Size

- Fixed part: 677 bytes
- Variable part: 340 bytes

Table 2-87 Port Summary (PI_PTS) Fields

Port Summary (PI_PTS)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
Avg I/O /sec (`AVG_IO_RATE`)	Average frequency of read and write operations for the storage system	%	`float`	No	Supported See ***Note 1*** and ***Note 2***	Supported See ***Note 3***	--

Port Summary (PI_PTS)								
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
	port (number of times per second)						
Avg Xfer /sec (AVG_XFER_RATE)	Average read and write transfer speed for the storage system port (MB per second)	%	`float`	No	Supported See **Note 1** and **Note 2**	Supported See **Note 3**	--
CHA Name (CHA_NAME)	Name of the channel adapter	COPY	`string(16)`	No	--	Supported	--
Initiator Avg I/O /sec (INITIATOR_AVG _IO_RATE)	Average frequency of read and write operations for the storage system port (number of times per second) (total number of initiator and external ports) See **Note 4**	%	float	No	--	Supported See **Note 5**	--
Initiator Avg Xfer /sec (INITIATOR_AVG _XFER_RATE)	Average read and write transfer speed for the storage system port (MB per second) (total number of initiator and external ports) See **Note 4**	%	float	No	--	Supported See **Note 5**	--
Initiator Max I/O /sec (INITIATOR_MAX _IO_RATE)	Maximum frequency of read and write operations for the storage system port (number of times per second) (total number of initiator and external ports) See **Note 4** and **Note 6**.	HI	float	No	--	Supported See **Note 5**	--
Initiator Max Xfer /sec (INITIATOR_MAX _XFER_RATE)	Maximum read and write transfer speed for the storage system port (MB per second) (total	HI	float	No	--	Supported See **Note 5**	--

Port Summary (PI_PTS)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
	number of initiator and external ports) See **Note 4** and **Note 6**.						
Initiator Min I/O /sec (INITIATOR_MIN _IO_RATE)	Minimum frequency of read and write operations for the storage system port (number of times per second) (total number of initiator and external ports) See **Note 4** and **Note 6**.	LO	float	No	--	Supported See **Note 5**	--
Initiator Min Xfer /sec (INITIATOR_MIN _XFER_RATE)	Minimum read and write transfer speed for the storage system port (MB per second) (total number of initiator and external ports) See **Note 4** and **Note 6**.	LO	float	No	--	Supported See **Note 5**	--
Initiator Total IO Count (INITIATOR_TOT AL_IO_COUNT)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Initiator Total Mbytes (INITIATOR_TOT AL_MBYTES)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Interval (INTERVAL)	Interval (in seconds) at which information is collected	ADD	ulong	No	Supported	Supported	--
Max I/O /sec (MAX_IO_RATE)	Maximum frequency of read and write operations for the storage system port (number of times per second). See **Note 6**.	HI	float	No	Supported See **Note 1** and **Note 2**	Supported See **Note 3**	--

Port Summary (PI_PTS)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
Max Xfer /sec (`MAX_XFER_RATE`)	Maximum read and write transfer speed for the storage system port (MB per second). See ***Note 6***.	HI	`float`	No	Supported See ***Note 1*** and ***Note 2***	Supported See ***Note 3***	--
Min I/O /sec (`MIN_IO_RATE`)	Minimum frequency of read and write operations for the storage system port (number of times per second). See ***Note 6***.	LO	`float`	No	Supported See ***Note 1*** and ***Note 2***	Supported See ***Note 3***	--
Min Xfer /sec (`MIN_XFER_RATE`)	Minimum read and write transfer speed for the storage system port (MB per second). See ***Note 6***.	LO	`float`	No	Supported See ***Note 1*** and ***Note 2***	Supported See ***Note 3***	--
Port Name (`PORT_NAME`)	Name of the storage system port	COPY	`string(64)`	No	Supported	Supported	--
Port Role (`PORT_ROLE`)	The role which assigned to this port. • Target • Initiator • RCU Target • External • Bidirectional • (Null string) : If the port type is `FICON`	--	`string(16)`	No	--	Supported	--
Port Number (`PORT_NUMBER`)	Number of the storage system port	COPY	`string(8)`	No	Supported	Supported	--
Read I/O /sec (`READ_IO_RATE`)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Read I/O Count	This field cannot be used because it is reserved.	--	--	--	--	--	--

Port Summary (PI_PTS)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
(READ_IO_COUNT)							
Read Mbytes (READ_MBYTES)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Read Response Rate (READ_RESPONSE_RATE)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Read Total Response (READ_TOTAL_RESPONSE)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Read Xfer /sec (READ_XFER_RATE)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Record Time (RECORD_TIME)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	time_t	No	Supported	Supported	--
Record Type (INPUT_RECORD_TYPE)	Record type identifier, which is always set to PTS	COPY	string(8)	No	Supported	Supported	--
Total I/O Count (TOTAL_IO_COUNT)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Total Mbytes (TOTAL_MBYTES)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Write I/O /sec (WRITE_IO_RATE)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Write I/O Count (WRITE_IO_COUNT)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Write Mbytes (WRITE_MBYTES)	This field cannot be used because it is reserved.	--	--	--	--	--	--

Port Summary (PI_PTS)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
Write Response Rate (`WRITE_RESPONSE_RATE`)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Write Total Response (`WRITE_TOTAL_RESPONSE`)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Write Xfer /sec (`WRITE_XFER_RATE`)	This field cannot be used because it is reserved.	--	--	--	--	--	--

Note: *1:* These values can be collected only when performance statistics of the monitored storage system are set to be collected.

Note: *2:* For the following storage systems, the value of this field cannot be collected when the port type is `NAS`:

- HUS100 series
- Hitachi SMS series
- Hitachi AMS2000 series
- Hitachi AMS/WMS series

Note: *3:*If the port type is `ESCON` or `FICON`, this value can be collected only for when the storage system is VSP 5000 series, VSP G1000 (80-03 or later), G1500, or VSP F1500.

Note: *4:*If the value of the `Port Role` field is not `Bidirectional`, the value of this field will be 0.

Note: *5:* If the storage system is HUS VM, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform V/VM series, the value of this field cannot be collected.

Note: *6:* If either of the following conditions is satisfied, the average value is used for this field when the data is stored in a record every minute or when the data is displayed as the real-time report:

- The storage system to be monitored is an HUS100 series, or a Hitachi AMS2000/AMS/WMS/SMS series storage system.
- The monitored storage system is a VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, or Universal Storage Platform

V/VM series storage system, and the value of `Collection Interval` is set to `60` or larger.

Processor Summary (PI_PRCS)

Function

The Processor Summary (`PI_PRCS`) record stores performance data indicating the operation status of the on-board processor of the storage system. This is a multi-instance record.

> **Note:** If Agent for RAID has started in SLPR restricted mode, it does not collect this record.

Table 2-88 Processor Summary (PI_PRCS) Default and Changeable Values

Item	Default Value	Changeable?
`Collection Interval`	60	Yes See **Note**
`Collection Offset`	0	No
`Log`	Yes	
`LOGIF`	(Blank)	

> **Note:** This value can be changed to a value from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Fields

Adaptor ID (`ADAPTOR_ID`), Processor ID (`PROCESSOR_ID`)

Lifetime

From when the instance is created to when it is deleted

Record Size

- Fixed part: 677 bytes
- Variable part: 104 bytes

Table 2-89 Processor Summary (PI_PRCS) Fields

<table>
<tr><th colspan="8">Processor Summary (PI_PRCS)</th></tr>
<tr><th rowspan="2">View Name
(Manager
Name)</th><th rowspan="2">Description</th><th rowspan="2">Sum
Rule</th><th rowspan="2">Format</th><th rowspan="2">Delta</th><th colspan="2">Supported Storage</th><th rowspan="2">Data
Source</th></tr>
<tr><th>Midrange</th><th>Enterprise</th></tr>
<tr>
<td>Adaptor ID
(ADAPTOR_ID)</td>
<td>
• For Universal Storage Platform V/VM series storage systems:

Character string that identifies the disk controller or channel adapter to which the processor belongs.

• For VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM , or VSP 5000 series storage system:

Character string that identifies the MP Unit to which the processor belongs.

• For VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems:

ID that identifies the MP Blade to which the processor belongs.
</td>
<td>COPY</td>
<td>string(16)</td>
<td>No</td>
<td>Not supported</td>
<td>Supported</td>
<td>--</td>
</tr>
<tr>
<td>Buffer IO %
(BUFFER_IO_RATE)</td>
<td>Microprocessor buffer usage. Calculated as the ratio of the number of I/O buffers in use to the</td>
<td>%</td>
<td>float</td>
<td>No</td>
<td>Not supported</td>
<td>Supported
See **Note 1, Note 2**</td>
<td>--</td>
</tr>
</table>

Processor Summary (PI_PRCS)								
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
	maximum number of usable I/O buffers.						
Buffer IO Count (BUFFER_IO_COUNT)	Number of I/O operations buffered in the microprocessor	COPY	float	No	Not supported	Supported See **Note 1, Note 2**	--
Controller (CONTROLLER)	Controller number	COPY	string(8)	No	Supported	Not supported	--
Interval (INTERVAL)	Interval (in seconds) at which information is collected	ADD	ulong	No	Supported	Supported	--
Max Buffer IO % (MAX_BUFFER_IO_RATE)	Microprocessor buffer usage. If the values are summarized to a greater unit, the maximum value is stored.	HI	float	No	Not supported	Supported See **Note 1**	BUFFER_IO_RATE
Max Buffer IO Count (MAX_BUFFER_IO_COUNT)	Number of microprocessor buffer I/O operations. If the values are summarized to a greater unit, the maximum value is stored.	HI	float	No	Not supported	Supported See **Note 1**	BUFFER_IO_COUNT
Max Buffer Length (MAX_BUFFER_LENGTH)	Maximum number of I/O buffers the microprocessor is able to use	COPY	float	No	Not supported	Supported See **Note 1**	--
Max Processor Busy % (MAX_PROCESSOR_BUSY_RATE)	Usage rate of the processor. **Note:** If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.	HI	float	No	Supported See **Note 3**	Supported	PROCESSOR_BUSY_RATE
Processor Busy %	Usage rate of the processor	%	float	No	Supported See **Note 3**	Supported See **Note 4**	--

Processor Summary (PI_PRCS)								
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
(`PROCESSOR_BUSY_RATE`)							
Processor ID (`PROCESSOR_ID`)	Character string that identifies the processor	COPY	`string(16)`	No	Supported	Supported See ***Note 5***	--
Processor Type (`PROCESSOR_TYPE`)	Character string that identifies the processor type	COPY	`string(8)`	No	Not supported	Supported	--
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to `PRCS`	COPY	`string(8)`	No	Supported	Supported	--

Note: *1:* The value of this field cannot be collected for the following storage systems: Universal Storage Platform V/VM series.

Note: *2:*For VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems, if the value in the `Processor Type` field is `MPB`, the value in the field is the average of the `Buffer IO` performance values of all the microprocessors in the MP Blade. For VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, or VSP 5000 series storage system, if the value in the `Processor Type` field is `MPB`, the value in the field is the average of the `Buffer IO` performance values of all the microprocessors in the MP Unit.

Note: *3:* These values can be collected only when performance statistics of the monitored storage system are set to be collected.

Note: *4:* For VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems, the value in the `Processor Busy %` field is the average activity rate of all the microprocessors in the MP Blade if the value in the `Processor Type` field is `MPB`. For VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, or VSP 5000 series storage system, the value in the `Processor Busy %` field is the average activity rate of all the microprocessors in the MP Unit if the value in the `Processor Type` field is `MPB`.

Note: _5:_ For HUS VM, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems, the value in the `Processor ID` field is `_Total` if the value in the `Processor Type` field is `MPB`.

RAID Group Configuration (PD_RGC)

Function

The RAID Group Configuration (`PD_RGC`) record holds performance data indicating configuration information for a parity group. This is a multi-instance record. The following records are not generated:

- Records for external volume groups or virtual volume groups (Copy-on-Write Snapshot, Thin Image, and Dynamic Provisioning virtual volume groups)
- Records for parity groups without a logical device

Note: If Agent for RAID has started in SLPR restricted mode, it collects only the information on parity groups that belong to the monitored SLPR.

Table 2-90 RAID Group Configuration (PD_RGC) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	No
Collection Offset	0	
Log	Yes	
LOGIF	(Blank)	

Key Fields

RAID Group Number (`RAID_GROUP_NUMBER`)

Lifetime

From when the parity group is set up to when it is removed

Record Size

- Fixed part: 681 bytes
- Variable part: 181 bytes

Table 2-91 RAID Group Configuration (PD_RGC) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
CLPR Number (`CLPR_NUMBER`)	Number of the CLPR to which the parity group has been assigned	--	`string(8)`	No	Not supported	Supported	--
Collection Time (`COLLECTION_TIME`)	Time (in GMT) when the data was collected from the storage system	--	`time_t`	No	Supported	Supported	--
Display Drive Type (`DISPLAY_DRIVE_TYPE`)	Type of drive making up the parity group (display name)	--	`string(32)`	No	Not supported	Supported See ***Note 1***	--
Drive Type (`DRIVE_TYPE`)	Type of drive making up the parity group See ***Note 5***	--	`string(16)`	No	Not supported	Supported See ***Note 1***	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	--	`ulong`	No	Supported	Supported	--
Pool ID (`POOL_ID`)	ID of the Dynamic Provisioning pool to which the parity group belongs. See ***Note 2***.	--	`string(8)`	No	Supported See ***Note 3***	Not supported	--
RAID Group Number (`RAID_GROUP_NUMBER`)	Parity group number	--	`string(64)`	No	Supported	Supported	--
RAID Group Type (`RAID_GROUP_TYPE`)	Information indicating whether the parity group belongs to a Dynamic Provisioning pool: • POOL See ***Note 2***.	--	`string(8)`	No	Supported See ***Note 3***	Not supported	--
RAID Level (`RAID_LEVEL`)	RAID level of the parity group	--	`unsigned char`	No	Supported	Supported	--
RAID Type (`RAID_TYPE`)	Combination of the RAID level and	--	`string(32)`	No	Supported	Supported	--

RAID Group Configuration (PD_RGC)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
	HDU of the parity group. ***Example:*** RAID5(3D+1P)						
Record Time (`RECORD_TIME`)	Record creation time (in GMT)	--	`time_t`	No	Supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to `RGC`	--	`string(8)`	No	Supported	Supported	--
SLPR Number (`SLPR_NUMBER`)	Number of the SLPR to which the parity group belongs	--	`string(8)`	No	Not supported	Supported See ***Note 4***	--

Note: *1:* The value of this field cannot be collected for the following storage systems: Universal Storage Platform V/VM series.

Note: *2:* This value can be collected only when the drive belongs to a Dynamic Provisioning pool.

Note: *3:* Not supported by Hitachi SMS series, or Hitachi AMS/WMS series storage systems.

Note: *4:* Not supported by VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, or Virtual Storage Platform series storage systems.

Note: *5:* For a flash drive, the field values are as follows:
"SSD SLC", "SSD MLC", "FMD", "FMC", "SSD(RI)", "SSD NVMe"
"FMC" is the value to be stored when the drive type is FMC, FMD DC2, or FMD HDE.

RAID Group Summary (PI_RGS)

Function

The RAID Group Summary (`PI_RGS`) record holds performance data indicating the execution status of read or write operations on a parity group. This is a multi-instance record. The following records are not generated:

- Records for external volume groups or virtual volume groups (Copy-on-Write Snapshot, Thin Image, and Dynamic Provisioning virtual volume groups)

- Records for parity groups without a logical device

> **Note:** If Agent for RAID has started in SLPR restricted mode, it collects only the information on parity groups that belong to the monitored SLPR.

Table 2-92 RAID Group Summary (PI_RGS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	300	Yes See **Note**
Collection Offset	0	No
Log	Yes	
LOGIF	(Blank)	

> **Note:** The following values can be set:
>
> - For Hybrid Store or Store database version 2.0:
>   A value from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.
> - For Store database version 1.0:
>   A value from 300 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.
>
> Note, however, that if you set a value smaller than the default value for `Collection Interval`, the KAVE00227-W message might be output repeatedly to the common message log.
> For details about how to resolve this problem, see the *Tuning Manager Agent Administration Guide*.

Key Fields

RAID Group Number (`RAID_GROUP_NUMBER`)

Lifetime

From when the parity group is set up to when it is removed

Record Size

- Fixed part: 677 bytes
- Variable part: 704 bytes

Table 2-93 RAID Group Summary (PI_RGS) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	**Enterprise**	
Busy % (BUSY_RATE)	Usage rate of the parity group. See **Note 1**	%	float	No	Not supported	Supported	--
Interval (INTERVAL)	Interval (in seconds) at which information is collected	ADD	ulong	No	Supported	Supported	--
Max Busy % (MAX_BUSY_RATE)	Usage rate of the parity group. **Note:** If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value. See **Note 1**	HI	float	No	Not supported	Supported	BUSY_RATE
RAID Group Number (RAID_GROUP_NUMBER)	Parity group number	COPY	string(64)	No	Supported	Supported	--
Random Read I/O % (RANDOM_READ_IO_PCT)	Percentage of the total number of read and write operations that are random read operations	%	float	No	Supported See **Note 2** and **Note 3**	Supported	--
Random Read I/O /sec (RANDOM_READ_IO_RATE)	Frequency of random read operations (times per second)	%	float	No	Supported See **Note 2** and **Note 3**	Supported	--
Random Read Xfer % (RANDOM_READ_XFER_PCT)	Percentage of the total transfers that are random read operations	%	float	No	Supported See **Note 2** and **Note 3**	Supported See **Note 4**	--
Random Read Xfer /sec (RANDOM_READ_XFER_RATE)	Transfer rate of random read operations (megabytes per second)	%	float	No	Supported See **Note 2** and **Note 3**	Supported See **Note 4**	--

RAID Group Summary (PI_RGS)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
Random Total I/O /sec (RANDOM_TOTAL_IO_RATE)	Frequency of random operations (sum of processing times for random read and write operations per second)	%	`float`	No	Supported See ***Note 2*** and ***Note 3***	Supported	--
Random Total Xfer /sec (RANDOM_TOTAL_XFER_RATE)	Transfer rate of random operations (total megabytes for random read and write operations per second)	%	`float`	No	Supported See ***Note 2*** and ***Note 3***	Supported See ***Note 4***	--
Random Write I/O % (RANDOM_WRITE_IO_PCT)	Percentage of the total number of read and write operations that are random write operations	%	`float`	No	Supported See ***Note 2*** and ***Note 3***	Supported	--
Random Write I/O /sec (RANDOM_WRITE_IO_RATE)	Frequency of random write operations (times per second)	%	`float`	No	Supported See ***Note 2*** and ***Note 3***	Supported	--
Random Write Xfer % (RANDOM_WRITE_XFER_PCT)	Percentage of the total transfers that are random write operations	%	`float`	No	Supported See ***Note 2*** and ***Note 3***	Supported See ***Note 4***	--
Random Write Xfer /sec (RANDOM_WRITE_XFER_RATE)	Transfer rate of random write operations (megabytes per second)	%	`float`	No	Supported See ***Note 2*** and ***Note 3***	Supported See ***Note 4***	--
Read Hit % (READ_HIT_RATE)	Cache hit rate of read operations	%	`double`	No	Supported See ***Note 5***	Supported	(READ_HIT_IO_COUNT / READ_IO_COUNT) * 100
Read Hit I/O Count (READ_HIT_IO_COUNT)	Number of times the cache is hit in read operations	ADD	`double`	Yes	Supported See ***Note 5***	Supported	--
Read I/O % (READ_IO_PCT)	Percentage of the total number of read and write	%	`float`	No	Supported See ***Note 5***	Supported	{READ_IO_COUNT /

RAID Group Summary (PI_RGS)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
	operations that are read operations						`(READ_I O_COUNT + WRITE_I O_COUNT )} * 100`
Read I/O /sec (`READ_IO_RATE`)	Frequency of read operations (number of times per second)	%	`double`	No	Supported See **Note 5**	Supported	`READ_IO _COUNT / INTERVA L`
Read I/O Count (`READ_IO_COUNT`)	Number of read operations	ADD	`double`	Yes	Supported See **Note 5**	Supported	--
Read Mbytes (`READ_MBYTES`)	Transfer size of read data (MB)	ADD	`double`	Yes	Supported See **Note 2**	Supported See **Note 6**	--
Read Response Rate (`READ_AVG_RESP ONSE`)	Average processing time for each read operation request (in microseconds)	%	`float`	No	--	Supported See **Note 6**	--
Read Total Response (`READ_TOTAL_RE SPONSE`)	Sum of processing times for read-operation requests processed during the collection period (in microseconds)	ADD	`double`	Yes	--	Supported See **Note 6**	--
Read Xfer % (`READ_XFER_PCT )`	Percentage of the total transfers that are read operations	%	`float`	No	Supported See **Note 2**	Supported See **Note 6**	`{READ_M BYTES / (READ_M BYTES + WRITE_M BYTES)} * 100`
Read Xfer /sec (`READ_XFER_RAT E`)	Read data transfer rate (MB per second)	%	`double`	No	Supported See **Note 2**	Supported See **Note 6**	`READ_MB YTES / INTERVA L`
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Supported	Supported	--
Record Type	Record type identifier, which is always set to `RGS`	COPY	`string(8)`	No	Supported	Supported	--

RAID Group Summary (PI_RGS)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
(`INPUT_RECORD_TYPE`)							
Sequential Read I/O % (`SEQUENTIAL_READ_IO_PCT`)	Percentage of the total number of read and write operations that are sequential read operations	%	`float`	No	Supported See **Note 2** and **Note 3**	Supported	--
Sequential Read I/O /sec (`SEQUENTIAL_READ_IO_RATE`)	Frequency of sequential read operations (times per second)	%	`float`	No	Supported See **Note 2** and **Note 3**	Supported	--
Sequential Read Xfer % (`SEQUENTIAL_READ_XFER_PCT`)	Percentage of the total transfers that are sequential read operations	%	`float`	No	Supported See **Note 2** and **Note 3**	Supported See **Note 4**	--
Sequential Read Xfer /sec (`SEQUENTIAL_READ_XFER_RATE`)	Transfer rate of sequential read operations (megabytes per second)	%	`float`	No	Supported See **Note 2** and **Note 3**	Supported See **Note 4**	--
Sequential Total I/O /sec (`SEQUENTIAL_TOTAL_IO_RATE`)	Frequency of sequential operations (sum of processing times for sequential read and write operations per second)	%	`float`	No	Supported See **Note 2** and **Note 3**	Supported	--
Sequential Total Xfer /sec (`SEQUENTIAL_TOTAL_XFER_RATE`)	Transfer rate of sequential operations (total megabytes for sequential read and write operations per second)	%	`float`	No	Supported See **Note 2** and **Note 3**	Supported See **Note 4**	--
Sequential Write I/O % (`SEQUENTIAL_WRITE_IO_PCT`)	Percentage of the total number of read and write operations that are sequential write operations	%	`float`	No	Supported See **Note 2** and **Note 3**	Supported	--
Sequential Write I/O /sec (`SEQUENTIAL_WRITE_IO_RATE`)	Frequency of sequential write operations (times per second)	%	`float`	No	Supported See **Note 2** and **Note 3**	Supported	--

RAID Group Summary (PI_RGS)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
Sequential Write Xfer % (`SEQUENTIAL_WRITE_XFER_PCT`)	Percentage of the total transfers that are sequential write operations	%	`float`	No	Supported See **Note 2** and **Note 3**	Supported See **Note 4**	--
Sequential Write Xfer /sec (`SEQUENTIAL_WRITE_XFER_RATE`)	Transfer rate of sequential write operations (megabytes per second)	%	`float`	No	Supported See **Note 2** and **Note 3**	Supported See **Note 4**	--
Total Response Rate (`TOTAL_RESPONSE_RATE`)	Average processing time (in microseconds) per read/write processing request	%	`float`	No	--	Supported See **Note 6**	--
Write I/O % (`WRITE_IO_PCT`)	Percentage of the total number of read and write operations that are write operations	%	`float`	No	Supported See **Note 5**	Supported	{`WRITE_IO_COUNT` / (`READ_IO_COUNT` + `WRITE_IO_COUNT`)} * 100
Write Hit % (`WRITE_HIT_RATE`)	Cache hit rate of write operations	%	`double`	No	Supported See **Note 5**	Not supported	(`WRITE_HIT_IO_COUNT` / `WRITE_IO_COUNT`) * 100
Write Hit I/O Count (`WRITE_HIT_IO_COUNT`)	Number of times the cache is hit for write operations	ADD	`double`	Yes	Supported See **Note 5**	Not supported	--
Write I/O /sec (`WRITE_IO_RATE`)	Frequency of write operations (number of times per second)	%	`double`	No	Supported See **Note 5**	Supported	`WRITE_IO_COUNT` / `INTERVAL`
Write I/O Count (`WRITE_IO_COUNT`)	Number of write operations	ADD	`double`	Yes	Supported See **Note 5**	Supported	--
Write Mbytes (`WRITE_MBYTES`)	Write data transfer size (MB)	ADD	`double`	Yes	Supported See **Note 2**	Supported See **Note 6**	--

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RAID Group Summary (PI_RGS)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
Write Xfer % (`WRITE_XFER_PCT`)	Percentage of the total transfers that are write operations	%	`float`	No	Supported See **Note 2**	Supported See **Note 6**	{`WRITE_MBYTES` / (`READ_MBYTES` + `WRITE_MBYTES`)} * 100
Write Response Rate (`WRITE_AVG_RESPONSE`)	Average processing time for each write operation request (in microseconds)	%	`float`	No	--	Supported See **Note 6**	--
Write Total Response (`WRITE_TOTAL_RESPONSE`)	Sum of processing times for write-operation requests processed during the collection period (in microseconds)	ADD	`double`	Yes	--	Supported See **Note 6**	--
Write Xfer /sec (`WRITE_XFER_RATE`)	Write data transfer rate (MB per second)	%	`double`	No	Supported See **Note 2**	Supported See **Note 6**	`WRITE_MBYTES` / `INTERVAL`

Note: 1: For storage systems other than VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, VSP 5000 series, VSP G1000, G1500, VSP F1500, if storage systems use parity groups created from flash drives (FMD, FMC, or SSD), you cannot judge the load status from the usage rate of the parity group. Because of the characteristics of flash drives, larger values might be displayed regardless of the load status.

Note: 2: These values can be collected only when performance statistics of the monitored storage system are set to be collected.

Note: 3: Not supported by Hitachi AMS/WMS series storage systems.

Note: 4: This field is not supported for parity groups that include a logical device for which the mainframe emulation type is set.

Note: 5: For the following storage systems, these values can be collected only when performance statistics are set to be collected from the storage system to be monitored:

- HUS100 series
- Hitachi SMS series

- Hitachi AMS2000 series
- Hitachi AMS/WMS series

> **Note: *6:*** For parity groups that include a logical device for which the mainframe emulation type is set, this value can be collected only for when the storage system is VSP 5000 series, VSP G1000 (80-03 or later), G1500, or VSP F1500.

Storage Detail (PD)

Function

The Storage Detail (PD) record stores the performance data indicating the detailed information of the storage system.

> **Note:** If Agent for RAID has started in SLPR restricted mode, it stores only information on resources that belong to the monitored SLPR.

Table 2-94 Storage Detail (PD) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	No
Collection Offset	0	
Log	Yes	
LOGIF	(Blank)	

Key Fields

None

Lifetime

From when the instance is created to when it is deleted

Record Size

- Fixed part: 863 bytes
- Variable part: 0 bytes

Table 2-95 Storage Detail (PD) Fields

<table>
<tr><th colspan="8">Storage Detail (PD)</th></tr>
<tr><th rowspan="2">View Name (Manager Name)</th><th rowspan="2">Description</th><th rowspan="2">Sum Rule</th><th rowspan="2">Format</th><th rowspan="2">Delta</th><th colspan="2">Supported Storage</th><th rowspan="2">Data Source</th></tr>
<tr><th>Midrange</th><th>Enterprise</th></tr>
<tr><td>Cache Memory Capacity
(CACHE_MEMORY_CAPACITY)</td><td>Cache memory size for the storage system (of the installed memory, the size of the memory assigned for I/O cache (MB))</td><td>--</td><td>ulong</td><td>No</td><td>Supported
See **Note 1**</td><td>Supported</td><td>--</td></tr>
<tr><td>Cache Memory Installed Size
(CACHE_MEMORY_INSTALLED_SIZE)</td><td>Cache memory size installed in the storage system (MB)</td><td>--</td><td>ulong</td><td>No</td><td>Supported</td><td>Not supported</td><td>--</td></tr>
<tr><td>Collection Time
(COLLECTION_TIME)</td><td>Time (in GMT) when the data was collected from the storage system</td><td>--</td><td>time_t</td><td>No</td><td>Supported</td><td>Supported</td><td>--</td></tr>
<tr><td>DKC Name
(DKC_NAME)</td><td>Product name of the storage system
See **Note 4**</td><td>--</td><td>string(64)</td><td>No</td><td>Supported</td><td>Supported</td><td>--</td></tr>
<tr><td>DKC Serial Number
(DKC_SERIAL_NUMBER)</td><td>Serial number of the storage system</td><td>--</td><td>string(32)</td><td>No</td><td>Supported
See **Note 2**</td><td>Supported</td><td>--</td></tr>
<tr><td>DKC Status
(DKC_STATUS)</td><td>This field cannot be used because it is reserved.</td><td>--</td><td>--</td><td>--</td><td>--</td><td>--</td><td>--</td></tr>
<tr><td>Interval
(INTERVAL)</td><td>Interval (in seconds) at which information is collected</td><td>--</td><td>ulong</td><td>No</td><td>Supported</td><td>Supported</td><td>--</td></tr>
<tr><td>Monitored SLPR Number
(MONITORED_SLPR_NUMBER)</td><td>Number of the SLPR to be monitored. **Note:** When the SLPR number is 0, all the SLPRs and the shared resources are monitored.</td><td>--</td><td>string(8)</td><td>No</td><td>Not supported</td><td>Supported
See **Note 3**</td><td>--</td></tr>
<tr><td>Record Time
(RECORD_TIME)</td><td>Time (in GMT) when the record is stored</td><td>--</td><td>time_t</td><td>No</td><td>Supported</td><td>Supported</td><td>--</td></tr>
</table>

Storage Detail (PD)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to `PD`	--	`string(8)`	No	Supported	Supported	--
Unit ID (`UNIT_ID`)	This field cannot be used because it is reserved.	--	--	--	--	--	--
Vendor ID (`VENDOR_ID`)	Vendor name of the storage system	--	`string(64)`	No	Supported	Supported	--

Note: *1:* These values can be collected only when performance statistics of the monitored storage system are set to be collected.

Note: *2:* For monitored Hitachi SMS storage systems, the value stored in the DKC Serial Number field will be the array ID. For details about array IDs, see the relevant Hitachi SMS series documentation.

Note: *3:* Not supported by VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, or Virtual Storage Platform series storage systems.

Note: *4:* If the storage system is a VSP Nx00 models, the value is `VSP G400 G600`, `VSP G800`, `VSP F400 F600` or `VSP F800`.

Storage Efficiency (PD_SEFF)

Function

The Storage Efficiency (`PD_SEFF`) record stores performance data indicating the ratio of the total saving effect (excluding system data) achieved by the accelerated compression, capacity saving, snapshot, and provisioning for the storage system.

Table 2-96 Storage Efficiency (PD_SEFF) Default and Changeable Values

Item	Default Value	Changeable?
`Collection Interval`	3600	Yes[#]
`Collection Offset`	0	No
`Log`	Yes	Yes
`LOGIF`	(Blank)	No

\#

The value of this item must be either a value that is a multiple of 60 and a divisor of 3,600, or is a value that is a multiple of 3,600 and a divisor of 86,400.

Key Fields

None

Lifetime

From when the instance is created to when it is deleted

Record Size

- Fixed part: 825 bytes
- Variable part: 0 bytes

Table 2-97 Storage Efficiency (PD_SEFF) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
AC Compression Ratio (`AC_COMP_RATIO`)	A ratio of the data saving effect achieved by compression of accelerated compression for a parity group. This is the value of N when the ratio of capacity before and after the reduction is N:1. See **Note 2**, **Note 3**	--	`float`	No	Not supported	Supported	--
AC Pattern Match Ratio (`AC_MATCH_RATIO`)	A ratio of the data saving effect achieved by reclaiming the specified data pattern using accelerated compression of a parity group. This is the value of N when the ratio of capacity before and after the reduction is N:1.	--	`float`	No	Not supported	Supported	--

Storage Efficiency (PD_SEFF)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
	See *Note 2*, *Note 3*						
AC Saving Ratio (`AC_SAVING_RATIO`)	A ratio of the data saving effect achieved by accelerated compression of a parity group. This is the value of N when the ratio of capacity before and after the reduction is N:1. See *Note 2*, *Note 3*	--	`float`	No	Not supported	Supported	--
Calculation End Time (`CALCULATION_END_TIME`)	The end date and time for calculating (UTC) See *Note 4*	--	`string(32)`	No	Not supported	Supported	--
Calculation Start Time (`CALCULATION_START_TIME`)	The start date and time for calculating (UTC) See *Note 4*	--	`string(32)`	No	Not supported	Supported	--
Collection Time (`COLLECTION_TIME`)	Time (in GMT) when the data was collected from the storage system	--	`time_t`	No	Not supported	Supported	--
Data Reduction Ratio (`DATA_REDUCTION_ RATIO`)	A ratio of the data saving effect achieved by the capacity saving feature and accelerated compression of the parity group. This is the value of N when the ratio of capacity before and after the reduction is N:1. See *Note 2*, *Note 3*	--	`float`	No	Not supported	Supported	--
DKC Serial Number (`DKC_SERIAL_ NUMBER`)	Serial number of the storage system	--	`string(32)`	No	Not supported	Supported	--

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Storage Efficiency (PD_SEFF)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise** See *Note 1*	
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	--	`ulong`	No	Not supported	Supported	--
Provisioning Efficiency Rate (`PROVISIONING_EFFICIENCY_RATE`)	The provisioning effect (%) See **Note 2**	--	`float`	No	Not supported	Supported	--
Record Time (`RECORD_TIME`)	Time (in GMT) when the record is stored	--	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to SEFF	--	`string(8)`	No	Not supported	Supported	--
Snapshot Efficiency Ratio (`SNAPSHOT_EFFICIENCY_RATIO`)	A ratio of the snapshot effect. This is the value of N when the ratio of capacity before and after the reduction is N:1. See **Note 2**, **Note 3**	--	`float`	No	Not supported	Supported	--
Software Compression Ratio (`SOFTWARE_COMP_RATIO`)	A ratio of the data saving effect achieved by compression of the capacity saving feature. This is the value of N when the ratio of capacity before and after the reduction is N:1. See **Note 2**, **Note 3**	--	`float`	No	Not supported	Supported	--
Software Deduplication Ratio (`SOFTWARE_DEDUP_RATIO`)	A ratio of the data saving effect achieved by deduplication of the capacity saving feature. This is the value of N when the ratio of capacity before and	--	`float`	No	Not supported	Supported	--

Storage Efficiency (PD_SEFF)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
	after the reduction is N:1. See **Note 2**, **Note 3**						
Software Pattern Match Ratio (`SOFTWARE_MATCH_ RATIO`)	A ratio of the data saving effect achieved by reclaiming the specified data pattern using the capacity saving feature. This is the value of N when the ratio of capacity before and after the reduction is N:1. See **Note 2**, **Note 3**	--	`float`	No	Not supported	Supported	--
Software Saving Ratio (`SOFTWARE_SAVI NG_ RATIO`)	A ratio of the data saving effect of the capacity saving feature. This is the value of N when the ratio of capacity before and after the reduction is N:1. See **Note 2**, **Note 3**	--	`float`	No	Not supported	Supported	--
Total Efficiency Ratio (`TOTAL_EFFICIE NCY_ RATIO`)	A ratio of the total saving effect achieved by the accelerated compression, capacity saving, snapshot, and provisioning. This is the value of N when the ratio of capacity before and after the reduction is N:1. See **Note 2**, **Note 3**	--	`float`	No	Not supported	Supported	--

Note: *1:* A record cannot be created for storage systems other than VSP G350, G370, G700, G900, VSP F350, F370, F700, F900, VSP 5000 series.

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Note: *2:* If a value cannot be obtained, the field value becomes one of the following:

- If the micro-version is earlier than 88-03-01, the value is -1.
- If the calculation is not complete, the value is -2.
- If the information is invalid, the value is -3.

Note: *3:* Under certain circumstances, the field value can display as 99999 (for example: before data has been written to newly-created pool or virtual volume).

Note: *4:* Times are displayed in yyyy-mm-dd hh:mm:ss format. If a value cannot be obtained, an empty character string ("") is displayed.

Storage Summary (PI)

Function

The Storage Summary (`PI`) record stores the performance data indicating the operation status of the storage system.

Note: If Agent for RAID has started in SLPR restricted mode, it stores summarized results for the operation status of the monitored SLPR.

Table 2-98 Storage Summary (PI) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes See **Note**
Collection Offset	0	No
Log	Yes	
LOGIF	(Blank)	

Note: This value can be changed to a value from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Fields

None

Lifetime

From when the instance is created to when it is deleted

Record Size

- Fixed part: 797 bytes

- Variable part: 0 bytes

Table 2-99 Storage Summary (PI) Fields

Storage Summary (PI)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
Cache Memory Capacity (`CACHE_MEMORY_CAPACITY`)	Amount of cache memory in the storage system (of the installed memory, the size of the memory assigned for the I/O cache (MB)). For HUS100 series and Hitachi AMS2000/AMS/WMS/SMS series storage systems, the amount of memory allocated as unused capacity is not included.	COPY	`ulong`	No	Supported See **Note 1**	Supported	--
Cache Memory Usage (`CACHE_MEMORY_USAGE`)	Of the cache memory in the storage system, the amount that is being used (MB). See **Note 2**.	COPY	`ulong`	No	Supported See **Note 1**	Supported	--
Cache Memory Usage % (`CACHE_MEMORY_USAGE_RATE`)	Of the cache memory in the storage system, the percentage that is being used. See **Note 2**.	%	`float`	No	Supported See **Note 1**	Supported	(`CACHE_MEMORY_USAGE` / `CACHE_MEMORY_CAPACITY`) * 100
Cache Side File Usage (`CACHE_SIDE_FILE`)	Of the cache memory, the cache memory size used by the side file (MB)	COPY	`ulong`	No	Not supported	Supported See **Note 3**	--
Cache Side File Usage % (`CACHE_SIDE_FILE_RATE`)	Of the cache memory, the percentage of the cache memory used by the side file	%	`float`	No	Not supported	Supported See **Note 3**	(`CACHE_SIDE_FILE` / `CACHE_MEMORY_CAPACITY`) * 100
Cache Write Pending Usage	Of the cache memory, the cache memory size used	COPY	`ulong`	No	Supported See **Note 1**	Supported	--

Storage Summary (PI)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
(CACHE_WRITE_PENDING)	by write-pending data (MB). See ***Note 2***.						
Cache Write Pending Usage % (CACHE_WRITE_PENDING_RATE)	Of the cache memory, the percentage of the cache memory used by write-pending data. See ***Note 2***.	%	float	No	Supported See ***Note 1***	Supported	(CACHE_WRITE_PENDING / CACHE_MEMORY_CAPACITY) * 100
CHA Cache Path Usage % (CHA_CACHE_PATH_USAGE_RATE)	Average (%) of the access path usage rate in the device between the channel adapter and cache switch	%	float	No	Not supported	Supported See ***Note 4***	--
DKA Cache Path Usage % (DKA_CACHE_PATH_USAGE_RATE)	Average (%) of the access path usage rate in the device between the disk adapter and cache switch	%	float	No	Not supported	Supported See ***Note 4***	--
Interval (INTERVAL)	Interval (in seconds) at which information is collected	ADD	ulong	No	Supported	Supported	--
LDEV Count (LDEV_COUNT)	This field cannot be used because it is reserved.	--	--	--	Not supported	Not supported	--
Max Cache Memory Usage % (MAX_CACHE_MEMORY_USAGE_RATE)	Of the cache memory in the storage system, the percentage that is being used. ***Note:*** If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.	HI	float	No	Supported See ***Note 1***	Supported	CACHE_MEMORY_USAGE_RATE
Max Cache Side File Usage % (MAX_CACHE_SIDE_FILE_RATE)	Of the cache memory, the percentage used by the side file.	HI	float	No	Not supported	Supported See ***Note 3***	CACHE_SIDE_FILE_RATE

Storage Summary (PI)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	**Supported Storage**		Data Source
					Midrange	Enterprise	
	Note: If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.						
Max Cache Write Pending Usage % (MAX_CACHE_WRITE_PENDING_RATE)	Of the cache memory, the percentage used by write-pending data. ***Note:*** If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.	HI	float	No	Supported See ***Note 1***	Supported	CACHE_WRITE_PENDING_RATE
Port Count (PORT_COUNT)	This field cannot be used because it is reserved.	--	--	--	Not supported	Not supported	--
Record Time (RECORD_TIME)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	time_t	No	Supported	Supported	--
Record Type (INPUT_RECORD_TYPE)	Record type identifier, which is always set to PI	COPY	string(8)	No	Supported	Supported	--

Note: *1:* These values can be collected only when performance statistics of the monitored storage system are set to be collected.

Note: *2:* For HUS100 series, Hitachi SMS series, and Hitachi AMS2000 series storage systems, this field stores the average value of the performance data over the collection interval. For Hitachi AMS/WMS series, VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, and Universal Storage Platform V/VM series storage systems, this field stores the value that was the most recent at the time that the record was created.

> **Note:** *3:* Not supported by VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems.

> **Note:** *4:* Not supported by VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, or Universal Storage Platform V/VM series storage systems.

Utilization Per MP Blade Summary (PD_UMS)

Function

The Utilization Per MP Blade Summary `(PD_UMS)` record stores performance data indicating the 20 highest activity rates for the resources allocated to each MP Blade.

Table 2-100 Utilization Per MP Blade Summary (PD_UMS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	300	Yes See **Note**
Collection Offset from Top of Minute	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

Note:

> This value can be changed to a value from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Fields

MP Blade ID (`MP_BLADE_ID`) , Processor ID (`PROCESSOR_ID`) and Usage Rank (`USAGE_RANK`)

Lifetime

From when the MP Blade is defined to when it is removed

Record Size

- Fixed part: 681 bytes
- Variable part: 96 bytes

Table 2-101 Utilization Per MP Blade Summary (PD_UMS) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	**Enterprise See *Note***	
Collection Time (`COLLECTION_TIME`)	Time (in GMT) when data was collected from the storage system	--	`time_t`	No	Not supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	--	`ulong`	No	Not supported	Supported	--
MP Blade ID (`MP_BLADE_ID`)	• For VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, or VSP 5000 series: ID that identifies the MP Unit in the storage system to which the processor belongs. • For VSP G1000, G1500, VSP F1500 or Virtual Storage Platform: ID that identifies the MP Blade in the storage system to which the processor belongs.	COPY	`string(16)`	No	Not supported	Supported	--
Processor ID (`PROCESSOR_ID`)	Character string that identifies the processor	COPY	`string(16)`	No	Not supported	Supported	--
Processing Type (`PROCESSING_TYPE`)	The type of resource usage.	COPY	`string(16)`	No	Not supported	Supported	--
Record Time (`RECORD_TIME`)	Time (in GMT) when the record was created	--	`time_t`	No	Not supported	Supported	--

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View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midra nge	Enterp rise See *Note*	
Record Type (`INPUT_RECORD_ TYPE`)	Record type identifier, which is always set to `UMS`	--	`string( 8)`	No	Not suppor ted	Support ed	--
Resource ID (`RESOURCE_ID`)	Resource ID. The value of this field depends on the type of resource, as follows: For LDEVs: The LDEV number For journals: The journal group number For external volumes: The external volume group number	COPY	`string( 16)`	No	Not suppor ted	Support ed	--
Resource Type (`RESOURCE_TYPE`)	Type of resource. The value of this field depends on the type of resource, as follows: For LDEVs: `LDEV` For journal groups: `Journal` For external volume groups: `External Volume`	COPY	`string( 16)`	No	Not suppor ted	Support ed	--
Resource Utilization (`RESOURCE_UTIL IZATION`)	Resource utilization	%	`float`	No	Not suppor ted	Support ed	--
Usage Rank (`USAGE_RANK`)	The rank (from 1 to 20) of this resource compared to other resources in the MP in terms of utilization	--	`string( 8)`	No	Not suppor ted	Support ed	--

Note: The value of this field cannot be collected for the following storage systems: Universal Storage Platform V/VM series.

V-VOL Frequency Distribution (PD_VVF)

Function

The V-VOL Frequency Distribution (PD_VVF) record stores performance information indicating the page I/O status for the virtual volumes mapped to the Dynamic Provisioning pool.

Notes:

- Information about Copy-on-Write Snapshot pools, Thin Image pools, and Dynamic Provisioning pools that do not have tier management enabled is not collected.
- Agent for RAID does not collect information about a blocked Dynamic Provisioning pool except when the pool is blocked due to its usage rate reaching 100%.

For midrange storage systems:

- In the default settings, PD_VVF record collection is disabled. To collect the PD_VVF record, enable the setting for collecting records from Performance Reporter.
- In an environment that has multiple Dynamic Provisioning virtual volumes, PD_VVF record collection might take several minutes. If record collection is slow, define the record collection time in the collection time definition file so that the collection of performance information is not skipped. For details on how to use the collection time definition file, see the *Tuning Manager Agent Administration Guide*.

For enterprise storage systems:

- Agent for RAID does not collect information about the V-VOLs that are not associated with the Dynamic Provisioning pool.
- History data is saved whenever tier relocation information for the storage system is updated. If you collect history data immediately after Agent for RAID starts, the data that was collected the last time might be saved again.
- Information about Dynamic Provisioning pools is not collected if tier relocation information has never been collected by the storage system.
- If Agent for RAID is collecting records when the storage system is aggregating monitoring information, the collecting of records is canceled, and the KAVF18514-W message is output to the common log.

  If the KAVF18514-W message is output frequently, change the value of `Collection Interval` or `Collection Offset` so that the collection of monitoring information for Dynamic Provisioning pools and the collection of the `PD_PLR` record do not occur at the same time.

  For details about how to change the `Collection Interval` or `Collection Offset` setting, see the *Tuning Manager Agent Administration Guide*.

- If you stop and then restart the Agent, monitoring information that covers the same time period might be stored twice.

Table 2-102 V-VOL Frequency Distribution (PD_VVF) Default and Changeable Values

Item	Default Value	Changeable
Collection Interval	3600	Yes See **Note 1**
Collection Offset from Top of Minute	0	Yes See **Note 2**
Log	• For enterprise storage systems: Yes • For midrange storage systems: No	Yes
LOGIF	(Blank)	No

Note: 1: The value of this item must be either a value that is a multiple of 60 and a divisor of 3,600, or a multiple of 3,600 and a divisor of 86,400.

Note: 2: The value of this item must be in the range from 0 to 32,767, without exceeding the value of Collection Interval.

Key Fields

LDEV Number (LDEV_NUMBER) and Partition Number (PARTITION_NUMBER)

Lifetime

From when a virtual volume is set up in a Dynamic Provisioning pool with tier management enabled to when the volume is removed

Record Size

- Fixed part: 681 bytes
- Variable part: 108 bytes

Table 2-103 V-VOL Frequency Distribution (PD_VVF) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange See Note 1	**Enterprise See Note 2**	
Avg Page I/O /sec	Average rate of page read/write	--	float	No	Supported	Supported	--

| View Name (Manager Name) | Description | Sum Rule | Format | Delta | Supported Storage | | Data Source |
					Midrange See *Note 1*	Enterprise See *Note 2*	
(AVG_PAGE_IO_R ATE)	operations (per second) to and from virtual volumes						
Capacity (CAPACITY)	Capacity of the virtual volume (GB)	--	float	No	Support ed	Support ed	--
Collection Time (COLLECTION_TI ME)	Time (in GMT) when data was collected from the storage system	--	time_t	No	Support ed	Support ed	--
Interval (INTERVAL)	Interval (in seconds) at which the information was collected	ADD	ulong	No	Support ed	Support ed	--
LDEV Number (LDEV_NUMBER)	Logical device number of the virtual volume	--	string(16)	No	Support ed	Support ed	--
Monitor Collection End Time (MONITOR_COLLE CTION_END_TIME)	Time that collection of the monitoring information for the storage system ended. See *Note 3* and *Note 4*.	--	string(32)	No	Not support ed	Support ed	--
Monitor Collection Start Time (MONITOR_COLLE CTION_START_TI ME)	Time that collection of the monitoring information for the storage system started. See *Note 3* and *Note 4*.	--	string(32)	No	Not support ed	Support ed	--
Partition Number (PARTITION_NUM BER)	• For enterprise storage systems: Partition number (from 0 to 125) • For midrange storage systems: I/O section number (from 0 to 495)	--	string(8)	No	Support ed	Support ed	--
Pool ID (POOL_ID)	Pool ID of the pool	COPY	string(8)	No	Support ed	Support ed	--

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange See *Note 1*	Enterprise See *Note 2*	
Record Time (RECORD_TIME)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	time_t	No	Supported	Supported	--
Record Type (INPUT_RECORD_TYPE)	Record type identifier, which is always set to VVF	COPY	string(8)	No	Supported	Supported	--

Note: *1:* The values of these fields cannot be collected for the following storage systems: Hitachi SMS series, Hitachi AMS2000 series, and Hitachi AMS/WMS series.

Note: *2:* The value of this field cannot be collected for the following storage systems: Universal Storage Platform V/VM series.

Note: *3:* Times are obtained from the storage system.

Note: *4:* Times are displayed in YYYY/MM/DD hh:mm:ss format.

V-VOL Tier Type Configuration (PD_VVTC)

Function

The V-VOL Tier Type Configuration (PD_VVTC) record stores performance data indicating the operation status of the virtual volume for each tier type of a Dynamic Provisioning pool that has tier management enabled. This is a multi-instance record.

Notes:

- Agent for RAID does not collect information about a Copy-on-Write Snapshot V-VOL, a Thin Image V-VOL, or a Dynamic Provisioning V-VOL that has tier management disabled.

- If the Dynamic Provisioning pool to which the Dynamic Provisioning V-VOL belongs is blocked, Agent for RAID does not collect information about the V-VOL. However, if the Dynamic Provisioning pool is blocked because the usage rate of the pool capacity is 100%, Agent for RAID collects information about the V-VOL.

○ Agent for RAID does not collect information about the V-VOLs that are not associated with the Dynamic Provisioning pool.

Table 2-104 V-VOL Tier Type Configuration (PD_VVTC) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	Yes See *Note 1*.
Collection Offset	0	Yes See *Note 2*.
Log	Yes	Yes
LOGIF	(Blank)	No

> **Note: *1:*** This value can be changed to a value in the range from 3,600 to 86,400. The value must be a multiple of 3,600 and a divisor of 86,400.

> **Note: *2:*** This value can be changed to a value available for `Collection Interval` and in the range from 0 to 32,767.

Key Fields

LDEV Number (`LDEV_NUMBER`), Tier Type (`TIER_TYPE`)

Lifetime

From the time the Dynamic Provisioning V-VOL that has tier management enabled is set up to when it is removed

Record Size

- Fixed part: 681 bytes
- Variable part: 112 bytes

Table 2-105 V-VOL Tier Type Configuration (PD_VVTC) Fields

V-VOL Tier Type Configuration (PD_VVTC)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange See *Note 1*	Enterprise See *Note 2*	
Collection Time (`COLLECTION_TIME`)	Time (in GMT) at which the data was collected from the storage system	--	`time_t`	No	Supported	Supported	--
Display Drive Type	Type of the tier (display name)	--	`string(32)`	No	Not supported	Supported	--

V-VOL Tier Type Configuration (PD_VVTC)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange See *Note 1*	**Enterprise** See *Note 2*	
(`DISPLAY_DRIVE_TYPE`)							
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	--	`ulong`	No	Supported	Supported	--
LDEV Number (`LDEV_NUMBER`)	Logical device number of the V-VOL	--	`string(16)`	No	Supported	Supported	--
Pool ID (`POOL_ID`)	ID of the pool	--	`string(8)`	No	Supported	Supported	--
Record Time (`RECORD_TIME`)	Time (in GMT) at which the record was stored	--	`time_t`	No	Supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to `VVTC`	--	`string(8)`	No	Supported	Supported	--
Tier Number (`TIER_NUMBER`)	Tier number	--	`string(8)`	No	Supported	Supported	--
Tier Type (`TIER_TYPE`)	Tier type See **Note 4**	--	`string(32)`	No	Supported	Supported	--
Usage % (`USAGE_RATE`)	Of the virtual capacity of the V-VOL, the percentage of the capacity used by the tier. See **Note 3**.	--	`float`	No	Supported	Supported	(`PD_VVTC_USED_CAPACITY` / `PD_VVC_VIRTUAL_VOLUME_CAPACITY`) * 100
Used Capacity (`USED_CAPACITY`)	Of the virtual capacity of the V-VOL, the actual amount of V-VOL capacity used by the tier (MB). See **Note 3**.	--	`double`	No	Supported	Supported	--

Note: 1: The values of these fields cannot be collected for the following storage systems: Hitachi SMS series, Hitachi AMS2000 series, and Hitachi AMS/WMS series.

Note: *2:* Not supported by Universal Storage Platform V/VM series storage systems.

Note: *3:* This value is not exactly the same as the device capacity information that is recognized by the host because this capacity information is managed by the storage system.

Note: *4:* For a flash drive, the field values are as follows:
"SSD SLC", "SSD MLC", "FMD", "FMC", "SSD Mixed", "SSD(RI)", "SSD NVMe"

- "FMC" is the value to be stored when the drive type is FMC, FMD DC2, or FMD HDE.
- "SSD Mixed" is the value to be stored when different types of flash drives exist.

V-VOL Tier Type I/O Information (PI_VVTI)

Function

The V-VOL Tier Type I/O Information (`PI_VVTI`) record stores performance data indicating the execution status of read and write processing for each type of tier for Dynamic Provisioning V-VOLs that have tier management enabled. This is a multi-instance record.

Notes:

- Information about Copy-on-Write Snapshot V-VOLs , Thin Image V-VOLs, and Dynamic Provisioning V-VOLs that do not have tier management enabled is not collected.

- Agent for RAID does not collect information about a Dynamic Provisioning V-VOL that belongs to a blocked Dynamic Provisioning pool except when the pool is blocked due to its usage rate reaching 100%.

- Information about V-VOLs that are not associated with Dynamic Provisioning pools is not collected.

Table 2-106 V-VOL Tier Type I/O Information (PI_VVTI) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	900	Yes See *Note*.
Collection Offset	0	No
Log	Yes	No
LOGIF	(Blank)	No

Note: The value of this item must be a value that is a multiple of 300 and a divisor of 3,600.

Key Fields

LDEV Number (`LDEV_NUMBER`), Tier Type (`TIER_TYPE`)

Lifetime

From the time when a Dynamic Provisioning V-VOL that has tier management enabled is set up until the time when the V-VOL is removed

Record Size

- Fixed part: 677 bytes
- Variable part: 88 bytes

Table 2-107 V-VOL Tier Type I/O Information (PI_VVTI) Fields

V-VOL Tier Type I/O Information (PI_VVTI)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See *Note 1***	
Avg I/O /sec (`AVG_IO_RATE`)	Average read and write processing rate (number of times per second) for the tier, excluding cache hits Note that this value will not match the performance information for virtual volumes because cache hits are not included.	AVG	`double`	No	Not supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which the information was collected	ADD	`ulong`	No	Not supported	Supported	--
LDEV Number (`LDEV_NUMBER`)	Logical device number of the V-VOL	--	`string(16)`	No	Not supported	Supported	--
Pool ID (`POOL_ID`)	ID of the pool	COPY	`string(8)`	No	Not supported	Supported	--
Record Time (`RECORD_TIME`)	Time (in GMT) that the data was collected from the storage system and the record was generated	COPY	`time_t`	No	Not supported	Supported	--

V-VOL Tier Type I/O Information (PI_VVTI)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier. The value is always `VVTI`.	COPY	`string(8)`	No	Not supported	Supported	--
Tier Number (`TIER_NUMBER`)	Number of the tier	--	`string(8)`	No	Not supported	Supported	--
Tier Type (`TIER_TYPE`)	Type of the tier See **Note 2**	--	`string(32)`	No	Not supported	Supported	--

Note: *1:* Not supported by Universal Storage Platform V/VM series storage systems.

Note: *2:* For a flash drive, the field values are as follows:
"SSD SLC", "SSD MLC", "FMD", "FMC", "SSD Mixed", "SSD(RI)", "SSD NVMe"

- "FMC" is the value to be stored when the drive type is FMC, FMD DC2, or FMD HDE.
- "SSD Mixed" is the value to be stored when different types of flash drives exist.

Virtual Volume Configuration (PD_VVC)

Function

The Virtual Volume Configuration (`PD_VVC`) record stores performance data indicating the operation status of the V-VOL for Dynamic Provisioning. This is a multi-instance record.

Note:

- Information about Copy-on-Write Snapshot V-VOLs, Thin Image V-VOLs, and the V-VOLs that are not associated with the Dynamic Provisioning pool is not collected.
- If the Dynamic Provisioning pool to which the Dynamic Provisioning V-VOL belongs is blocked, Agent for RAID does not collect information about the V-VOL. However, if the Dynamic Provisioning pool is blocked because the usage rate of the pool capacity is 100%, Agent for RAID collects information about the V-VOL.
- If Agent for RAID has started in SLPR restricted mode, it collects only the information on V-VOLs that belong to the monitored SLPR.

Table 2-108 Virtual Volume Configuration (PD_VVC) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	21600	Yes See **Note**
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

Note: This value can be changed to a value from 3,600 to 86,400. The value must be a multiple of 3,600 and a divisor of 86,400.

Key Fields

LDEV Number (LDEV_NUMBER)

Lifetime

From when the V-VOL of Dynamic Provisioning is set up to when it is removed

Record Size

- Fixed part: 681 bytes
- Variable part: 129 bytes

Table 2-109 Virtual Volume Configuration (PD_VVC) Fields

Virtual Volume Configuration (PD_VVC)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise	
Attribute (ATTRIBUTE)	An attribute that indicates whether Full Allocation is enabled or disabled and whether the Data Direct Mapping is enabled or disabled - If Full Allocation is enabled Full Allocation	--	string(20)	No	Not supported	Supported See **Note 1**	--

Virtual Volume Configuration (PD_VVC)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
	• If Data Direct Mapping is enabled Data Direct Mapping • If Full Allocation and Data Direct Mapping are disabled, or Full Allocation and Data Direct Mapping are not supported by the storage system (Null string)						
Collection Time (COLLECTION_TIME)	Time (in GMT) when the data was collected from the storage system	--	time_t	No	Supported See *Note 2*	Supported	--
Data Saving (DATA_SAVING)	Settings of the capacity saving function (dedupe and compression) for a volume • 0x00: The deduplication function and the compression function are disabled. • 0x02: The compression function is enabled. • 0x03: The deduplication function and the compression function are enabled.	--	unsigned char	No	Not supported	Supported See *Note 1*	--
Deduplication Mode (DEDUP_MODE)	The capacity saving processing mode Inline: Inline mode.	--	string(32)	No	Not supported	Supported See *Note 1*	--

Virtual Volume Configuration (PD_VVC)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
	Post-process: Post-process mode. ""\: This function is not supported.						
Free Capacity (`FREE_CAPACIT Y`)	Free capacity of the V-VOL (MB). See **Note 3** and **Note 4**.	--	`double`	No	Supported See **Note 2**	Supported	`VIRTUAL _VOLUME _CAPACI TY - USED_CA PACITY`
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	--	`ulong`	No	Supported See **Note 2**	Supported	--
LDEV Number (`LDEV_NUMBER`)	Logical device number of the V-VOL	--	`string(16)`	No	Supported See **Note 2**	Supported	--
Pool Free Capacity % (`POOL_FREE_CA PACITY_RATE`)	Free capacity in the Dynamic Provisioning pool to which the V-VOL belongs, as a percentage of the free capacity in the V-VOL. See **Note 3** and **Note 5**. If the free capacity in the V-VOL is small, the value of this field might become extremely large. **Example:** If the free capacity in the pool to which the V-VOL belongs is 100 GB and the free capacity in the V-VOL is 10 GB, the value of this field is 1000%.	--	`double`	No	Supported See **Note 2**	Supported	(`PD_PLC _FREE_C APACITY` / `PD_VVC_ FREE_CA PACITY`) * 100
Pool ID (`POOL_ID`)	ID of the Dynamic Provisioning pool to which the V-VOL belongs	--	`string(8)`	No	Supported See **Note 2**	Supported	--

Virtual Volume Configuration (PD_VVC)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
Record Time (`RECORD_TIME`)	Time (in GMT) when the record was stored	--	`time_t`	No	Supported See **Note 2**	Supported	--
Record Type (`INPUT_RECORD _TYPE`)	Record type identifier, which is always set to `VVC`	--	`string(8)`	No	Supported See **Note 2**	Supported	--
Reserved Capacity (`RESERVED_CAP ACITY`)	The capacity for the reserved pages of the virtual volume (MB)	--	`double`	No	Not supported	Supported See **Note 1**	--
Threshold (`THRESHOLD`)	Threshold value (%) set for the free capacity in the Dynamic Provisioning pool to which the V-VOL belongs, as a percentage of the free capacity in the V-VOL (the value of the Pool Free Capacity % field). This value is specified in Storage Navigator.	--	`float`	No	Not supported	Supported	--
Usage % (`USAGE_RATE`)	Of the virtual capacity of the V-VOL, the percentage of the capacity actually used (the usage rate of the pool capacity). See **Note 3** and **Note 6**. If pool areas are reserved, the percentage includes the capacity for the reserved pages.	--	`float`	No	Supported See **Note 2**	Supported	(`USED_C APACITY / VIRTUAL _VOLUME _CAPACI TY`) * 100
Used Capacity (`USED_CAPACIT Y`)	The actual amount of V-VOL capacity being used (MB). See **Note 3**. If pool areas are reserved, the value	--	`double`	No	Supported See **Note 2**	Supported	--

Virtual Volume Configuration (PD_VVC)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise**	
	includes the capacity for the reserved pages.						
Virtual Volume Capacity (`VIRTUAL_VOLUME_CAPACITY`)	The virtual capacity of the V-VOL (MB). See *Note 3*.	--	`double`	No	Supported See *Note 2*	Supported See *Note 7*	--

Note: *1:* Not supported by HUS VM, Virtual Storage Platform series, and Universal Storage Platform V/VM series.

Note: *2:* Not supported by Hitachi SMS series, Hitachi AMS/WMS series storage systems.

Note: *3:* This value is not exactly the same as the device capacity information that is recognized by the host because this capacity information is managed by the storage system.

Note: *4:* For HUS100 series and Hitachi AMS2000 series storage systems, if a Dynamic Provisioning V-VOL is created in Full Capacity Mode, the value of the field is always 0.

Note: *5:* For HUS100 series or Hitachi AMS2000 series storage systems, if a Dynamic Provisioning V-VOL is created in Full Capacity Mode, the usage rate of the V-VOL capacity is 100%. As a result, the unused capacity in the pool is reduced by an amount equal to the capacity of the V-VOL created in Full Capacity Mode.

Note: *6:* For HUS100 series or Hitachi AMS2000 series storage systems, if a Dynamic Provisioning V-VOL is created in Full Capacity Mode, the value of the field is always 100.

Note: *7:* This value is not exactly the same as the setting value of Storage Navigator because this value is the actually assigned value.

Agent for RAID Records (collection by using a TCP/IP connection)

lists the records of the following storage systems that can be collected by Agent for RAID and the information that is stored in each record.

- Enterprise storage systems (when collecting records by using a TCP/IP connection)

Note

Performance values do not include values such as pool volumes for which I/O processing from servers does not occur.

Table 2-110 Agent for RAID Records

Record Name	Record ID	Information Stored in Record
Between Cache Switch and Cache Memory Summary	PI_CCMS	Performance data indicating the performance between a cache switch and cache memory
Between CHA and Cache Switch Summary	PI_CHAC	Performance data indicating the performance between a channel adapter and cache switch
Between CHB and Main Blade Summary	PI_CBMB	Performance data indicating the performance between a channel blade and main blade
Between DKA and Cache Switch Summary	PI_DKAC	Performance data indicating the performance between a disk adapter and cache switch
Between DKB and Main Blade Summary	PI_DBMB	Performance data indicating the performance between a disk blade and main blade
Between MP Blade and Cache Switch Summary	PI_MPCS	Performance data indicating the performance between an MP Blade and cache switch
Cache Path Summary	PI_CPS	Performance data indicating the usage rate of the cache path in a main blade
CHA DRR Summary	PI_CHDR	Performance data indicating the usage of the data recovery reconfiguration circuit for a channel adapter
CLPR Per MP Blade Summary Extra	PI_CLMX	Performance data indicating the CLPR usage of each MP Blade or MP unit
DKA DRR Summary	PI_DKDR	Performance data indicating the performance of the data recovery reconfiguration circuit for a disk adapter
External LDEV Summary	PI_ELDS	Performance data indicating the performance of an external volume
External Volume Group Summary	PI_EVGS	Performance data indicating the performance of an external volume group
HBA Summary	PI_HBAS	Performance data indicating the traffic performance between an HBA and a storage system
HBA WWN Summary by Port	PI_HWSP	Performance data indicating the traffic performance between an HBA for each port and a storage system
Journal Group Summary Extra	PI_JNLX	Performance data indicating the operation status of the journal group
LDEV Summary Extra	PI_LDSX	Performance data indicating the performance of a volume
LDEV TC Summary	PI_LDTC	Performance data indicating the performance of an internal, external, or virtual volume (data of remote copy by TrueCopy or

Record Name	Record ID	Information Stored in Record
		TrueCopy for Mainframe, and monitoring data for global-active device)
LDEV UR Summary	PI_LDUR	Performance data indicating the performance of an internal, external, or virtual volume (data of remote copy by Universal Replicator or Universal Replicator for Mainframe)
LDEV Utilization	PI_LDU	Performance data indicating the activity rate of an internal volume
Logical Device Copy Configuration	PD_LDCC	This record cannot be used because it is reserved.
Logical Device Detail	PD_LDD	This record cannot be used because it is reserved.
LU Summary By Port	PI_LSP	Performance data indicating the performance of the LUs for each port
LU TC Summary By Port	PI_LTSP	Performance data indicating the performance of the LUs for each port (data of remote copy by TrueCopy or TrueCopy for Mainframe, and monitoring data for global-active device)
LU UR Summary By Port	PI_LUSP	Performance data indicating the performance of the LUs for each port (data of remote copy by Universal Replicator or Universal Replicator for Mainframe)
Main Blade DRR Summary	PI_MBDR	Performance data indicating the usage rate of the data recovery reconfiguration circuit for a main blade
Mainframe Port Summary	PI_MPTS	Performance data indicating the performance of ports for mainframes
MP Blade Configuration	PD_MPBC	This record cannot be used because it is reserved.
MP Summary	PI_MPS	Performance data indicating the performance of microprocessors
Port Summary Extra	PI_PTSX	Performance data indicating the performance of storage system ports
RAID Group Detail	PD_RGD	This record cannot be used because it is reserved.
RAID Group Summary Extra	PI_RGSX	Performance data indicating the performance of an internal parity group, external volume group, and a virtual volume group
RAID Group Utilization	PI_RGU	Performance data indicating the activity rate of a parity group
Storage Cache Summary	PI_SCS	Performance data indicating the cache performance of the entire storage system
Storage Copy Summary	PI_SCPS	Performance data indicating the performance of the entire storage system (monitoring data for TrueCopy or TrueCopy for Mainframe, Universal Replicator or Universal

Record Name	Record ID	Information Stored in Record
		Replicator for Mainframe, or global-active device)
Storage Detail Extra	PD_PDX	Performance data indicating detailed information about the storage system
Utilization Per MP Blade Extra	PD_UMSX	Performance data indicating the 100 highest activity rates for the resources allocated to each MP Blade

Between Cache Switch and Cache Memory Summary (PI_CCMS)

Function

The Between Cache Switch and Cache Memory Summary (PI_CCMS) record stores the performance data indicating the performance between a cache switch and cache memory.

Table 2-111 Between Cache Switch and Cache Memory Summary (PI_CCMS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes[#]
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

\#

This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

Cache Switch Name (CACHE_SWITCH_NAME) and Cache Memory Name (CACHE_MEMORY_NAME)

Lifetime

From when the instance is created to when it is deleted

Record Size

- Fixed part: --
- Variable part: --

Table 2-112 Between Cache Switch and Cache Memory Summary (PI_CCMS) Fields

Between Cache Switch and Cache Memory Summary (PI_CCMS)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
Access Path Usage % (`ACCESS_PATH_USAGE_RATE`)	Usage rate of the access path between a cache switch and cache memory (%)	%	`float`	No	Not supported	Supported	--
Cache Memory Name (`CACHE_MEMORY_NAME`)	Name of cache memory See *Note 2*	COPY	`string(16)`	No	Not supported	Supported	--
Cache Switch Name (`CACHE_SWITCH_NAME`)	Name of the cache switch See *Note 3*	COPY	`string(16)`	No	Not supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not supported	Supported	--
Max Access Path Usage % (`MAX_ACCESS_PATH_USAGE_RATE`)	Usage rate of the access path between a cache switch and cache memory (%). If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.	HI	`float`	No	Not supported	Supported	`ACCESS_PATH_USAGE_RATE`
Record Time (`RECORD_TIME`)	Time (in GMT) when the data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to CCMS	COPY	`char(8)`	No	Not supported	Supported	--

Hitachi Tuning Manager Hardware Reports Reference

Note: 1: The value of this field cannot be collected for VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, and Universal Storage Platform V/VM series storage systems.

Note: 2: For VSP G1000, G1500, VSP F1500, no value is stored in this field.

Note: 3: For VSP G1000, G1500, VSP F1500, the cache memory name is stored in this field.

Between CHA and Cache Switch Summary (PI_CHAC)

Function

The Between CHA and Cache Switch Summary (`PI_CHAC`) record stores the performance data indicating the performance between a channel adapter and cache switch.

Table 2-113 Between CHA and Cache Switch Summary (PI_CHAC) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes[#]
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

#
   This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

CHA Name (CHA_NAME) and Cache Switch Name (CACHE_SWITCH_NAME)

Lifetime

From when the channel adapter is set up to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-114 Between CHA and Cache Switch Summary (PI_CHAC) Fields

Between CHA and Cache Switch Summary							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
Access Path Usage % (`ACCESS_PATH_USAGE_RATE`)	Usage rate of the access path between the channel adapter and the cache switch (%)	%	`float`	No	Not supported	Supported	--
Cache Switch Name (`CACHE_SWITCH_NAME`)	Name of the cache switch See *Note 2*	COPY	`string(16)`	No	Not supported	Supported	--
CHA Name (`CHA_NAME`)	Name of the channel adapter	COPY	`string(16)`	No	Not supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not supported	Supported	--
Max Access Path Usage % (`MAX_ACCESS_PATH_USAGE_RATE`)	Usage rate of the access path between the channel adapter and the cache switch (%). If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.	HI	`float`	No	Not supported	Supported	`ACCESS_PATH_USAGE_RATE`
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to CHAC	COPY	`char(8)`	No	Not supported	Supported	--

Note: *1:* The value of this field cannot be collected for VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, and Universal Storage Platform V/VM series storage systems.

> **Note: 2:** For VSP G1000, G1500, VSP F1500, the cache memory name is stored in this field.

Between CHB and Main Blade Summary (PI_CBMB)

Function

The Between CHB and Main Blade Summary (`PI_CBMB`) record stores the performance data indicating the performance between a channel blade and main blade.

Table 2-115 Between CHB and Main Blade Summary (PI_CBMB) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes[#]
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

\#

This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

Channel Blade Name (CHANNEL_BLADE_NAME) and Main Blade Name (MAIN_BLADE_NAME)

Lifetime

From when the channel blade and the main blade are set up to when they are removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-116 Between CHB and Main Blade Summary (PI_CBMB) Fields

Between CHB and Main Blade Summary (PI_CBMB)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See *Note***	
Access Path Usage % (`ACCESS_PATH_USAGE_RATE`)	Usage rate of the access path between the channel blade and the main blade (%)	%	`float`	No	Not supported	Supported	--
Channel Blade Name (`CHANNEL_BLADE_NAME`)	Name of the channel blade	COPY	`string(16)`	No	Not supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not supported	Supported	--
Main Blade Name (`MAIN_BLADE_NAME`)	Name of the main blade	COPY	`string(16)`	No	Not supported	Supported	--
Max Access Path Usage % (`MAX_ACCESS_PATH_USAGE_RATE`)	Usage rate of the access path between the channel blade and the main blade (%). If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.	HI	`float`	No	Not supported	Supported	`ACCESS_PATH_USAGE_RATE`
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to CBMB	COPY	`char(8)`	No	Not supported	Supported	--

> **Note:** The value of this field cannot be collected for VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, and Universal Storage Platform V/VM series storage systems.

Between DKA and Cache Switch Summary (PI_DKAC)

Function

The Between DKA and Cache Switch Summary (`PI_DKAC`) record stores the performance data indicating the performance between a disk adapter and cache switch.

Table 2-117 Between DKA and Cache Switch Summary (PI_DKAC) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes[#]
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

[#]
> This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

DKA Name (DKA_NAME) and Cache Switch Name (CACHE_SWITCH_NAME)

Lifetime

From when the disk adapter is set up to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-118 Between DKA and Cache Switch Summary (PI_DKAC) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	**Enterprise See Note 1**	
Access Path Usage % (ACCESS_PATH_USAGE_RATE)	Usage rate of the access path between the disk adapter and the cache switch (%)	%	float	No	Not supported	Supported	--
Cache Switch Name (CACHE_SWITCH_NAME)	Name of the cache switch See **Note 2**	COPY	string(16)	No	Not supported	Supported	--
DKA Name (DKA_NAME)	Name of the disk adapter	COPY	string(16)	No	Not supported	Supported	--
Interval (INTERVAL)	Interval (in seconds) at which information is collected	ADD	ulong	No	Not supported	Supported	--
Max Access Path Usage % (MAX_ACCESS_PATH_USAGE_RATE)	Usage rate of the access path between the disk adapter and the cache switch (%). If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.	HI	float	No	Not supported	Supported	ACCESS_PATH_USAGE_RATE
Record Time (RECORD_TIME)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	time_t	No	Not supported	Supported	--
Record Type (INPUT_RECORD_TYPE)	Record type identifier, which is always set to DKAC	COPY	char(8)	No	Not supported	Supported	--

Note: 1: The value of this field cannot be collected for VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, and Universal Storage Platform V/VM series storage systems.

> **Note: 2:** For VSP G1000, G1500, VSP F1500, the cache memory name is stored in this field.

Between DKB and Main Blade Summary (PI_DBMB)

Function

The Between DKB and Main Blade Summary (`PI_DBMB`) record stores the performance data indicating the performance between a disk blade and main blade.

Table 2-119 Between DKB and Main Blade Summary (PI_DBMB) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes[#]
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

#

This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

Disk Blade Name (DISK_BLADE_NAME) and Main Blade Name (MAIN_BLADE_NAME)

Lifetime

From when the disk blade and the main blade are set up to when they are removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-120 Between DKB and Main Blade Summary (PI_DBMB) Fields

Between DKB and Main Blade Summary (PI_DBMB)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
Access Path Usage % (`ACCESS_PATH_U SAGE_RATE`)	Usage rate of the access path between the disk blade and the main blade (%)	%	`float`	No	Not supported	Supported	--
Disk Blade Name (`DISK_BLADE_NA ME`)	Name of the disk blade	COPY	`string( 16)`	No	Not supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not supported	Supported	--
Main Blade Name (`MAIN_BLADE_NA ME`)	Name of the main blade	COPY	`string( 16)`	No	Not supported	Supported	--
Max Access Path Usage % (`MAX_ACCESS_PA TH_USAGE_RATE`)	Usage rate of the access path between the disk blade and the main blade (%). If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.	HI	`float`	No	Not supported	Supported	`ACCESS_PATH_US AGE_RATE`
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_ TYPE`)	Record type identifier, which is always set to DBMB	COPY	`char(8)`	No	Not supported	Supported	--

Note: The value of this field cannot be collected for VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, VSP 5000 series, VSP G1000, G1500, VSP

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Between MP Blade and Cache Switch Summary (PI_MPCS)

Function

The Between MP Blade and Cache Switch Summary (`PI_MPCS`) record stores the performance data indicating the performance between an MP Blade and cache switch.

Table 2-121 Between MP Blade and Cache Switch Summary (PI_MPCS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes[#]
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

\#

This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

MP Blade ID (MP_BLADE_ID) and Cache Switch Name (CACHE_SWITCH_NAME)

Lifetime

From when the MP Blade is defined to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-122 Between MP Blade and Cache Switch Summary (PI_MPCS) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	**Enterprise See Note 1**	
Access Path Usage % (`ACCESS_PATH_USAGE_RATE`)	Usage rate of the access path between the MP Blade and the cache switch (%)	%	`float`	No	Not supported	Supported	--
Cache Switch Name (`CACHE_SWITCH_NAME`)	Name of the cache switch See **Note 2**	COPY	`string(16)`	No	Not supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not supported	Supported	--
Max Access Path Usage % (`MAX_ACCESS_PATH_USAGE_RATE`)	Usage rate of the access path between the MP Blade and the cache switch (%). If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.	HI	`float`	No	Not supported	Supported	`ACCESS_PATH_USAGE_RATE`
MP Blade ID (`MP_BLADE_ID`)	ID that identifies the MP Blade that the processor belongs to in the storage system Example: MPB0	COPY	`string(16)`	No	Not supported	Supported	--
MP Blade Name (`MP_BLADE_NAME`)	• For VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, or VSP 5000 series storage systems:	COPY	`string(32)`	No	Not supported	Supported	--

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage Midrange	Supported Storage Enterprise See *Note 1*	Data Source
	Name of the microprocessor unit that the processor belongs to • For VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems: Name of the MP Blade that the processor belongs to						
Record Time (RECORD_TIME)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	time_t	No	Not supported	Supported	--
Record Type (INPUT_RECORD_TYPE)	Record type identifier, which is always set to MPCS	COPY	char(8)	No	Not supported	Supported	--

> **Note: *1:***The value of this field cannot be collected for VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, and Universal Storage Platform V/VM series storage systems.

> **Note: *2:***For VSP G1000, G1500, VSP F1500, the cache memory name is stored in this field.

Cache Path Summary (PI_CPS)

Function

The Cache Path Summary (PI_CPS) record stores the performance data indicating the usage rate of the cache path in a main blade.

Table 2-123 Cache Path Summary (PI_CPS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes#
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

\#

This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

Main Blade Name (MAIN_BLADE_NAME)

Lifetime

From when the main blade is set up to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-124 Cache Path Summary (PI_CPS) Fields

					Supported Storage		
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Midrange**	**Enterprise See** *Note*	**Data Source**
Access Path Usage % (ACCESS_PATH_USAGE_RATE)	Usage rate of the access path for the cache path in the main blade (%)	%	float	No	Not supported	Supported	--
Interval (INTERVAL)	Interval (in seconds) at which information is collected	ADD	ulong	No	Not supported	Supported	--
Main Blade Name (MAIN_BLADE_NAME)	Name of the main blade	COPY	string(8)	No	Not supported	Supported	--

Cache Path Summary (PI_CPS)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
Max Access Path Usage % (`MAX_ACCESS_PA TH_USAGE_RATE`)	Usage rate of the access path for the cache path in the main blade (%). If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.	HI	`float`	No	Not support ed	Support ed	`ACCESS_PATH_US AGE_RATE`
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not support ed	Support ed	--
Record Type (`INPUT_RECORD_ TYPE`)	Record type identifier, which is always set to CPS	COPY	`char(8)`	No	Not support ed	Support ed	--

Note: The value of this field cannot be collected for VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, and Universal Storage Platform V/VM series storage systems.

CHA DRR Summary (PI_CHDR)

Function

The CHA DRR Summary (`PI_CHDR`) record stores the performance data indicating the usage of the data recovery reconfiguration circuit for a channel adapter.

Table 2-125 CHA DRR Summary (PI_CHDR) Default and Changeable Values

Item	Default Value	Changeable?
`Collection Interval`	60	Yes[#]

Item	Default Value	Changeable?
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

\#

This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

CHA Name (CHA_NAME) and DRR Name (DRR_NAME)

Lifetime

From when the channel adapter is set up to when it is removed

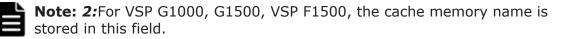### Record Size

- Fixed part: --
- Variable part: --

Table 2-126 CHA DRR Summary (PI_CHDR) Fields

CHA DRR Summary (PI_CHDR)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
Busy % (BUSY_RATE)	Usage rate of the data recovery reconfiguration circuit (DRR) of the channel adapter	%	float	No	Not supported	Supported	--
CHA Name (CHA_NAME)	Name of the channel adapter	COPY	string(16)	No	Not supported	Supported	--
DRR Name (DRR_NAME)	Name of the data recovery reconfiguration circuit (DRR)	COPY	string(16)	No	Not supported	Supported	--
Interval (INTERVAL)	Interval (in seconds) at which information is collected	ADD	ulong	No	Not supported	Supported	--

CHA DRR Summary (PI_CHDR)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midran ge	**Enterp rise See Note**	
Max Busy % (`MAX_BUSY_RATE`)	Usage rate of the data recovery reconfiguration circuit (DRR) of the channel adapter. If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.	HI	`float`	No	Not support ed	Support ed	`BUSY_RATE`
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not support ed	Support ed	--
Record Type (`INPUT_RECORD_ TYPE`)	Record type identifier, which is always set to CHDR	COPY	`char(8)`	No	Not support ed	Support ed	--

Note: The value of this field cannot be collected for VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, and Universal Storage Platform V/VM series storage systems.

CLPR Per MP Blade Summary Extra (PI_CLMX)

Function

The CLPR Per MP Blade Summary Extra (`PI_CLMX`) record stores the CLPR usage status for each MP Blade or MP unit.

Table 2-127 CLPR Per MP Blade Summary Extra (PI_CLMX) Default and Changeable Values

Item	Default Value	Changeable?
`Collection Interval`	60	Yes[#]
`Collection Offset`	0	No

Item	Default Value	Changeable?
Log	No	Yes
LOGIF	(Blank)	No

#

This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

Ldev Owner Id (LDEV_OWNER_ID) and CLPR Number (CLPR_NUMBER)

Lifetime

From when the MP blade and the CLPR are set up to when they are removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-128 CLPR Per MP Blade Summary Extra (PI_CLMX) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
Cache Allocate Memory Size (CACHE_ALLOCATE_MEMORY_SIZE)	Size (in MB) of cache memory allocated to each MP Blade in the CLPR	COPY	double	No	Not supported	Supported	--
Cache Memory Usage % (CACHE_MEMORY_USAGE_RATE)	Of the cache memory allocated to each MP Blade in the CLPR, the percentage of memory that is used by the LDEV owned by the MP Blade in the Ldev Owner Id field	%	float	No	Not supported	Supported	--
Cache Write Pending Usage %	Of the cache memory allocated to each MP Blade in the CLPR, the	%	float	No	Not supported	Supported	--

CLPR Per MP Blade Summary Extra (PI_CLMX)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See _Note_**	
(CACHE_WRITE_P ENDING_RATE)	percentage of memory that is used by write-pending data on the LDEV owned by the MP Blade in the Ldev Owner Id field						
CLPR Number (CLPR_NUMBER)	CLPR number	COPY	string(8)	No	Not supported	Support ed	--
Interval (INTERVAL)	Interval (in seconds) at which information is collected	ADD	ulong	No	Not supported	Support ed	--
Ldev Owner Id (LDEV_OWNER_ID)	• For VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, or VSP 5000 series storage systems: ID that identifies the microprocessor unit that the processor belongs to in the storage system • For VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems: ID that identifies the MP Blade that the processor belongs to in the storage system	COPY	string(16)	No	Not supported	Support ed	--

CLPR Per MP Blade Summary Extra (PI_CLMX)								
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
Ldev Owner Name (`LDEV_OWNER_NAME`)	• For VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, or VSP 5000 series storage systems: Name of the microprocessor unit that the processor belongs to • For VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems: Name of the MP Blade that the processor belongs to	COPY	`string(16)`	No	Not supported	Supported	--
Max Cache Memory Usage % (`MAX_CACHE_MEMORY_USAGE_RATE`)	Of the cache memory allocated to each MP Blade in the CLPR, the percentage of memory used by the LDEV owned by the MP Blade in the Ldev Owner Id field	HI	`float`	No	Not supported	Supported	`CACHE_MEMORY_USAGE_RATE`
Max Cache Write Pending Usage % (`MAX_CACHE_WRITE_PENDING_RATE`)	Of the cache memory allocated to each MP Blade in the CLPR, the maximum percentage of memory used by write-pending data on the LDEV owned by the MP Blade in the Ldev Owner Id field	HI	`float`	No	Not supported	Supported	`CACHE_WRITE_PENDING_RATE`

CLPR Per MP Blade Summary Extra (PI_CLMX)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See *Note***	
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to CLMX	COPY	`char(8)`	No	Not supported	Supported	--

Note: The value of this field cannot be collected for Universal Storage Platform V/VM series storage systems.

DKA DRR Summary (PI_DKDR)

Function

The DKA DRR Summary (`PI_DKDR`) record stores the performance data indicating the performance of the data recovery reconfiguration circuit for a disk adapter.

Table 2-129 DKA DRR Summary (PI_DKDR) Default and Changeable Values

Item	**Default Value**	**Changeable?**
`Collection Interval`	60	Yes[#]
`Collection Offset`	0	No
`Log`	Yes	Yes
`LOGIF`	(Blank)	No

\#

This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

DKA Name (DKA_NAME) and DRR Name (DRR_NAME)

Lifetime

From when the disk adapter is set up to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-130 DKA DRR Summary (PI_DKDR) Fields

DKA DRR Summary (PI_DKDR)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
Busy % (BUSY_RATE)	Usage of the data recovery reconfiguration circuit for a disk adapter	%	float	No	Not supported	Supported	--
DKA Name (DKA_NAME)	Name of the disk adapter	COPY	string(16)	No	Not supported	Supported	--
DRR Name (DRR_NAME)	Name of the data recovery reconfiguration circuit (DRR)	COPY	string(16)	No	Not supported	Supported	--
Interval (INTERVAL)	Interval (in seconds) at which information is collected	ADD	ulong	No	Not supported	Supported	--
Max Busy % (MAX_BUSY_RATE)	Usage of the data recovery reconfiguration circuit. If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.	HI	float	No	Not supported	Supported	BUSY_RATE
Record Time (RECORD_TIME)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	time_t	No	Not supported	Supported	--

DKA DRR Summary (PI_DKDR)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See** *Note*	
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to DKDR	COPY	`char(8)`	No	Not supported	Supported	--

> **Note:** The value of this field cannot be collected for VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, VSP 5000 series, and Universal Storage Platform V/VM series storage systems.

External LDEV Summary (PI_ELDS)

Function

The External LDEV Summary (`PI_ELDS`) record stores the performance data indicating the performance of an externally connected volume.

Note:

If the CU number of the target LDEV is not set to be monitored, the record will not be created.

Table 2-131 External LDEV Summary (PI_ELDS) Default and Changeable Values

Item	Default Value	Changeable?
`Collection Interval`	3600	Yes[#]
`Collection Offset`	0	No
`Log`	Yes	Yes
`LOGIF`	(Blank)	No

\#
  This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

LDEV Number (LDEV_NUMBER)

Lifetime

From when the logical device is set up to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-132 External LDEV Summary (PI_ELDS) Fields

External LDEV Summary (PI_ELDS)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See _Note_**	
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not supported	Supported	--
LDEV Number (`LDEV_NUMBER`)	Logical device number Example: 00:01:0F	COPY	`string(16)`	No	Not supported	Supported	--
RAID Group Number (`RAID_GROUP_NUMBER`)	Number of the parity group	COPY	`string(64)`	No	Not supported	Supported	--
Read Response Rate (`READ_RESPONSE_RATE`)	Average processing time per read operation request for each external volume (in milliseconds)	%	`double`	No	Not supported	Supported	--
Read Total Xfer /sec (`READ_TOTAL_XFER_RATE`)	Transfer rate of operations for each external volume (total kilobytes for read operations per second)	%	`double`	No	Not supported	Supported	--
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to ELDS	COPY	`char(8)`	No	Not supported	Supported	--

External LDEV Summary (PI_ELDS)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
Total Response Rate (`TOTAL_RESPONSE_RATE`)	Average processing time per read or write operation request for each external volume (in milliseconds)	%	`double`	No	Not supported	Supported	--
Total Xfer /sec (`TOTAL_XFER_RATE`)	Transfer rate of operations for each external volume (total kilobytes for read and write operations per second)	%	`double`	No	Not supported	Supported	--
Write Response Rate (`WRITE_RESPONSE_RATE`)	Average processing time per write operation request for each external volume (in milliseconds)	%	`double`	No	Not supported	Supported	--
Write Total Xfer /sec (`WRITE_TOTAL_XFER_RATE`)	Transfer rate of operations for each external volume (total kilobytes for write operations per second)	%	`double`	No	Not supported	Supported	--

Note: The value of this field cannot be collected for Universal Storage Platform V/VM series storage systems.

External Volume Group Summary (PI_EVGS)

Function

The External Volume Group Summary (`PI_EVGS`) record stores the performance data indicating the performance of external volume groups.

Note:

All the CU numbers of the LDEVs that belong to the target parity group must be set to be monitored for the record to be created.

Table 2-133 External Volume Group Summary (PI_EVGS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	Yes#
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

\#

This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

RAID Group Number (RAID_GROUP_NUMBER)

Lifetime

From when the external volume group is set up to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-134 External Volume Group Summary (PI_EVGS) Fields

External Volume Group Summary (PI_EVGS)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
Interval (INTERVAL)	Interval (in seconds) at which information is collected	ADD	ulong	No	Not supported	Supported	--
RAID Group Number (RAID_GROUP_NU MBER)	Parity group number	COPY	string(64)	No	Not supported	Supported	--
Read Response Rate (READ_RESPONSE _RATE)	Average processing time per read operation request for each external	%	double	No	Not supported	Supported	--

External Volume Group Summary (PI_EVGS)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See Note**	
	volume group (in milliseconds)						
Read Total Xfer /sec (`READ_TOTAL_XFER_RATE`)	Transfer rate of read operations for each external volume (total kilobytes for read operations per second)	%	`double`	No	Not supported	Supported	--
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to EVGS	COPY	`char(8)`	No	Not supported	Supported	--
Total Response Rate (`TOTAL_RESPONSE_RATE`)	Average processing time per read or write operation request for each external volume group (in milliseconds)	%	`double`	No	Not supported	Supported	--
Total Xfer /sec (`TOTAL_XFER_RATE`)	Transfer rate of operations for each external volume group (total kilobytes for read and write operations per second)	%	`double`	No	Not supported	Supported	--
Write Response Rate (`WRITE_RESPONSE_RATE`)	Average processing time per write operation request for each external volume group (in milliseconds)	%	`double`	No	Not supported	Supported	--
Write Total Xfer /sec (`WRITE_TOTAL_XFER_RATE`)	Transfer rate of operations for each external volume group (total kilobytes for write operations per second)	%	`double`	No	Not supported	Supported	--

Note: The value of this field cannot be collected for Universal Storage Platform V/VM series storage systems.

HBA Summary (PI_HBAS)

Function

The HBA Summary (`PI_HBAS`) record stores the performance data indicating the traffic performance between an HBA and a storage system.

Note:

If WWNs to be monitored are not set in advance, the record will not be output. Only the record for the HBAs registered to the WWNs to be monitored will be output.

Table 2-135 HBA Summary (PI_HBAS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes[#]
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

#
> This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

HBA WWN (HBA_WWN)

Lifetime

From when the HBA is set up to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-136 HBA Summary (PI_HBAS) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Midrange	Enterprise See Note 1	Data Source
HBA Summary (PI_HBAS)					Supported Storage		
HBA WWN (`HBA_WWN`)	WWN of a HBA	COPY	`string(32)`	No	Not supported	Supported	--
HBA WWN Nickname (`HBA_WWN_NICKNAME`)	Nickname of an HBA WWN	COPY	`string(65)`	No	Not supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not supported	Supported	--
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to HBAS	COPY	`char(8)`	No	Not supported	Supported	--
SPM Group Name (`SPM_GROUP_NAME`)	Name of an SPM group that the HBA belongs to See **Note 2**	COPY	`string(65)`	No	Not supported	Supported	--
Total I/O /sec (`TOTAL_IO_RATE`)	Average frequency of read and write operations for the storage system (number of operations per second)	%	`double`	No	Not supported	Supported	--
Total Response Rate (`TOTAL_RESPONSE_RATE`)	Average processing time per read/write processing request for the storage system (in microseconds)	%	`double`	No	Not supported	Supported	--
Total Xfer /sec (`TOTAL_XFER_RATE`)	Read and write transfer speed for the storage system	%	`double`	No	Not supported	Supported	--

HBA Summary (PI_HBAS)								
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
	(kilobytes per second)						

📄 **Note: *1:***The value of this field cannot be collected for Universal Storage Platform V/VM series storage systems.

📄 **Note: *2:***An SPM group consists of multiple HBAs.

HBA WWN Summary by Port (PI_HWSP)

Function

HBA WWN Summary by Port (PI_HWSP) stores performance data indicating the traffic performance between an HBA for each port and a storage system.

Note:

If WWNs to be monitored are not set in advance, the record will not be output. Only the record for the HBAs registered to the WWNs to be monitored will be output.

Table 2-137 HBA WWN Summary by Port (PI_HWSP) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes[#]
Collection Offset	0	No
Log	No	Yes
LOGIF	(Blank)	No

#
> This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

Storage Port Name (STORAGE_PORT_NAME) and HBA WWN (HBA_WWN)

Lifetime

From when the HBA is set up to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-138 HBA WWN Summary by Port (PI_HWSP) Fields

HBA WWN Summary by Port (PI_HWSP)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
HBA WWN (HBA_WWN)	WWN of a HBA	COPY	string(32)	No	Not supported	Supported	--
HBA WWN Nickname (HBA_WWN_NICKNAME)	Nickname of an HBA WWN	COPY	string(65)	No	Not supported	Supported	--
Interval (INTERVAL)	Interval (in seconds) at which information is collected	ADD	ulong	No	Not supported	Supported	--
Storage Port Name (STORAGE_PORT_NAME)	Name of a storage system port	COPY	string(64)	No	Not supported	Supported	--
Record Time (RECORD_TIME)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	time_t	No	Not supported	Supported	--
Record Type (INPUT_RECORD_TYPE)	Record type identifier, which is always set to PWS	COPY	char(8)	No	Not supported	Supported	--
Total I/O /sec (TOTAL_IO_RATE)	Average frequency of read and write operations for the storage system (number of times per second)	%	double	No	Not supported	Supported	--

HBA WWN Summary by Port (PI_HWSP)								
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See** *Note*	
Total Response Rate (`TOTAL_RESPONSE_RATE`)	Average processing time per read or write operation request for the storage system (in microseconds)	%	`double`	No	Not supported	Supported	--
Total Xfer /sec (`TOTAL_XFER_RATE`)	Read and write transfer speed for the storage system (number of times per second)	%	`double`	No	Not supported	Supported	--

Note: The value of this field cannot be collected for Universal Storage Platform V/VM series storage systems.

Journal Group Summary Extra (PI_JNLX)

Function

The Journal Group Summary Extra (`PI_JNLX`) record stores the performance data indicating the performance of a journal group (about journal-based remote copy by Universal Replicator or Universal Replicator for Mainframe).

Note:

The value stored in this record is the total value of the performance data for the LDEVs that belong to the monitored CUs. The performance data of the LDEVs that belong to the CUs that are not monitored is not calculated together.

Table 2-139 Journal Group Summary Extra (PI_JNLX) Default and Changeable Values

Item	Default Value	Changeable?
`Collection Interval`	60	Yes[#]
`Collection Offset`	0	No
`Log`	Yes	Yes
`LOGIF`	(Blank)	No

#

This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

Journal ID (JOURNAL_ID)

Lifetime

From when the journal group is set up to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-140 Journal Group Summary Extra (PI_JNLX) Fields

Journal Group Summary Extra (PI_JNLX)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
Initial Copy Hit % (`INITIAL_COPY_HIT_RATE`)	Initial copy hit rate in a journal group	%	`float`	No	Not supported	Supported	--
Initial Copy Xfer /sec (`INITIAL_COPY_XFER_RATE`)	Transfer rate of initial copy processing in a journal group (kilobytes per second)	%	`double`	No	Not supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not supported	Supported	--
Journal ID (`JOURNAL_ID`)	ID of the journal group	COPY	`string(64)`	No	Not supported	Supported	--
Master JNL Data Usage % (`MASTER_JNL_DATA_USAGE`)	Master journal's data usage measured for each journal	%	`float`	No	Not supported	Supported	--

Journal Group Summary Extra (PI_JNLX)								
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See *Note***	
Master JNL Meta Data Usage % (`MASTER_JNL_META_DATA_USAGE`)	Master journal's meta data usage measured for each journal	%	`float`	No	Not supported	Supported	--
M-JNL Async Journal Count (`M_JNL_ASYNC_JOURNAL_COUNT`)	Total number of journals in the primary storage system	COPY	`double`	No	Not supported	Supported	--
M-JNL Async Remote I/O /sec (`M_JNL_ASYNC_RIO_RATE`)	Frequency of asynchronous remote I/O operations for each journal in the primary storage system (number of operations per second)	%	`double`	No	Not supported	Supported	--
M-JNL Async Response Rate (`M_JNL_ASYNC_RESPONSE_RATE`)	Average remote I/O response time for each journal in the primary storage system (milliseconds per operation)	%	`double`	No	Not supported	Supported	--
M-JNL Async Xfer /sec (`M_JNL_ASYNC_XFER_RATE`)	Transfer rate of operations for each journal in the primary storage system (total kilobytes for write operations per second)	%	`double`	No	Not supported	Supported	--
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to JNLX	COPY	`char(8)`	No	Not supported	Supported	--
Restore JNL Data Usage %	Restore journal's data usage	%	`float`	No	Not supported	Supported	--

Journal Group Summary Extra (PI_JNLX)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See _Note_**	
(`RESTORE_JNL_DATA_USAGE`)	measured for each journal						
Restore JNL Meta Data Usage % (`RESTORE_JNL_META_DATA_USAGE`)	Restore journal's meta data usage measured for each journal	%	`float`	No	Not supported	Supported	--
R-JNL Async Journal Count (`R_JNL_ASYNC_JOURNAL_COUNT`)	Total number of journals in the secondary storage system	COPY	`double`	No	Not supported	Supported	--
R-JNL Async Remote I/O /sec (`R_JNL_ASYNC_RIO_RATE`)	Frequency of asynchronous remote I/O operations for each journal in the secondary storage system (number of operations per second)	%	`double`	No	Not supported	Supported	--
R-JNL Async Response Rate (`R_JNL_ASYNC_RESPONSE_RATE`)	Average remote I/O response time for each journal in the secondary storage system (milliseconds per operation)	%	`double`	No	Not supported	Supported	--
R-JNL Async Xfer /sec (`R_JNL_ASYNC_XFER_RATE`)	Transfer rate of operations for each journal in the secondary storage system (total kilobytes for write operations per second)	%	`double`	No	Not supported	Supported	--
Write I/O /sec (`WRITE_IO_RATE`)	Frequency of write operations in a journal group (number of operations per second)	%	`double`	No	Not supported	Supported	--
Write Xfer /sec (`WRITE_XFER_RATE`)	Transfer rate of write operations in a journal group	%	`double`	No	Not supported	Supported	--

Journal Group Summary Extra (PI_JNLX)								
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
	(kilobytes per second)							

Note: The value of this field cannot be collected for Universal Storage Platform V/VM series storage systems.

LDEV Summary Extra (PI_LDSX)

Function

The LDEV Summary Extra (`PI_LDSX`) record stores the performance data indicating the performance of a volume.

Note:

If the CU number of the target LDEV is not set to be monitored, the record will not be created.

Table 2-141 LDEV Summary Extra (PI_LDSX) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	Yes[#]
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

#
> This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

LDEV Number (LDEV_NUMBER)

Lifetime

From when the logical device is set up to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-142 LDEV Summary Extra (PI_LDSX) Fields

LDEV Summary Extra (PI_LDSX)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	**Supported Storage**		Data Source
					Midrange	Enterprise See *Note 1*	
Back I/O /sec (BACK_IO_RATE)	Frequency of data transfer operations between cache memory and a hard disk drive (number of operations per second)	%	double	No	Not supported	Supported	--
Cache Memory Disk I/O /sec (CACHE_MEMORY_DISK_IO_RATE)	Frequency of data transfer operations from cache memory to a hard disk drive (number of operations per second)	%	double	No	Not supported	Supported	--
CFW Read Hit % (CFW_READ_HIT_RATE)	Cache hit rate of read operations in Cache Fast Write mode for each volume	%	float	No	Not supported	Supported See *Note 2*	--
CFW Read I/O /sec (CFW_READ_IO_RATE)	Frequency of read operations in Cache Fast Write mode for each volume (number of operations per second)	%	double	No	Not supported	Supported See *Note 2*	--
CFW Write Hit % (CFW_WRITE_HIT_RATE)	Cache hit rate of write operations in Cache Fast Write mode for each volume	%	float	No	Not supported	Supported See *Note 2*	--
CFW Write I/O /sec (CFW_WRITE_IO_RATE)	Frequency of write operations in Cache Fast Write for each volume (number of operations per second)	%	double	No	Not supported	Supported See *Note 2*	--

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LDEV Summary Extra (PI_LDSX)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	**Supported Storage**		Data Source
					Midran ge	Enterp rise See *Note 1*	
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not support ed	Support ed	--
LDEV Number (`LDEV_NUMBER`)	Logical device number Example: 00:01:0F	COPY	`string( 16)`	No	Not support ed	Support ed	--
RAID Group Number (`RAID_GROUP_NU MBER`)	Parity group number	COPY	`string( 64)`	No	Not support ed	Support ed	--
Random Disk Cache I/O /sec (`RANDOM_DISK_C ACHE_IO_RATE`)	Frequency of random data transfer operations from a hard disk drive to cache memory (number of operations per second)	%	`double`	No	Not support ed	Support ed	--
Random Read Hit % (`RANDOM_READ_H IT_RATE`)	Cache hit rate of random read operations for each volume	%	`float`	No	Not support ed	Support ed	--
Random Read I/O /sec (`RANDOM_READ_I O_RATE`)	Frequency of random read operations for each volume (number of operations per second)	%	`double`	No	Not support ed	Support ed	--
Random Write Hit % (`RANDOM_WRITE_ HIT_RATE`)	Cache hit rate of random write operations for each volume	%	`float`	No	Not support ed	Support ed	--
Random Write I/O /sec (`RANDOM_WRITE_ IO_RATE`)	Frequency of random write operations for each volume (number of operations per second)	%	`double`	No	Not support ed	Support ed	--
Read Hit % (`READ_HIT_RATE`)	Cache hit rate of read operations for each volume	%	`float`	No	Not support ed	Support ed	--

LDEV Summary Extra (PI_LDSX)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
Read I/O /sec (READ_IO_RATE)	Frequency of read operations for each volume (number of operations per second)	%	`double`	No	Not supported	Supported	--
Read Response Rate (READ_RESPONSE _RATE)	Average processing time per read operation request for each volume (in microseconds)	%	`double`	No	Not supported	Supported	--
Read Total Xfer /sec (READ_TOTAL_XF ER_RATE)	Transfer rate of operations for each volume (total kilobytes for read operations per second)	%	`double`	No	Not supported	Supported	--
Record Time (RECORD_TIME)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (INPUT_RECORD_ TYPE)	Record type identifier, which is always set to LDSX	COPY	`char(8)`	No	Not supported	Supported	--
Sequential Disk Cache I/O /sec (SEQUENTIAL_DI SK_CACHE_IO_RA TE)	Frequency of sequential data transfer operations from a hard disk drive to cache memory (number of operations per second)	%	`double`	No	Not supported	Supported	--
Sequential Read Hit % (SEQUENTIAL_RE AD_HIT_RATE)	Cache hit rate of sequential read operations for each volume	%	`float`	No	Not supported	Supported	--
Sequential Read I/O /sec (SEQUENTIAL_RE AD_IO_RATE)	Frequency of sequential read operations for each volume (number of operations per second)	%	`double`	No	Not supported	Supported	--

LDEV Summary Extra (PI_LDSX)								
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
Sequential Write Hit % (`SEQUENTIAL_WRITE_HIT_RATE`)	Cache hit rate of sequential write operations for each volume	%	`float`	No	Not supported	Supported	--
Sequential Write I/O /sec (`SEQUENTIAL_WRITE_IO_RATE`)	Frequency of sequential write operations for each volume (number of operations per second)	%	`double`	No	Not supported	Supported	--
Total I/O /sec (`TOTAL_IO_RATE`)	Frequency of operations for each volume (total number of read and write operations per second)	%	`double`	No	Not supported	Supported	--
Total Response Rate (`TOTAL_RESPONSE_RATE`)	Average processing time per read or write operation request for each volume (in microseconds)	%	`double`	No	Not supported	Supported	--
Total Xfer /sec (`TOTAL_XFER_RATE`)	Transfer rate of operations for each volume (total kilobytes for read and write operations per second)	%	`double`	No	Not supported	Supported	--
Write Hit % (`WRITE_HIT_RATE`)	Cache hit rate of write operations for each volume	%	`float`	No	Not supported	Supported	--
Write I/O /sec (`WRITE_IO_RATE`)	Frequency of write operations for each volume (number of operations per second)	%	`double`	No	Not supported	Supported	--
Write Response Rate (`WRITE_RESPONSE_RATE`)	Average processing time per write operation request for each volume (in microseconds)	%	`double`	No	Not supported	Supported	--

LDEV Summary Extra (PI_LDSX)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	**Supported Storage**		Data Source
					Midrange	Enterprise See *Note 1*	
Write Total Xfer /sec (`WRITE_TOTAL_X FER_RATE`)	Transfer rate of operations for each volume (total kilobytes for write operations per second)	%	`double`	No	Not supported	Supported	--

Note: *1:* The value of this field cannot be collected for Universal Storage Platform V/VM series storage systems.

Note: *2:* The value of this field cannot be collected for VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, and HUS VM storage systems.

LDEV TC Summary (PI_LDTC)

Function

The LDEV TC Summary (`PI_LDTC`) record stores the performance data indicating the performance of an internal, external, or virtual volume (data of remote copy by TrueCopy or TrueCopy for Mainframe, and monitoring data for global-active device).

Note:

If the CU number of the target LDEV is not set to be monitored, the record will not be created.

Table 2-143 LDEV TC Summary (PI_LDTC) Default and Changeable Values

Item	Default Value	Changeable?
`Collection Interval`	3600	Yes[#]
`Collection Offset`	0	No
`Log`	Yes	Yes
`LOGIF`	(Blank)	No

\#

This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

LDEV Number (LDEV_NUMBER)

Lifetime

From when the logical device is set up to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-144 LDEV TC Summary (PI_LDTC) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	**Enterprise See Note 1**	
Initial Copy Hit RIO Count (`INITIAL_COPY_HIT_RIO_COUNT`)	Remote I/O hit count during initial copy	ADD	`double`	No	Not supported	Supported See **Note 2**	--
Initial Copy Remote I/O Count (`INITIAL_COPY_RIO_COUNT`)	Number of remote I/O operations during initial copy	ADD	`double`	No	Not supported	Supported	--
Initial Copy Response Rate (`INITIAL_COPY_RESPONSE_RATE`)	Average remote I/O response time during initial copy (milliseconds per operation)	%	`double`	No	Not supported	Supported	--
Initial Copy Xfer /sec (`INITIAL_COPY_XFER_RATE`)	Transfer rate of remote I/O operations during initial copy (kilobytes per second)	%	`double`	No	Not supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not supported	Supported	--
LDEV Number (`LDEV_NUMBER`)	Logical device number Example: 00:01:0F	COPY	`string(16)`	No	Not supported	Supported	--

LDEV TC Summary (PI_LDTC)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See Note 1**	
Migration Copy Hit RIO Count (`MIGRATION_COPY_HIT_RIO_COUNT`)	Remote I/O hit count during migration copy	ADD	`double`	No	Not supported	Supported See *Note 2*	--
Migration Copy Remote I/O Count (`MIGRATION_COPY_RIO_COUNT`)	Number of remote I/O operations during migration copy	ADD	`double`	No	Not supported	Supported See *Note 2*	--
Out of Sync Track Count (`OUT_OF_SYNC_TRACK_COUNT`)	Number of differential tracks	ADD	`double`	No	Not supported	Supported	--
Pair Synchronized % (`PAIR_SYNCHRONIZED_RATE`)	Pair match rate	%	`float`	No	Not supported	Supported	--
Read Remote I/O Count (`READ_RIO_COUNT`)	Total number of read remote I/O operations	ADD	`double`	No	Not supported	Supported See *Note 2*	--
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to LDTC	COPY	`char(8)`	No	Not supported	Supported	--
Remote I/O Error Count (`RIO_ERROR_COUNT`)	Number of errors that occur during remote I/O processing	ADD	`double`	No	Not supported	Supported	--
Restore Copy Hit RIO Count (`RESTORE_COPY_HIT_RIO_COUNT`)	Remote I/O hit count during restore copy	ADD	`double`	No	Not supported	Supported See *Note 2*	--

LDEV TC Summary (PI_LDTC)								
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See Note 1**	
Restore Copy Remote I/O Count (`RESTORE_COPY_RIO_COUNT`)	Number of remote I/O operations during restore copy	ADD	`double`	No	Not supported	Supported See ***Note 2***	--
Total Remote I/O Count (`TOTAL_RIO_COUNT`)	Total number of read and write remote I/O operations	ADD	`double`	No	Not supported	Supported	--
Update Copy Hit Remote I/O Count (`UPDATE_COPY_HIT_RIO_COUNT`)	Remote I/O hit count during update copy	ADD	`double`	No	Not supported	Supported See ***Note 2***	--
Update Copy Remote I/O Count (`UPDATE_COPY_RIO_COUNT`)	Number of remote I/O operations during update copy	ADD	`double`	No	Not supported	Supported	--
Update Copy Response Rate (`UPDATE_COPY_RESPONSE_RATE`)	Average remote I/O response time during update copy (milliseconds per operation)	%	`double`	No	Not supported	Supported	--
Update Copy Xfer /sec (`UPDATE_COPY_XFER_RATE`)	Transfer rate of remote I/O operations during update copy (kilobytes per second)	%	`double`	No	Not supported	Supported	--
Write Remote I/O Count (`WRITE_RIO_COUNT`)	Total number of write remote I/O operations	ADD	`double`	No	Not supported	Supported	--

Note: *1:* The value of this field cannot be collected for Universal Storage Platform V/VM series storage systems.

Note: *2:* The value of this field cannot be collected for VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, and VSP 5000 series storage systems.

LDEV UR Summary (PI_LDUR)

Function

The LDEV UR Summary (PI_LDUR) record stores the performance data indicating the performance of an internal, external, or virtual volume (about remote copy by Universal Replicator or Universal Replicator for Mainframe).

Note:

If the CU number of the target LDEV is not set to be monitored, the record will not be created.

Table 2-145 LDEV UR Summary (PI_LDUR) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	Yes[#]
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

#

This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

LDEV Number (LDEV_NUMBER)

Lifetime

From when the logical device is set up to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-146 LDEV UR Summary (PI_LDUR) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage Midrange	Supported Storage Enterprise See *Note*	Data Source
Initial Copy Hit % (`INITIAL_COPY_HIT_RATE`)	Hit rate of initial copy by Universal Replicator	%	`float`	No	Not supported	Supported	--
Initial Copy Xfer /sec (`INITIAL_COPY_XFER_RATE`)	Transfer rate of remote I/O operations during initial copy by Universal Replicator (kilobytes per second)	%	`double`	No	Not supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not supported	Supported	--
LDEV Number (`LDEV_NUMBER`)	Logical device number Example: 00:01:0F	COPY	`string(16)`	No	Not supported	Supported	--
Read Hit I/O /sec (`READ_HIT_IO_RATE`)	Number of cache hits in read operations by Universal Replicator (number of times per second)	%	double	No	Not supported	Supported	--
Read I/O /sec (`READ_IO_RATE`)	Frequency of read operations by Universal Replicator (number of operations per second)	%	`double`	No	Not supported	Supported	--
Read Xfer /sec (`READ_XFER_RATE`)	Transfer rate of read operations by Universal Replicator (kilobytes per second)	%	`double`	No	Not supported	Supported	--
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--

LDEV UR Summary (PI_LDUR)								
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source	
					Midrange	Enterprise See *Note*		
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to LDUR	COPY	`char(8)`	No	Not supported	Supported	--	
Write Hit I/O /sec (`WRITE_HIT_IO_RATE`)	Number of cache hits in write operations by Universal Replicator (number of times per second)	%	`double`	No	Not supported	Supported	--	
Write I/O /sec (`WRITE_IO_RATE`)	Frequency of write operations by Universal Replicator (number of operations per second)	%	`double`	No	Not supported	Supported	--	
Write Xfer /sec (`WRITE_XFER_RATE`)	Transfer rate of write operations by Universal Replicator (kilobytes per second)	%	`double`	No	Not supported	Supported	--	

Note: The value of this field cannot be collected for Universal Storage Platform V/VM series storage systems.

LDEV Utilization (PI_LDU)

Function

LDEV Utilization (PI_LDU) record stores the performance data indicating the activity rate of internal volumes.

Note: If the CU number of the target LDEV is not set to be monitored, the record will not be created.

Table 2-147 LDEV Utilization (PI_LDU) Default and Changeable Values

Item	Default Value	Changeable?
`Collection Interval`	3600	Yes[#]
`Collection Offset`	0	No

Item	Default Value	Changeable?
Log	No	Yes
LOGIF	(Blank)	No

\#

This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

LDEV Number (LDEV_NUMBER)

Lifetime

From when the logical device is set up to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-148 LDEV Utilization (PI_LDU) Fields

LDEV Utilization (PI_LDU)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
Busy % (BUSY_RATE)	Volume usage See **Note 2**	%	float	No	Not supported	Supported	--
Interval (INTERVAL)	Interval (in seconds) at which information is collected	ADD	ulong	No	Not supported	Supported	--
LDEV Number (LDEV_NUMBER)	Logical device number Example: 00:01:0F	COPY	string(16)	No	Not supported	Supported	--
Max Busy % (MAX_BUSY_RATE)	Volume usage. If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is	HI	float	No	Not supported	Supported	BUSY_RATE

LDEV Utilization (PI_LDU)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise** See **Note 1**	
	stored rather than the average value. See **Note 2**						
RAID Group Number (`RAID_GROUP_NUMBER`)	Parity group number	COPY	`string(64)`	No	Not supported	Supported	--
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to LDU	COPY	`char(8)`	No	Not supported	Supported	--
SI Busy % (`SI_BUSY_RATE`)	ShadowImage volume usage. This is the percentage of processing performed by ShadowImage and ShadowImage for Mainframe, of all processing for volumes.	%	`float`	No	Not supported	Supported	--

> **Note: 1:**The value of this field cannot be collected for Universal Storage Platform V/VM series storage systems.

> **Note: 2:**For storage systems other than VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, VSP 5000 series, VSP G1000, G1500, VSP F1500, if storage systems use parity groups created from flash drives (FMD, FMC, or SSD), you cannot judge the load status from the usage rate of the parity group. Because of the characteristics of flash drives, larger values might be displayed regardless of the load status.

LU Summary By Port (PI_LSP)

Function

LU Summary By Port (PI_LSP) record stores the performance data indicating the performance of the LUs for each port. Note that if an applicable LU is connected to multiple ports, the performance values for that LU will be the same.

Note:

If the CU number of the target LU (LDEV) is not set to be monitored, the record will not be created.

Table 2-149 LU Summary By Port (PI_LSP) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	Yes[#]
Collection Offset	0	No
Log	No	Yes
LOGIF	(Blank)	No

#
> This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

Port Name (PORT_NAME), LU Number (LU_NUMBER) and Host Group Name (HOST_GROUP_NAME)

Lifetime

From when the LU is set up to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-150 LU Summary By Port (PI_LSP) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
Cache Memory Disk I/O /sec (`CACHE_MEMORY_DISK_IO_RATE`)	Frequency of data transfer operations from cache memory to a hard disk drive (number of operations per second)	%	`double`	No	Not supported	Supported	--
Host Group ID (`HOST_GROUP_ID`)	String that identifies the host group	COPY	`string(16)`	No	Not supported	Supported	--
Host Group Name (`HOST_GROUP_NAME`)	Name of the host group	COPY	`string(65)`	No	Not supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not supported	Supported	--
LDEV Number (`LDEV_NUMBER`)	Logical device number Example: 00:01:0F	COPY	`string(16)`	No	Not supported	Supported	--
LU Number (`LU_NUMBER`)	Logical unit number (LUN)	COPY	`string(16)`	No	Not supported	Supported	--
Port Name (`PORT_NAME`)	Storage system port name	COPY	`string(64)`	No	Not supported	Supported	--
Random Disk Cache I/O /sec (`RANDOM_DISK_CACHE_IO_RATE`)	Frequency of random data transfer operations from a hard disk drive to cache memory (number of operations per second)	%	`double`	No	Not supported	Supported	--
Random Read Hit % (`RANDOM_READ_HIT_RATE`)	Cache hit rate of random read operations for each logical unit	%	`float`	No	Not supported	Supported	--

LU Summary By Port (PI_LSP) Fields							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
Random Read I/O /sec (`RANDOM_READ_IO_RATE`)	Frequency of random read operations for each logical unit (number of operations per second)	%	`double`	No	Not supported	Supported	--
Random Write Hit % (`RANDOM_WRITE_HIT_RATE`)	Cache hit rate of random write operations for each logical unit	%	`float`	No	Not supported	Supported	--
Random Write I/O /sec (`RANDOM_WRITE_IO_RATE`)	Frequency of random write operations for each logical unit (number of operations per second)	%	`double`	No	Not supported	Supported	--
Read Response Rate (`READ_RESPONSE_RATE`)	Average processing time per read operation request for each logical unit (in microseconds)	%	`double`	No	Not supported	Supported	--
Read Xfer /sec (`READ_XFER_RATE`)	Transfer rate of read operations for each logical unit (kilobytes per second)	%	`double`	No	Not supported	Supported	--
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to LSP	COPY	`char(8)`	No	Not supported	Supported	--
Sequential Disk Cache I/O /sec (`SEQUENTIAL_DISK_CACHE_IO_RATE`)	Frequency of sequential data transfer operations from a hard disk drive to cache memory (number of operations per second)	%	`double`	No	Not supported	Supported	--

LU Summary By Port (PI_LSP) Fields							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
Sequential Read Hit % (SEQUENTIAL_READ_HIT_RATE)	Cache hit rate of sequential read operations for each logical unit	%	`float`	No	Not supported	Supported	--
Sequential Read I/O /sec (SEQUENTIAL_READ_IO_RATE)	Frequency of sequential read operations for each logical unit (number of operations per second)	%	`double`	No	Not supported	Supported	--
Sequential Write Hit % (SEQUENTIAL_WRITE_HIT_RATE)	Cache hit rate of sequential write operations for each logical unit	%	`float`	No	Not supported	Supported	--
Sequential Write I/O /sec (SEQUENTIAL_WRITE_IO_RATE)	Frequency of sequential write operations for each logical unit (number of operations per second)	%	`double`	No	Not supported	Supported	--
Total I/O /sec (TOTAL_IO_RATE)	Frequency of operations for each logical unit (total number of read and write operations per second)	%	`double`	No	Not supported	Supported	--
Total Response Rate (TOTAL_RESPONSE_RATE)	Average processing time per read or write operation request for each logical unit (in microseconds)	%	`double`	No	Not supported	Supported	--
Total Xfer /sec (TOTAL_XFER_RATE)	Transfer rate of operations for each logical unit (total kilobytes for read and write operations per second)	%	`double`	No	Not supported	Supported	--
Write Response Rate (WRITE_RESPONSE_RATE)	Average processing time per write operation request for each logical unit (in microseconds)	%	`double`	No	Not supported	Supported	--

LU Summary By Port (PI_LSP) Fields							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
Write Xfer /sec (`WRITE_XFER_RATE`)	Transfer rate of write operations for each logical unit (kilobytes per second)	%	`double`	No	Not supported	Supported	--

Note: The value of this field cannot be collected for Universal Storage Platform V/VM series storage systems.

LU TC Summary By Port (PI_LTSP)

Function

The LU TC Summary By Port (PI_LTSP) record stores performance data indicating the performance of the LUs for each port (data of remote copy by TrueCopy or TrueCopy for Mainframe, and monitoring data for global-active device). Note that if an applicable LU is connected to multiple ports, the performance values for that LU will be the same.

Note:

If the CU number of the target LDEV is not set to be monitored, the record will not be created.

Table 2-151 LU TC Summary By Port (PI_LTSP) Default and Changeable Values

Item	Default Value	Changeable?
`Collection Interval`	3600	Yes[#]
`Collection Offset`	0	No
`Log`	No	Yes
`LOGIF`	(Blank)	No

#
> This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

Port Name (PORT_NAME), LU Number (LU_NUMBER) and Host Group Name (HOST_GROUP_NAME)

Lifetime

From when the LU is set up to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-152 LU TC Summary By Port (PI_LTSP) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	**Enterprise** See *Note 1*	
Host Group ID (`HOST_GROUP_ID`)	String that identifies the host group	COPY	`string(16)`	No	Not supported	Supported	--
Host Group Name (`HOST_GROUP_NAME`)	Host group name	COPY	`string(65)`	No	Not supported	Supported	--
Initial Copy Hit RIO Count (`INITIAL_COPY_HIT_RIO_COUNT`)	Remote I/O hit count during initial copy for each volume (logical unit)	ADD	double	No	Not supported	Supported See *Note 2*	--
Initial Copy Remote I/O Count (`INITIAL_COPY_RIO_COUNT`)	Number of remote I/O operations during initial copy for each volume (logical unit)	ADD	`double`	No	Not supported	Supported	--
Initial Copy Response Rate (`INITIAL_COPY_RESPONSE_RATE`)	Average remote I/O response time during initial copy for each volume (logical unit) (milliseconds per operation)	%	`double`	No	Not supported	Supported	--
Initial Copy Xfer /sec	Transfer rate of remote I/O operations during	%	`double`	No	Not supported	Supported	--

LU TC Summary By Port (PI_LTSP)								
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
(INITIAL_COPY_XFER_RATE)	initial copy for each volume (logical unit) (kilobytes per second)						
Interval (INTERVAL)	Interval (in seconds) at which information is collected	ADD	ulong	No	Not supported	Supported	--
LDEV Number (LDEV_NUMBER)	Logical device number Example: 00:01:0F	COPY	string(16)	No	Not supported	Supported	--
LU Number (LU_NUMBER)	Logical unit number (LUN)	COPY	string(16)	No	Not supported	Supported	--
Migration Copy Hit RIO Count (MIGRATION_COPY_HIT_RIO_COUNT)	Remote I/O hit count during migration copy for each volume (logical unit)	ADD	double	No	Not supported	Supported See *Note 2*	--
Migration Copy Remote I/O Count (MIGRATION_COPY_RIO_COUNT)	Number of remote I/O operations during migration copy for each volume (logical unit)	ADD	double	No	Not supported	Supported See *Note 2*	--
Out of Sync Track Count (OUT_OF_SYNC_TRACK_COUNT)	Number of differential tracks for each volume (logical unit)	ADD	double	No	Not supported	Supported	--
Pair Synchronized % (PAIR_SYNCHRONIZED_RATE)	Pair match rate for each volume (logical unit)	%	float	No	Not supported	Supported	--
Port Name (PORT_NAME)	Storage system port name	COPY	string(64)	No	Not supported	Supported	Not supported
Read Remote I/O Count (READ_RIO_COUNT)	Total number of read remote I/O operations for each volume (logical unit)	ADD	double	No	Not supported	Supported See *Note 2*	--

LU TC Summary By Port (PI_LTSP)								
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
Record Time (RECORD_TIME)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (INPUT_RECORD_TYPE)	Record type identifier, which is always set to LTSP	COPY	`char(8)`	No	Not supported	Supported	--
Remote I/O Error Count (RIO_ERROR_COUNT)	Number of errors that occur during remote I/O processing for each volume (logical unit)	ADD	`double`	No	Not supported	Supported	--
Restore Copy Hit RIO Count (RESTORE_COPY_HIT_RIO_COUNT)	Remote I/O hit count during restore copy for each volume (logical unit)	ADD	double	No	Not supported	Supported See *Note 2*	--
Restore Copy Remote I/O Count (RESTORE_COPY_RIO_COUNT)	Number of remote I/O operations during restore copy for each volume (logical unit)	ADD	`double`	No	Not supported	Supported See *Note 2*	--
Total Remote I/O Count (TOTAL_RIO_COUNT)	Total number of read and write remote I/O operations for each volume (logical unit)	ADD	`double`	No	Not supported	Supported	--
Update Copy Hit Remote I/O Count (UPDATE_COPY_HIT_RIO_COUNT)	Remote I/O hit count during update copy for each volume (logical unit)	ADD	`double`	No	Not supported	Supported See *Note 2*	--
Update Copy Remote I/O Count (UPDATE_COPY_RIO_COUNT)	Number of remote I/O operations during update copy for each volume (logical unit)	ADD	`double`	No	Not supported	Supported	--
Update Copy Response Rate	Average remote I/O response time during update copy	%	`double`	No	Not supported	Supported	--

LU TC Summary By Port (PI_LTSP)								
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See** *Note 1*	
(UPDATE_COPY_R ESPONSE_RATE)	for each volume (logical unit) (milliseconds per operation)						
Update Copy Xfer /sec (UPDATE_COPY_X FER_RATE)	Transfer rate of remote I/O operations during update copy for each volume (logical unit) (kilobytes per second)	%	double	No	Not support ed	Support ed	--
Write Remote I/O Count (WRITE_RIO_COU NT)	Total number of write remote I/O operations for each volume (logical unit)	ADD	double	No	Not support ed	Support ed	--

📄 **Note:** *1:*The value of this field cannot be collected for Universal Storage Platform V/VM series storage systems.

📄 **Note:** *2:*The value of this field cannot be collected for VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, and VSP 5000 series storage systems.

LU UR Summary By Port (PI_LUSP)

Function

The LU UR Summary By Port (PI_LUSP) record stores performance data indicating the performance of the LUs for each port. Note that if an applicable LU is connected to multiple ports, the performance values for that LU will be the same.

Note:

If the CU number of the target LU (LDEV) is not set to be monitored, the record will not be created.

Table 2-153 LU UR Summary By Port (PI_LUSP) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	Yes#
Collection Offset	0	No
Log	No	Yes
LOGIF	(Blank)	No

\#

This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

Port Name (PORT_NAME), LU Number (LU_NUMBER) and Host Group Name (HOST_GROUP_NAME)

Lifetime

From when the LU is set up to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-154 LU UR Summary By Port (PI_LUSP) Fields

LU UR Summary By Port (PI_LUSP)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See** *Note*	
Host Group ID (HOST_GROUP_ID)	String that identifies the host group	COPY	string(16)	No	Not supported	Supported	--
Host Group Name (HOST_GROUP_NAME)	Host group name	COPY	string(65)	No	Not supported	Supported	--
Initial Copy Hit %	Hit rate of initial copy by Universal	%	float	No	Not supported	Supported	--

LU UR Summary By Port (PI_LUSP)								
View Name (Manager Name)	Description	Sum Rule	Format	Delta	**Supported Storage**		Data Source
					Midrange	Enterprise See *Note*	
(`INITIAL_COPY_HIT_RATE`)	Replicator for each volume (logical unit)						
Initial Copy Xfer /sec (`INITIAL_COPY_XFER_RATE`)	Transfer rate of remote I/O operations during initial copy by Universal Replicator for each volume (logical unit) (kilobytes per second)	%	`double`	No	Not supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not supported	Supported	--
LDEV Number (`LDEV_NUMBER`)	Logical device number Example: 00:01:0F	COPY	`string(16)`	No	Not supported	Supported	--
LU Number (`LU_NUMBER`)	Logical unit number (LUN)	COPY	`string(16)`	No	Not supported	Supported	--
Port Name (`PORT_NAME`)	Storage system port name	COPY	`string(64)`	No	Not supported	Supported	--
Read Hit I/O /sec (`READ_HIT_IO_RATE`)	Number of cache hits in read operations for each volume (LU) in Universal Replicator (number of times per second)	%	`double`	No	Not supported	Supported	--
Read I/O /sec (`READ_IO_RATE`)	Frequency of read operations by Universal Replicator for each volume (logical unit) (number of operations per second)	%	`double`	No	Not supported	Supported	--
Read Xfer /sec (`READ_XFER_RATE`)	Transfer rate of read operations by Universal Replicator for each volume (logical unit)	%	`double`	No	Not supported	Supported	--

LU UR Summary By Port (PI_LUSP)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See _Note_**	
	(kilobytes per second)						
Record Time (RECORD_TIME)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	time_t	No	Not supported	Supported	--
Record Type (INPUT_RECORD_TYPE)	Record type identifier, which is always set to LUSP	COPY	char(8)	No	Not supported	Supported	--
Write Hit I/O /sec (WRITE_HIT_IO_RATE)	Number of cache hits in write operations for each volume (LU) in Universal Replicator (number of times per second)	%	double	No	Not supported	Supported	--
Write I/O /sec (WRITE_IO_RATE)	Frequency of write operations by Universal Replicator for each volume (logical unit) (number of operations per second)	%	double	No	Not supported	Supported	--
Write Xfer /sec (WRITE_XFER_RATE)	Transfer rate of write operations by Universal Replicator for each volume (logical unit) (kilobytes per second)	%	double	No	Not supported	Supported	--

Note: The value of this field cannot be collected for Universal Storage Platform V/VM series storage systems.

Working with Records

Hitachi Tuning Manager Hardware Reports Reference

Main Blade DRR Summary (PI_MBDR)

Function

The Main Blade DRR Summary (`PI_MBDR`) record stores performance data indicating the usage rate of the data recovery reconfiguration circuit for a main blade.

Table 2-155 Main Blade DRR Summary (PI_MBDR) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes[#]
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

Key Fields

Main Blade Name (`MAIN_BLADE_NAME`) and DRR Name (`DRR_NAME`)

Lifetime

From when the main blade is set up to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-156 Main Blade DRR Summary (PI_MBDR) Fields

<table>
<tr><th colspan="9">Main Blade DRR Summary (PI_MBDR)</th></tr>
<tr><th rowspan="2">View Name (Manager Name)</th><th rowspan="2">Description</th><th rowspan="2">Sum Rule</th><th rowspan="2">Format</th><th rowspan="2">Delta</th><th colspan="2">Supported Storage</th><th rowspan="2">Data Source</th></tr>
<tr><th>Midrange</th><th>Enterprise See Note</th></tr>
<tr><td>Busy % (BUSY_RATE)</td><td>Usage rate of the data recovery reconfiguration circuit (DRR)</td><td>%</td><td>float</td><td>No</td><td>Not supported</td><td>Supported</td><td>--</td></tr>
<tr><td>DRR Name (DRR_NAME)</td><td>Name of the data recovery reconfiguration circuit (DRR)</td><td>COPY</td><td>string(16)</td><td>No</td><td>Not supported</td><td>Supported</td><td>--</td></tr>
<tr><td>Interval (INTERVAL)</td><td>Interval (in seconds) at which</td><td>ADD</td><td>ulong</td><td>No</td><td>Not supported</td><td>Supported</td><td>--</td></tr>
</table>

Main Blade DRR Summary (PI_MBDR)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
	information is collected						
Main Blade Name (MAIN_BLADE_NA ME)	Name of the main blade	COPY	string(16)	No	Not supported	Supported	--
Max Busy % (MAX_BUSY_RATE)	Usage rate of the data recovery reconfiguration circuit (DRR). If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored instead of the average value.	HI	float	No	Not supported	Supported	BUSY_RA TE
Record Time (RECORD_TIME)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	time_t	No	Not supported	Supported	--
Record Type (INPUT_RECORD_ TYPE)	Record type identifier, which is always set to MBDR	COPY	char(8)	No	Not supported	Supported	--

> **Note:** The value of this field cannot be collected for VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, VSP 5000 series, VSP G1000, G1500, VSP F1500, Virtual Storage Platform series, and Universal Storage Platform V/VM series storage systems.

Mainframe Port Summary (PI_MPTS)

Function

The Mainframe Port Summary (PI_MPTS) record stores the performance data indicating the performance of mainframe ports.

> **Note:** The items in 1 and 2 below all have the same field name (Port Number), but the values output to the items in 1 are different from those output to the items in 2.
> 1. the Port Number field of the PD_PTC record or the PI_PTS record
> 2. the Port Number field of the PI_MPTS record or the PI_PTSX record

For this reason, if you want to check whether the port information of one record matches that of another record, check the port name field (`Port Name`).

Table 2-157 Mainframe Port Summary (PI_MPTS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes[#]
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

#

This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

Port Number (PORT_NUMBER)

Lifetime

From when the main frame port is set up to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-158 Mainframe Port Summary (PI_MPTS) Fields

Mainframe Port Summary (PI_MPTS)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
Avg CMR Time (AVG_CMR_TIME)	Average CMR processing time (in microseconds) See *Note 2*	ADD	double	No	Not supported	Supported	--
Avg Connect Time (AVG_CONNECT_TIME)	Average connection time (in microseconds) See *Note 3*	ADD	double	No	Not supported	Supported	--

Mainframe Port Summary (PI_MPTS)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	**Supported Storage**		Data Source
					Midrange	Enterprise See *Note 1*	
Avg Disconnect Time (`AVG_DISCONNECT_TIME`)	Average disconnection time (in microseconds) See *Note 4*	ADD	`double`	No	Not support ed	Support ed	--
Avg I/O /sec (`AVG_IO_RATE`)	Number of read and write operations measured for each port	%	`double`	No	Not support ed	Support ed	--
Avg Open Exchange Rate (`AVG_OPEN_EXCHANGE_RATE`)	Number of open exchanges per second See *Note 5*	%	`double`	No	Not support ed	Support ed	--
Avg Response Rate (`AVG_RESPONSE_RATE`)	Response time for each port (in microseconds)	%	`double`	No	Not support ed	Support ed	--
Avg Xfer /sec (`AVG_XFER_RATE`)	Amount of data transferred by read and write operations for each port (kilobytes per second)	%	`double`	No	Not support ed	Support ed	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not support ed	Support ed	--
Max I/O /sec (`MAX_IO_RATE`)	Maximum number of read and write operations per second measured for each port	HI	`double`	No	Not support ed	Support ed	`AVG_IO_RATE`
Max Xfer /sec (`MAX_XFER_RATE`)	Maximum amount of data transferred by read and write operations for each port (kilobytes per second)	HI	`double`	No	Not support ed	Support ed	`AVG_XFER_RATE`
Port Name (`PORT_NAME`)	Port name	COPY	`string(16)`	No	Not support ed	Support ed	--

Mainframe Port Summary (PI_MPTS)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See _Note 1_**	
Port Number (`PORT_NUMBER`)	Port number of the storage system	COPY	`string(8)`	No	Not supported	Supported	--
Read Avg Xfer /sec (`READ_AVG_XFER_RATE`)	Amount of data transferred by read operations for each port (kilobytes per second)	%	`double`	No	Not supported	Supported	--
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to MPTS	COPY	`char(8)`	No	Not supported	Supported	--
Write Avg Xfer /sec (`WRITE_AVG_XFER_RATE`)	Amount of data transferred by write operations for each port (kilobytes per second)	%	`double`	No	Not supported	Supported	--

Note: _1:_ The value of this field cannot be collected for VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, Virtual Storage Platform series, and Universal Storage Platform V/VM series storage systems.

Note: _2:_ The CMR processing time is the time required for a monitored port to return a command response to the storage system in response to I/O access from the storage system to that port.

Note: _3:_ The connection time is the time obtained by subtracting the CMR delay time from the response time.

Note: _4:_ The average disconnection time is the time during which processing is stopped to perform I/O processing for a drive when the storage system performs I/O access to a monitored port.

Note: _5:_ The number of open exchanges is the average of the number of active I/O access operations for a monitored port.

MP Summary (PI_MPS)

Function

The MP Summary (`PI_MPS`) record stores the performance data indicating the performance of a microprocessor.

Table 2-159 MP Summary (PI_MPS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes[#]
Collection Offset	0	No
Log	No	Yes
LOGIF	(Blank)	No

[#]

This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

Ldev Owner Id (LDEV_OWNER_ID) and Processor ID (PROCESSOR_ID)

Lifetime

From when the instance is created to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-160 MP Summary (PI_MPS) Fields

MP Summary (PI_MPS)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	**Supported Storage**		Data Source
					Midrange	Enterprise See *Note*	
Busy % (BUSY_RATE)	Processor usage	%	float	No	Not supported	Supported	--
Interval (INTERVAL)	Interval (in seconds) at which information is collected	ADD	ulong	No	Not supported	Supported	--

MP Summary (PI_MPS)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	**Supported Storage**		Data Source
					Midran ge	Enterp rise See *Note*	
Ldev Owner Id (`LDEV_OWNER_ID`)	• For VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, or VSP 5000 series storage systems: String that identifies the microprocessor unit that the processor belongs to • For VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems: ID that identifies the MP Blade that the processor belongs to	COPY	`string( 16)`	No	Not support ed	Support ed	--
Max Busy % (`MAX_BUSY_RATE`)	Processor usage. If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.	HI	`float`	No	Not support ed	Support ed	`BUSY_RATE`
Name (`NAME`)	• For VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, HUS VM, or VSP 5000 series storage systems:	COPY	`string( 32)`	No	Not support ed	Support ed	--

MP Summary (PI_MPS)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
	String created by concatenating the name of the microprocessor unit that the processor belongs to and the microprocessor name • For VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems: String created by concatenating the name of the MP Blade that the processor belongs to and the microprocessor name						
Processor ID (`PROCESSOR_ID`)	String that identifies the processor	COPY	`string(16)`	No	Not supported	Supported	--
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to MPS	COPY	`char(8)`	No	Not supported	Supported	--

Note: The value of this field cannot be collected for Universal Storage Platform V/VM series storage systems.

Port Summary Extra (PI_PTSX)

Function

The Port Summary Extra (`PI_PTSX`) record stores the performance data indicating the performance of storage system ports.

> **Note:** The items in 1 and 2 below all have the same field name (`Port Number`), but the values output to the items in 1 are different from those output to the items in 2.
> 1. the Port Number field of the PD_PTC record or the PI_PTS record
> 2. the Port Number field of the PI_MPTS record or the PI_PTSX record
>
> For this reason, if you want to check whether the port information of one record matches that of another record, check the port name field (`Port Name`).

Table 2-161 Port Summary Extra (PI_PTSX) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes[#]
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

\#

This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

Port Number (PORT_NUMBER)

Lifetime

From when the port is set up to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-162 Port Summary Extra (PI_PTSX) Fields

<table>
<tr><th colspan="9">Port Summary Extra (PI_PTSX)</th></tr>
<tr><th rowspan="3">View Name (Manager Name)</th><th rowspan="3">Description</th><th rowspan="3">Sum Rule</th><th rowspan="3">Format</th><th rowspan="3">Delta</th><th colspan="2">Supported Storage</th><th rowspan="3">Data Source</th></tr>
<tr><th rowspan="2">Midrange</th><th>Enterprise</th></tr>
<tr><th>See <i>Note</i></th></tr>
<tr>
<td>Avg I/O /sec
(AVG_IO_RATE)</td>
<td>Average frequency of read and write operations for a storage system port (number of operations per second)</td>
<td>%</td>
<td><code>double</code></td>
<td>No</td>
<td>Not supported</td>
<td>Supported</td>
<td>--</td>
</tr>
<tr>
<td>Avg Response Rate
(AVG_RESPONSE_RATE)</td>
<td>Average processing time per read/write processing request for a storage system port (in microseconds)</td>
<td>%</td>
<td><code>double</code></td>
<td>No</td>
<td>Not supported</td>
<td>Supported</td>
<td>--</td>
</tr>
<tr>
<td>Avg Xfer /sec
(AVG_XFER_RATE)</td>
<td>Average transfer rate of read and write operations for a storage system port (kilobytes per second)</td>
<td>%</td>
<td><code>double</code></td>
<td>No</td>
<td>Not supported</td>
<td>Supported</td>
<td>--</td>
</tr>
<tr>
<td>Initiator Avg I/O /sec
(INITIATOR_AVG_IO_RATE)</td>
<td>Average frequency of read and write operations for a storage system port (number of operations per second) (Initiator port value/External port value)</td>
<td>%</td>
<td><code>double</code></td>
<td>No</td>
<td>Not supported</td>
<td>Supported</td>
<td>--</td>
</tr>
<tr>
<td>Initiator Avg Response Rate
(INITIATOR_AVG_RESPONSE_RATE)</td>
<td>Average processing time per read/write processing request for a storage system port (in microseconds) (Initiator port value/External port value)</td>
<td>%</td>
<td><code>double</code></td>
<td>No</td>
<td>Not supported</td>
<td>Supported</td>
<td>--</td>
</tr>
<tr>
<td>Initiator Avg Xfer Rate
(INITIATOR_AVG_XFER_RATE)</td>
<td>Average transfer rate of read and write operations for a storage system port (megabytes per second) (Initiator</td>
<td>%</td>
<td><code>double</code></td>
<td>No</td>
<td>Not supported</td>
<td>Supported</td>
<td>--</td>
</tr>
</table>

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
	port value/External port value)						
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not supported	Supported	--
Max I/O /sec (`MAX_IO_RATE`)	Maximum frequency of read and write operations for a storage system port (number of operations per second)	HI	`double`	No	Not supported	Supported	`AVG_IO_RATE`
Max Xfer /sec (`MAX_XFER_RATE`)	Maximum transfer rate of read and write operations for a storage system port (kilobytes per second)	HI	`double`	No	Not supported	Supported	`AVG_XFER_RATE`
Port Name (`PORT_NAME`)	Port name	COPY	`string(16)`	No	Not supported	Supported	--
Port Number (`PORT_NUMBER`)	Storage system port number	COPY	`string(8)`	No	Not supported	Supported	--
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to PTSX	COPY	`char(8)`	No	Not supported	Supported	--

> **Note:** The value of this field cannot be collected for Universal Storage Platform V/VM series storage systems.

RAID Group Summary Extra (PI_RGSX)

Function

The RAID Group Summary Extra (`PI_RGSX`) record stores performance data indicating the performance of a parity group, external volume group, and a virtual volume group.

Note:

All the CU numbers of the LDEVs that belong to the target parity group must be set to be monitored for the record to be created.

Table 2-163 RAID Group Summary Extra (PI_RGSX) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	Yes[#]
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

#

This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

RAID Group Number (RAID_GROUP_NUMBER)

Lifetime

From when the parity group is set up to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-164 RAID Group Summary Extra (PI_RGSX) Fields

RAID Group Summary Extra (PI_RGSX)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See Note 1**	
Back I/O /sec (BACK_IO_RATE)	Frequency of data transfer operations between cache memory and a hard disk drive (number of operations per second)	%	double	No	Not supported	Supported	--
Cache Memory Disk I/O /sec (CACHE_MEMORY_ DISK_IO_RATE)	Frequency of data transfer operations from cache memory to a hard disk drive (number of operations per second)	%	double	No	Not supported	Supported	--
CFW Read Hit % (CFW_READ_HIT_ RATE)	Cache hit rate of read operations in Cache Fast Write mode for each parity group	%	float	No	Not supported	Supported See *Note 2*	--
CFW Read I/O /sec (CFW_READ_IO_R ATE)	Frequency of read operations in Cache Fast Write mode for each parity group (number of operations per second)	%	double	No	Not supported	Supported See *Note 2*	--
CFW Write Hit % (CFW_WRITE_HIT _RATE)	Cache hit rate of write operations in Cache Fast Write mode for each parity group	%	float	No	Not supported	Supported See *Note 2*	--
CFW Write I/O /sec (CFW_WRITE_IO_ RATE)	Frequency of write operations in Cache Fast Write mode for each parity group (number of operations per second)	%	double	No	Not supported	Supported See *Note 2*	--
Interval (INTERVAL)	Interval (in seconds) at which information is collected	ADD	ulong	No	Not supported	Supported	--

RAID Group Summary Extra (PI_RGSX)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See _Note 1_**	
RAID Group Number (`RAID_GROUP_NUMBER`)	Parity group number	COPY	`string(64)`	No	Not supported	Supported	--
Random Disk Cache I/O /sec (`RANDOM_DISK_CACHE_IO_RATE`)	Frequency of random data transfer operations from a hard disk drive to cache memory (number of operations per second)	%	`double`	No	Not supported	Supported	--
Random Read Hit % (`RANDOM_READ_HIT_RATE`)	Cache hit rate of random read operations for each parity group	%	`float`	No	Not supported	Supported	--
Random Read I/O /sec (`RANDOM_READ_IO_RATE`)	Frequency of random read operations for each parity group (number of operations per second)	%	`double`	No	Not supported	Supported	--
Random Write Hit % (`RANDOM_WRITE_HIT_RATE`)	Cache hit rate of random write operations for each parity group	%	`float`	No	Not supported	Supported	--
Random Write I/O /sec (`RANDOM_WRITE_IO_RATE`)	Frequency of random write operations for each parity group (number of operations per second)	%	`double`	No	Not supported	Supported	--
Read Hit % (`READ_HIT_RATE`)	Cache hit rate of read operations for each parity group	%	`float`	No	Not supported	Supported	--
Read I/O /sec (`READ_IO_RATE`)	Frequency of read operations for each parity group (number of operations per second)	%	`double`	No	Not supported	Supported	--

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RAID Group Summary Extra (PI_RGSX)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See** *Note 1*	
Read Response Rate (`READ_RESPONSE _RATE`)	Average processing time per read operation request for each parity group, external volume, or virtual volume group (in microseconds)	%	`double`	No	Not supported	Supported	--
Read Total Xfer /sec (`READ_TOTAL_XF ER_RATE`)	Transfer rate of operations for each parity group (total kilobytes for read operations per second)	%	`double`	No	Not supported	Supported	--
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_ TYPE`)	Record type identifier, which is always set to `RGSX`	COPY	`char(8)`	No	Not supported	Supported	--
Sequential Disk Cache I/O /sec (`SEQUENTIAL_DI SK_CACHE_IO_RA TE`)	Frequency of sequential data transfer operations from a hard disk drive to cache memory (number of operations per second)	%	`double`	No	Not supported	Supported	--
Sequential Read Hit % (`SEQUENTIAL_RE AD_HIT_RATE`)	Cache hit rate of sequential read operations for each parity group	%	`float`	No	Not supported	Supported	--
Sequential Read I/O /sec (`SEQUENTIAL_RE AD_IO_RATE`)	Frequency of sequential read operations for each parity group (number of operations per second)	%	`double`	No	Not supported	Supported	--

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Midrange	Enterprise See *Note 1*	Data Source
RAID Group Summary Extra (PI_RGSX)							
					Supported Storage		
Sequential Write Hit % (`SEQUENTIAL_WRITE_HIT_RATE`)	Cache hit rate of sequential write operations for each parity group	%	`float`	No	Not supported	Supported	--
Sequential Write I/O /sec (`SEQUENTIAL_WRITE_IO_RATE`)	Frequency of sequential write operations for each parity group (number of operations per second)	%	`double`	No	Not supported	Supported	--
Total I/O /sec (`TOTAL_IO_RATE`)	Frequency of operations for each parity group (total number of read and write operations per second)	%	`double`	No	Not supported	Supported	--
Total Response Rate (`TOTAL_RESPONSE_RATE`)	Average processing time per read or write operation request for each parity group, external volume, or virtual volume group (in microseconds)	%	`double`	No	Not supported	Supported	--
Total Xfer /sec (`TOTAL_XFER_RATE`)	Transfer rate for operations for each parity group (total kilobytes for read and write operations per second)	%	`double`	No	Not supported	Supported	--
Write Hit % (`WRITE_HIT_RATE`)	Cache hit rate of write operations for each parity group	%	`float`	No	Not supported	Supported	--
Write I/O /sec (`WRITE_IO_RATE`)	Frequency of write operations for each parity group (number of operations per second)	%	`double`	No	Not supported	Supported	--
Write Response Rate	Average processing time per write operation request	%	`double`	No	Not supported	Supported	--

RAID Group Summary Extra (PI_RGSX)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
(WRITE_RESPONSE_RATE)	for each parity group, external volume, or virtual volume group (in microseconds)						
Write Total Xfer /sec (WRITE_TOTAL_XFER_RATE)	Transfer rate of operations for each parity group (total kilobytes for write operations per second)	%	double	No	Not supported	Supported	--

> **Note: 1:** The value of this field cannot be collected for Universal Storage Platform V/VM series storage systems.

> **Note: 2:** The value of this field cannot be collected for VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, and HUS VM storage systems.

RAID Group Utilization (PI_RGU)

Function

The RAID Group Utilization (PI_RGU) record stores the performance data indicating the activity rate of parity groups.

Table 2-165 RAID Group Utilization (PI_RGU) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	Yes[#]
Collection Offset	0	No
Log	No	Yes
LOGIF	(Blank)	No

\#
    This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

RAID Group Number (RAID_GROUP_NUMBER)

Lifetime

From when the parity group is set up to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-166 RAID Group Utilization (PI_RGU) Fields

RAID Group Utilization (PI_RGU)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise Supported See *Note 1*	
Busy % (`BUSY_RATE`)	Usage rate of the parity group See *Note 2*	%	`float`	No	Not supported		--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not supported	Supported	--
Max Busy % (`MAX_BUSY_RATE`)	Usage rate of the parity group. If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored instead of the average value. See *Note 2*	HI	`float`	No	Not supported	Supported	`BUSY_RATE`
RAID Group Number (`RAID_GROUP_NU MBER`)	Parity group number	COPY	`string( 64)`	No	Not supported	Supported	--
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and	COPY	`time_t`	No	Not supported	Supported	--

RAID Group Utilization (PI_RGU)								
					Supported Storage			
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Midrange**	**Enterprise Supported See Note 1**	**Data Source**	
	the record was created							
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to RGU	COPY	`char(8)`	No	Not supported	Supported	--	

Note: 1: The value of this field cannot be collected for Universal Storage Platform V/VM series storage systems.

Note: 2: For storage systems other than VSP Gx00 models, VSP Fx00 models, VSP Nx00 models, VSP 5000 series, VSP G1000, G1500, VSP F1500, if storage systems use parity groups created from flash drives (FMD, FMC, or SSD), you cannot judge the load status from the usage rate of the parity group. Because of the characteristics of flash drives, larger values might be displayed regardless of the load status.

Storage Cache Summary (PI_SCS)

Function

The Storage Cache Summary (`PI_SCS`) record stores performance data indicating the cache performance of the entire storage system.

Table 2-167 Storage Cache Summary (PI_SCS) Default and Changeable Values

Item	**Default Value**	**Changeable?**
`Collection Interval`	60	Yes[#]
`Collection Offset`	0	No
`Log`	Yes	Yes
`LOGIF`	(Blank)	No

\#
This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

None

Lifetime

From when the instance is created to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-168 Storage Cache Summary (PI_SCS) Fields

Storage Cache Summary (PI_SCS)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
Cache Memory Usage % (`CACHE_MEMORY_USAGE_RATE`)	Usage of cache memory of the storage system	%	`float`	No	Not supported	Supported	--
Cache Write Pending Usage % (`CACHE_WRITE_PENDING_RATE`)	Of the cache memory, the percentage of memory that is used by write-pending data	%	`float`	No	Not supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not supported	Supported	--
Max Cache Memory Usage % (`MAX_CACHE_MEMORY_USAGE_RATE`)	Cache memory usage of the storage system. If the values of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.	HI	`float`	No	Not supported	Supported	`CACHE_MEMORY_USAGE_RATE`
Max Cache Write Pending Usage %	Of the cache memory, the percentage of memory that is used by write-pending data. If the values	HI	`float`	No	Not supported	Supported	`CACHE_WRITE_PENDING_RATE`

Storage Cache Summary (PI_SCS)								
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
(MAX_CACHE_WRITE_PENDING_RATE)	of a smaller unit (e.g., minutes) are summarized to a greater unit (e.g., hours), the maximum value is stored rather than the average value.						
Record Time (RECORD_TIME)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	time_t	No	Not supported	Supported	--
Record Type (INPUT_RECORD_TYPE)	Record type identifier, which is always set to SCS	COPY	char(8)	No	Not supported	Supported	--

Note: The value of this field cannot be collected for Universal Storage Platform V/VM series storage systems.

Storage Copy Summary (PI_SCPS)

Function

The Storage Copy Summary (PI_SCPS) record stores the performance data indicating the performance of the entire storage system (monitoring data for TrueCopy or TrueCopy for Mainframe, Universal Replicator or Universal Replicator for Mainframe, or global-active device)

Note:

The value stored in this record is the total value of the performance data for the LDEVs that belong to the monitored CUs. The performance data of the LDEVs that belong to the CUs that are not monitored is not calculated together.

Table 2-169 Storage Copy Summary (PI_SCPS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes#
Collection Offset	0	No
Log	Yes	Yes
LOGIF	(Blank)	No

\#

This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

None

Lifetime

From when the instance is created to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-170 Storage Copy Summary (PI_SCPS) Fields

Storage Copy Summary (PI_SCPS)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
Initial Copy Remote I/O Count (INITIAL_COPY_RIO_COUNT)	Number of remote I/O operations during initial copy	ADD	double	No	Not supported	Supported	--
Initial Copy Response Rate (INITIAL_COPY_RESPONSE_RATE)	Average response time of initial copy (milliseconds per operation)	%	double	No	Not supported	Supported	--

Storage Copy Summary (PI_SCPS)								
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note*	
Initial Copy Xfer /sec (`INITIAL_COPY_XFER_RATE`)	Transfer rate of remote I/O operations during initial copy (kilobytes per second)	%	`double`	No	Not supported	Supported	--
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not supported	Supported	--
Out of Sync Track Count (`OUT_OF_SYNC_TRACK_COUNT`)	Number of differential tracks	COPY	`double`	No	Not supported	Supported	--
Pair Synchronized % (`PAIR_SYNCHRONIZED_RATE`)	Pair match rate	%	`float`	No	Not supported	Supported	--
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to SCPS	COPY	`char(8)`	No	Not supported	Supported	--
Remote I/O Error Count (`RIO_ERROR_COUNT`)	Number of errors that occur during remote I/O processing	ADD	`double`	No	Not supported	Supported	--
Total Remote I/O Count (`TOTAL_RIO_COUNT`)	Total number of read and write remote I/O operations	ADD	`double`	No	Not supported	Supported	--
Update Copy Remote I/O Count (`UPDATE_COPY_RIO_COUNT`)	Number of remote I/O operations during update copy	ADD	`double`	No	Not supported	Supported	--

Storage Copy Summary (PI_SCPS)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See _Note_**	
Update Copy Response Rate (`UPDATE_COPY_R ESPONSE_RATE`)	Average response time during update copy (milliseconds per operation)	%	`double`	No	Not supported	Supported	--
Update Copy Xfer /sec (`UPDATE_COPY_X FER_RATE`)	Transfer rate of remote I/O operations during update copy (kilobytes per second)	%	`double`	No	Not supported	Supported	--
UR Initial Copy Hit % (`UR_INITIAL_CO PY_HIT_RATE`)	Hit rate (%) of initial copy by Universal Replicator	%	`float`	No	Not supported	Supported	--
UR Initial Copy Xfer /sec (`UR_INITIAL_CO PY_XFER_RATE`)	Average transfer rate of initial copy by Universal Replicator (kilobytes per second)	%	`double`	No	Not supported	Supported	--
UR M-JNL Async Journal Count (`UR_M_JNL_ASYN C_JOURNAL_COUN T`)	Total number of journals in the primary storage system	COPY	`double`	No	Not supported	Supported	--
UR M-JNL Async Response Rate (`UR_M_JNL_ASYN C_RESPONSE_RAT E`)	Average remote I/O response time in the primary storage system (milliseconds per operation)	%	`double`	No	Not supported	Supported	--
UR M-JNL Async RIO Rate (`UR_M_JNL_ASYN C_RIO_RATE`)	Number of asynchronous remote I/O operations per second in the primary storage system	%	`double`	No	Not supported	Supported	--
UR M-JNL Async Xfer /sec (`UR_M_JNL_ASYN C_XFER_RATE`)	Transfer speed per second for the primary storage system (in kilobytes)	%	`double`	No	Not supported	Supported	--

Storage Copy Summary (PI_SCPS)								
					Supported Storage		
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Midrange**	**Enterprise See *Note***	**Data Source**
UR R-JNL Async Journal Count (`UR_R_JNL_ASYNC_JOURNAL_COUNT`)	Total number of journals in the secondary storage system	COPY	`double`	No	Not supported	Supported	--
UR R-JNL Async Response Rate (`UR_R_JNL_ASYNC_RESPONSE_RATE`)	Average remote I/O response time in the secondary storage system (milliseconds per operation)	%	`double`	No	Not supported	Supported	--
UR R-JNL Async RIO Rate (`UR_R_JNL_ASYNC_RIO_RATE`)	Number of asynchronous remote I/O operations per second in the secondary storage system	%	`double`	No	Not supported	Supported	--
UR R-JNL Async Xfer /sec (`UR_R_JNL_ASYNC_XFER_RATE`)	Transfer speed per second for the secondary storage system (in kilobytes)	%	`double`	No	Not supported	Supported	--
UR Write I/O /sec (`UR_WRITE_IO_RATE`)	Frequency of write operations by Universal Replicator (number of operations per second)	%	`double`	No	Not supported	Supported	--
UR Write Xfer /sec (`UR_WRITE_XFER_RATE`)	Transfer rate of write operations by Universal Replicator (kilobytes per second)	%	`double`	No	Not supported	Supported	--
Write Remote I/O Count (`WRITE_RIO_COUNT`)	Total number of write remote I/O operations	ADD	`double`	No	Not supported	Supported	--

Note: The value of this field cannot be collected for Universal Storage Platform V/VM series storage systems.

Storage Detail Extra (PD_PDX)

Function

The Storage Detail Extra (`PD_PDX`) record stores the performance data indicating the detailed information of the storage system.

Table 2-171 Storage Detail Extra (PD_PDX) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	No
Collection Offset	0	
Log	Yes	
LOGIF	(Blank)	

Key Fields

None

Lifetime

From when the instance is created to when it is deleted

Record Size

- Fixed part: --
- Variable part: --

Table 2-172 Storage Detail Extra (PD_PDX) Fields

Storage Detail Extra (PD_PDX)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
DKC Name (DKC_NAME)	Product name of the storage system See *Note 2*	--	string(64)	No	Not supported	Supported	--
DKC Serial Number (DKC_SERIAL_NUMBER)	Serial number of the storage system	--	string(32)	No	Not supported	Supported	--
Interval (INTERVAL)	Interval (in seconds) at which information is collected	--	ulong	No	Not supported	Supported	--

Storage Detail Extra (PD_PDX)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise** See *Note 1*	
Record Time (`RECORD_TIME`)	Time (in GMT) at which data was collected from the storage system and the record was created	--	`time_t`	No	Not supported	Supported	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to PDX	--	`char(8)`	No	Not supported	Supported	--
Vendor ID (`VENDOR_ID`)	Vendor name of the storage system	--	`string(64)`	No	Not supported	Supported	--

> **Note: 1:** The value of this field cannot be collected for Universal Storage Platform V/VM series storage systems.

> **Note: 2:** If the storage system is a VSP Nx00 models, the value is `VSP G400 G600`, `VSP G800`, `VSP F400 F600` or `VSP F800`.

Utilization Per MP Blade Extra (PD_UMSX)

Function

The Utilization Per MP Blade Extra (`PD_UMSX`) record stores the performance data indicating the 100 highest activity rates for the resources allocated to each MP Blade.

Table 2-173 Utilization Per MP Blade Extra (PD_UMSX) Default and Changeable Values

Item	Default Value	Changeable?
`Collection Interval`	60	Yes[#]
`Collection Offset`	0	No
`Log`	No	Yes
`LOGIF`	(Blank)	No

#
  This value can be changed to a value in the range from 60 to 3,600. The value must be a multiple of 60 and a divisor of 3,600.

Key Field

MP Blade ID (MP_BLADE_ID), Processor ID (PROCESSOR_ID), and Usage Rank (USAGE_RANK)

Lifetime

From when the MP Blade is defined to when it is removed

Record Size

- Fixed part: --
- Variable part: --

Table 2-174 Utilization Per MP Blade Extra (PD_UMSX) Fields

	Utilization Per MP Blade Extra (PD_UMSX)						
					Supported Storage		
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Midrange**	**Enterprise See Note 1**	**Data Source**
Interval (`INTERVAL`)	Interval (in seconds) at which information is collected	ADD	`ulong`	No	Not supported	Supported See **Note 2**	--
MP Blade ID (`MP_BLADE_ID`)	ID that identifies the MP Blade in the storage system to which the processor belongs Example: MPB0	COPY	`string(16)`	No	Not supported	Supported See **Note 2**	--
Processing Type (`PROCESSING_TYPE`)	The type of resource usage: • Open-Target • Open-Initiator • Open-External • BackEnd • System	COPY	`string(16)`	No	Not supported	Supported See **Note 2**	--
Processor ID (`PROCESSOR_ID`)	String that identifies the processor	COPY	`string(16)`	No	Not supported	Supported See **Note 2**	--
Processor Name (`PROCESSOR_NAME`)	• For HUS VM or VSP 5000 series storage systems:	COPY	`string(32)`	No	Not supported	Supported See **Note 2**	--

Utilization Per MP Blade Extra (PD_UMSX)							
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Supported Storage**		**Data Source**
					Midrange	**Enterprise See Note 1**	
	String created by concatenating the name of the microprocessor unit that the processor belongs to and the microprocessor name • For VSP G1000, G1500, VSP F1500 or Virtual Storage Platform series storage systems: String created by concatenating the name of the MP Blade that the processor belongs to and the microprocessor name						
Record Time (RECORD_TIME)	Time (in GMT) at which data was collected from the storage system and the record was created	COPY	time_t	No	Not supported	Supported	--
Record Type (INPUT_RECORD_TYPE)	Record type identifier, which is always set to UMSX	COPY	char(8)	No	Not supported	Supported	--
Resource ID (RESOURCE_ID)	Resource ID The value of this field depends on the type of resource, as follows: • If the resource is an LDEV (logical device): LDEV number	COPY	string(16)	No	Not supported	Supported See Note 2	--

Utilization Per MP Blade Extra (PD_UMSX)							
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Supported Storage		Data Source
					Midrange	Enterprise See *Note 1*	
	• If the resource is a journal: Journal group number • If the resource is an external volume: External volume group number						
Resource Type (`RESOURCE_TYPE`)	Type of resource The value of this field depends on the type of resource, as follows: • If the resource is an LDEV (logical device): LDEV • If the resource is a journal group: Journal • If the resource is an external volume group: External Volume	COPY	`string( 16)`	No	Not supported	Supported See *Note 2*	--
Resource Utilization (`RESOURCE_UTIL IZATION`)	Resource usage	%	`float`	No	Not supported	Supported See *Note 2*	--
Usage Rank (`USAGE_RANK`)	The rank of this resource compared to other resources in the MP in terms of utilization	COPY	`string( 8)`	No	Not supported	Supported See *Note 2*	--

Note: *1:*The value of this field cannot be collected for Universal Storage Platform V/VM series storage systems.

Note: *2:*The value of this field cannot be collected for VSP Gx00 models, VSP Fx00 models, and VSP Nx00 models storage systems.

Working with Records

Hitachi Tuning Manager Hardware Reports Reference

Agent for SAN Switch Records

lists the records that can be collected by Agent for SAN Switch and the information that is stored in each record.

Table 2-175 Agent for SAN Switch Records

Record Name	Record ID	Information Stored in Record
Connected Port Detail	PD_CPTD	Information about the ports connected to switches or devices
Device Detail	PD_DEVD	Configuration information about nodes and devices, such as hosts or storage systems
Port Detail	PD_PTD	Configuration information about ports of switches or devices
Port Error Summary	PI_PTES	Performance error information and status information about switch ports
Port Summary	PI_PTS	Performance information about switch ports
Switch Detail	PD	Configuration information about switches in the monitored fabric
Switch Error Summary	PI_SWES	Performance error information and status information about a switch
Switch Summary	PI_SWS	Performance information about a switch
System Summary	PI	Information such as the number of switches in the monitored fabric and the number of devices connected to the fabric

Connected Port Detail (PD_CPTD)

Function

The Connected Port Detail (PD_CPTD) record stores information about the ports connected to switches or devices in the monitored fabric. If the switches or devices are connected to a Cisco switch (seed switch), information is collected only for ports connected to switches or devices that are connected to the seed switch. Also, information about ports that connect switches is not collected. If the switches or devices are connected to a Cisco switch (DCNM-SAN SMI-S Agent) and the DCNM-SAN version is 5.2, configuration information is collected only for ports of switches or host devices in the monitored fabric. This is a multi-instance record.

Table 2-176 Connected Port Detail (PD_CPTD) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	Yes

Item	Default Value	Changeable?
Collection Offset	0	
Log	Yes	
LOGIF	(Blank)	

Key Fields

Conn Port WWN (CONNECTED_PORT_WWN) and Port WWN (PORT_WWN)

Lifetime

None

Record Size

- Fixed part: 681 bytes
- Variable part: 40 bytes

Table 2-177 Connected Port Detail (PD_CPTD) Fields

Connected Port Detail (PD_CPTD)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delt a**	**Unsuppor ted**	**Data Source**
Conn Port WWN (CONNECTED_PORT_W WN)	WWN of the connection-target port (**Example:** 10000064621219 11)	--	string(20)	No	--	--
Interval (INTERVAL)	Interval in seconds for storing the record	--	ulong	No	--	--
Port WWN (PORT_WWN)	WWN of the port (**Example:** 10000064621219 E3)	--	string(20)	No	--	--
Record Time (RECORD_TIME)	Interval ending date and time (in GMT)	--	time_t	No	--	--
Record Type (INPUT_RECORD_TYP E)	Record type identifier (always CPTD)	--	char(8)	No	--	--

Working with Records

Hitachi Tuning Manager Hardware Reports Reference

Device Detail (PD_DEVD)

Function

The Device Detail (`PD_DEVD`) record stores configuration information about nodes and devices, such as hosts or storage systems, in the monitored fabric. If the nodes and devices are connected to a Cisco switch (seed switch), configuration information is collected only for nodes and devices, such as hosts or storage systems, connected to the seed switch. If the nodes and devices are connected to a Cisco switch (DCNM-SAN SMI-S Agent) and the DCNM-SAN version is 5.2, configuration information is collected only for host devices and nodes in the monitored fabric. This is a multi-instance record.

Table 2-178 Device Detail (PD_DEVD) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	Yes
Collection Offset	0	
Log	Yes	
LOGIF	(Blank)	

Key Fields

Node WWN (`NODE_WWN`)

Lifetime

None

Record Size

- Fixed part: 681 bytes
- Variable part: 164 bytes

Table 2-179 Device Detail (PD_DEVD) Fields

Device Detail (PD_DEVD)						
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Unsupported	Data Source
Device Name (DEVICE_NAME) See **Note**	This field cannot be used because it is reserved.					
Device Type (DEVICE_TYPE) See **Note**	This field cannot be used because it is reserved.					

Device Detail (PD_DEVD)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delt a**	**Unsuppor ted**	**Data Source**
Interval (`INTERVAL`)	Interval in seconds for storing the record	--	`ulong`	No	--	--
Node Name (`NODE_NAME`)	Name of the node (**Example:** `Node A`)	--	`string( 64)`	No	Cisco (DCNM-SAN SMI-S Agent): All nodes Cisco (Seed Switch): All nodes	--
Node WWN (`NODE_WWN`)	WWN of the node (**Example:** `1000006462121 9D8`). For a host: WWN of the HBA. For a storage system: WWN of the controller.	--	`string( 20)`	No	--	--
Record Time (`RECORD_TIME`)	Interval ending date and time (in GMT)	--	`time_t`	No	--	--
Record Type (`INPUT_RECORD_TYP E`)	Record type identifier (always `DEVD`)	--	`char(8)`	No	--	--

Note: Agent for SAN Switch cannot collect Device Name field data and Device Type field data. To check the device name and type, identify the hardware in your network configuration diagram based on the node name and WWN information that are stored in the following fields:

- When monitoring Brocade switches (B-Model), the Node Name field or Node WWN field
- When monitoring Cisco switches, the Node WWN field

Port Detail (PD_PTD)

Function

The Port Detail (`PD_PTD`) record stores configuration information about ports of switches or devices in the monitored fabric. If the switches or devices are connected to a Cisco switch (seed switch), port configuration information is collected only for switches or devices connected to the seed switch. If the switches or devices are connected to a Cisco switch (DCNM-SAN SMI-S Agent) and the DCNM-SAN version is 5.2, port configuration information is collected only for switches or host devices in the monitored fabric. This is a multi-instance record.

Table 2-180 Port Detail (PD_PTD) Default and Changeable Values

Item	Default value	Changeable?
Collection Interval	3600	Yes
Collection Offset	0	
Log	Yes	
LOGIF	(Blank)	

Key Fields

Port WWN (`PORT_WWN`)

Lifetime

None

Record Size

- Fixed part: 681 bytes
- Variable part: 143 bytes

Table 2-181 Port Detail (PD_PTD) Fields

Port Detail (PD_PTD)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Unsupported**	**Data Source**
Address ID (`ADDRESS_ID`)	Address identifier (in hexadecimal) (**Example:** `0x0E010A`). The first byte is the Domain ID, the second byte is the Area ID, and the last byte is the Port ID.	--	`string(10)`	No	Cisco (DCNM-SAN SMI-S Agent): Ports of the switch Cisco (Seed Switch): Ports of the node	--

Port Detail (PD_PTD)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Unsupported**	**Data Source**
	If connecting to a Cisco switch (seed switch), the value is `0x000000` for a port that is not connected to a switch or a port that is not in the `Enable` status.					
Area ID (`AREA_ID`)	Area identifier (in hexadecimal) (***Example:*** `0x1C`). In the arbitrated loop configuration, the ports of the switch, host, and storage system have the same Area ID. If connecting to a Cisco switch (seed switch), the value is `0x00` for a port that is not connected to a switch or a port that is not in the `Enable` status.	--	string(6)	No	Cisco (DCNM-SAN SMI-S Agent): Ports of the switch Cisco (Seed Switch): Ports of the node	--
GBIC Type (`GBIC_TYPE`)	This field cannot be used because it is reserved.					
Interval (`INTERVAL`)	Interval in seconds for storing the record	--	ulong	No	--	--
Parent Type (`PARENT_TYPE`)	Type of object to which the port belongs: • `Switch` • `Node`	--	string(8)	No	--	--
Parent WWN (`PARENT_WWN`)	WWN of the object to which the port belongs. For a switch port: WWN of the switch For a node port: WWN of the node	--	string(20)	No	--	--
Port ID (`PORT_ID`)	Port identifier (in hexadecimal) (***Example:***	--	string(6)	No	Cisco (DCNM-SAN SMI-S	--

Port Detail (PD_PTD)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Unsupported**	**Data Source**
	`0x00`). With the arbitrated loop configuration, `AL_PA` is the Port ID. If connecting to a Cisco switch (seed switch), the value is `0x00` for a port that is not connected to a switch or a port that is not in the `Enable` status.				Agent): Ports of the switch Cisco (Seed Switch): Ports of the node	
Port Module Number (`PORT_MODUL E_NUMBER`)	Port module number. For Cisco switches, `0` is used if the port belongs to a switch, and `-1` is used if the port belongs to a node. Note that the port module number is the first digit in the Port Number field.	`--`	`short`	No	Brocade (Network Advisor SMI Agent): Ports of the node Brocade (DCFM SMI Agent): Ports of the node Brocade (SMI Agent for FOS): Ports of the node Cisco (DCNM-SAN SMI-S Agent): All ports Cisco (Seed Switch): All ports	`--`
Port Name (`PORT_NAME`)	This field cannot be used because it is reserved.					
Port Number (`PORT_NUMBE R`)	Port number. For Cisco switches, the port number is the last two digits, and the port module number is the first digit. (***Example:*** If the port module number is `1` and the port number is `01`, the value is `101`.)	`--`	`short`	No	Brocade (Network Advisor SMI Agent): Ports of the node Brocade (DCFM SMI Agent): Ports of the node Brocade (SMI Agent for FOS): Ports of the node	`--`

Port Detail (PD_PTD)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Unsupported**	**Data Source**
					Cisco (DCNM-SAN SMI-S Agent): Ports of the node Cisco (Seed Switch): Ports of the node	
Port Speed (`PORT_SPEED`)	Signal transmission speed of the port: • 1G (Speed has been adjusted to 1 Gbps by Auto Negotiate or fixed at 1 Gbps.) • 2G (Speed has been adjusted to 2 Gbps by Auto Negotiate or fixed at 2 Gbps.) • 4G (Speed has been adjusted to 4 Gbps by Auto Negotiate or fixed at 4 Gbps.) • 8G (Speed has been adjusted to 8 Gbps by Auto Negotiate or fixed at 8 Gbps.) • 10G (Speed has been adjusted to 10 Gbps by Auto Negotiate or fixed at 10 Gbps.) • 16G (Speed has been adjusted to 16 Gbps by Auto Negotiate or fixed at 16 Gbps.) • 32G (Speed has been adjusted to 32 Gbps by Auto Negotiate	--	`string(8)`	No	Brocade (Network Advisor SMI Agent): Ports of the node Brocade (DCFM SMI Agent): Ports of the node Brocade (SMI Agent for FOS): Ports of the node Cisco (DCNM-SAN SMI-S Agent): Ports of the node Cisco (Seed Switch): Ports of the node	--

Port Detail (PD_PTD)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Unsupported**	**Data Source**
	or fixed at 32 Gbps.) For a connection to either a Cisco switch (version 5.2 of DCNM-SAN SMI-S Agent) or a Cisco seed switch, data can be collected only for ports that are in the `Enable` status.					
Port Type (`PORT_TYPE`)	Port type: • B port (a port of the bridge device connected to the E port of the switch) • E port (a port connecting switch to switch) • F port (a port of the switch connected one-to-one to the port of the device) • FL port (a port of the switch comprising the Arbitrated Loop) • G port (a port for which the switch or device is not connected) • N port (a port of the device connected one-to-one to the port of the switch) • NL port (a port of the device comprising the Arbitrated Loop) Data is not collected for Cisco switch ports that do not	--	`string( 8)`	No	--	--

Port Detail (PD_PTD)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Unsupported**	**Data Source**
	have a connection target, or that are not in the `Enable` status.					
Port WWN (`PORT_WWN`)	WWN of the port (***Example:*** `10000064621219E3`)	--	`string( 20)`	No	--	--
Record Time (`RECORD_TIM E`)	Interval ending date and time (in GMT)	--	`time_t`	No	--	--
Record Type (`INPUT_RECO RD_TYPE`)	Record type identifier (always `PTD`)	--	`char(8)`	No	--	--
Service Class (`SERVICE_CL ASS`)	Service class. The following shows the correspondence between the displayed number and service class: `1`: Service_F (used for communication between switches) `2`: Service_1 (a connection-oriented service with frame confirmation response, for which the frame's End-to-End flow control is performed) `4`: Service_2 (a connectionless service with frame confirmation response, for which the frame's End-to-End flow control and Buffer-to-Buffer flow control are performed) `8`: Service_3 (a connectionless service without frame confirmation response, for which the frame's Buffer-	--	`unsigne d char`	No	Brocade (Network Advisor SMI Agent): All ports Brocade (DCFM SMI Agent): All ports Brocade (SMI Agent for FOS): All ports	--

Port Detail (PD_PTD)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Unsupported**	**Data Source**
	to-Buffer flow control is performed) `16`: Unknown (when data other than `1`, `2`, `4` or `8` is collected, or the data cannot be collected) When multiple service classes can be used, the value is the sum of the service classes being used. For example, when Service_F and Service_1 can be used: `3`.					

Port Error Summary (PI_PTES)

Function

The Port Error Summary (`PI_PTES`) record stores performance error information about switch ports. This information concerns only ports for switches; it does not include information about the performance of ports for hosts or storage systems. This is a multi-instance record.

Table 2-182 Port Error Summary (PI_PTES) Default and Changeable Values

Item	**Default Value**	**Changeable?**
Collection Interval	60	Yes
Collection Offset	0	
Log	Yes	
LOGIF	(Blank)	

Key Fields

Port WWN (`PORT_WWN`)

Lifetime

None

Record Size

- Fixed part: 681 bytes
- Variable part: 218 bytes

Table 2-183 Port Error Summary (PI_PTES) Fields

Port Error Summary (PI_PTES)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Unsupported**	**Data Source**
Address Errors Count (`ADDRESS_ERRORS_COUNT`)	The number of address identifier errors detected on the port	COPY	`double`	Yes	--	--
Area ID (`AREA_ID`)	Area identifier (in hexadecimal) (***Example:*** `0x1C`). In the arbitrated loop configuration, the ports of the switch, host, and storage system have the same Area ID. If connecting to a Cisco switch (seed switch), the value is `0x00` for a port that is not connected to a switch or a port that is not in the `Enable` status.	COPY	`string(6)`	No	Cisco (DCNM-SAN SMI-S Agent): Ports of the switch	--
CRC Error Count (`CRC_ERROR_COUNT`)	The number of CRC errors detected on the port	COPY	`double`	Yes	--	--
Delimiter Errors Count (`DELIMITER_ERRORS_COUNT`)	The number of delimiter errors detected on the port	COPY	`double`	Yes	Brocade (Network Advisor SMI Agent): Ports of the switch Brocade (DCFM SMI	--

Port Error Summary (PI_PTES)						
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Unsupported	Data Source
					Agent): Ports of the switch	
Encoding Disparity Count (`ENCODING_DISPARITY_COUNT`)	The number of encoding errors and the number of disparity errors detected on the port	COPY	`double`	Yes	Brocade (Network Advisor SMI Agent): Ports of the switch Brocade (DCFM SMI Agent): Ports of the switch	--
Interval (`INTERVAL`)	Interval in seconds for storing the record	COPY	`ulong`	No	--	--
Invalid Ordered Set Count (`INVALID_ORDERED_SET_COUNT`)	The number of times an invalid ordered set was received on the port	COPY	`double`	Yes	Brocade (DCFM SMI Agent): Ports of the switch Cisco (DCNM-SAN SMI-S Agent): Ports of the switch Cisco (Seed Switch): Ports of the switch	--
Invalid Xmitd Words Count (`INVALID_TRANSMIT_WORDS_COUNT`)	The number of times an invalid word was detected on the port	COPY	`double`	Yes	--	--
Link Failures Count (`LINK_FAILURES_COUNT`)	The number of times a link failure was detected on the port	COPY	`double`	Yes	--	--
Loss of Signal Count (`LOSS_OF_SIGNAL_COUNT`)	The number of times a lost optical signal	COPY	`double`	Yes	Brocade (DCFM SMI Agent):	--

Port Error Summary (PI_PTES)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Unsupported**	**Data Source**
	was detected on the port				Ports of the switch	
Loss of Sync Count (`LOSS_OF_SYNC_CO UNT`)	The number of times a Sync Loss was detected on the port	COPY	`double`	Yes	--	--
Port Mode (`PORT_MODE`)	Operation mode of the port: • `Offline` • `Online` Data is not collected for Cisco switch ports that are not in the `Enable` status.	COPY	`string( 16)`	No	--	--
Port Module Number (`PORT_MODULE_NUM BER`)	Port module number. For a Cisco switch, `0` is used. Note that the port module number is the first digit in the Port Number field.	COPY	`short`	No	Cisco (DCNM-SAN SMI-S Agent): Ports of the switch Cisco (Seed Switch): Ports of the switch	--
Port Number (`PORT_NUMBER`)	Port number. For Cisco switches, the port number is the last two digits, and the port module number is the first digit. (**Example:** If the port module number is `1` and the port number is `01`, the value is `101`)	COPY	`short`	No	--	--
Port Ops Status	Port operation status: • `Faulty`	COPY	`string( 16)`	No	--	--

Port Error Summary (PI_PTES)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Unsupported**	**Data Source**
(`PORT_OPERATION_STATUS`)	• Ok • Warning Data is not collected for Cisco switch ports that do not have a connection target.					
Port Type (`PORT_TYPE`)	Port type: • E port (a port connecting switch to switch) • F port (a port of the switch connected one-to-one to the port of the device) • FL port (a port of the switch comprising the Arbitrated Loop) • G port (a port for which the switch or device is not connected) Data is not collected for Cisco switch ports that do not have a connection target, or that are not in the `Enable` status.	COPY	`string(8)`	No	--	--
Port WWN (`PORT_WWN`)	WWN of the port (***Example:***	COPY	`string(20)`	No	--	--

Port Error Summary (PI_PTES)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Unsupported**	**Data Source**
`10000064621219E3`)						
Prim Seq Proto Error Count (`PRIM_SEQ_PROTO_ERROR_COUNT`)	The number of times a primitive sequence protocol error was detected on the port	COPY	`double`	Yes	--	--
Rcvd Link Reset (`RECEIVED_LINK_RESET`)	The number of times a link reset protocol was received on the port	COPY	`double`	Yes	--	--
Rcvd Offline Sequence (`RECEIVED_OFFLINE_SEQUENCE`)	The number of times an offline sequence was received on the port	COPY	`double`	Yes	Brocade (DCFM SMI Agent): Ports of the switch Cisco (DCNM-SAN SMI-S Agent): Ports of the switch Cisco (Seed Switch): Ports of the switch	--
Record Time (`RECORD_TIME`)	Interval ending date and time (in GMT)	COPY	`time_t`	No	--	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier (always `PTES`)	COPY	`char(8)`	No	--	--
Switch WWN (`SWITCH_WWN`)	WWN of the switch (***Example:*** `100000606912 16D8`)	COPY	`string( 20)`	No	--	--
Too Long Frames Count (`TOO_LONG_FRAMES_COUNT`)	The number of times an overly long frame was received on the port	COPY	`double`	Yes	Brocade (Network Advisor SMI Agent): Ports of the switch	--

Port Error Summary (PI_PTES)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Unsupported**	**Data Source**
					Brocade (DCFM SMI Agent): Ports of the switch	
Too Short Frames Count (`TOO_SHORT_FRAMES_COUNT`)	The number of times an overly short frame was received on the port	COPY	`double`	Yes	Brocade (Network Advisor SMI Agent): Ports of the switch Brocade (DCFM SMI Agent): Ports of the switch	--
Xmitd Link Reset (`TRANSMITTED_LINK_RESET`)	The number of times a link reset protocol was sent on the port	COPY	`double`	Yes	--	--
Xmitd Offline Sequence (`TRANSMITTED_OFFLINE_SEQUENCE`)	The number of times an offline sequence was sent on the port	COPY	`double`	Yes	Brocade (DCFM SMI Agent): Ports of the switch Cisco (DCNM-SAN SMI-S Agent): Ports of the switch Cisco (Seed Switch): Ports of the switch	--

Port Summary (PI_PTS)

Function

The Port Summary (`PI_PTS`) record stores performance information about switch ports. This information concerns only ports for switches; it does not include information about the performance of ports for hosts or storage systems. This is a multi-instance record.

Table 2-184 Port Summary (PI_PTS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes
Collection Offset	0	
Log	Yes	
LOGIF	(Blank)	

Key Fields

Port WWN (PORT_WWN)

Lifetime

None

Record Size

- Fixed part: 681 bytes
- Variable part: 378 bytes

Table 2-185 Port Summary (PI_PTS) Fields

Port Summary (PI_PTS)						
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Unsupported	Data Source
Area ID (AREA_ID)	Area identifier (in hexadecimal) (**Example:** 0x1C). In the arbitrated loop configuration, the ports of the switch, host, and storage system have the same Area ID. If connecting to a Cisco switch (seed switch), the value is 0x00 for a port that is not connected to a switch or a port that is not in	COPY	string(6)	No	Cisco (DCNM-SAN SMI-S Agent): Ports of the switch	--

Port Summary (PI_PTS)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delt a**	**Unsuppor ted**	**Data Source**
	the `Enable` status.					
Buffer Credit Zero State Count (`BUFFER_CREDIT_ZE RO_STATE_COUNT`)	The number of times the credit count for Buffer-to-Buffer flow control of the port was `0`	COPY	`double`	Yes	--	--
Input Buffers Full Count (`INPUT_BUFFERS_FU LL_COUNT`)	The number of times the port buffer became full	COPY	`double`	Yes	Brocade (Network Advisor SMI Agent): Ports of the switch Brocade (DCFM SMI Agent): Ports of the switch Brocade (SMI Agent for FOS): Ports of the switch	--
Interval (`INTERVAL`)	Interval in seconds for storing the record	COPY	`ulong`	No	--	--
Port Module Number (`PORT_MODULE_NUMB ER`)	Port module number. For a Cisco switch, `0` is used. Note that the port module number is the first digit in the Port Number field.	COPY	`short`	No	Cisco (DCNM-SAN SMI-S Agent): Ports of the switch Cisco (Seed Switch): Ports of the switch	--
Port Number (`PORT_NUMBER`)	Port number. For Cisco switches, the port number is the last two digits, and the port module number is the first digit.	COPY	`short`	No	--	--

Port Summary (PI_PTS)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delt a**	**Unsuppor ted**	**Data Source**
	(**_Example:_** If the port module number is 1 and the port number is 01, the value is 101.)					
Port Type (PORT_TYPE)	Port type: • E port (a port connecting switch to switch) • F port (a port of the switch connected one-to-one to the port of the device) • FL port (a port of the switch comprising the Arbitrated Loop) • G port (a port for which the switch or device is not connected) Data is not collected for Cisco switch ports that do not have a connection target, or that are not in the Enable status.	COPY	string(8)	No	--	--
Port WWN (PORT_WWN)	WWN of the port (**_Example:_** 10000064621219E3)	COPY	string(20)	No	--	--

Port Summary (PI_PTS)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delt a**	**Unsuppor ted**	**Data Source**
Rcvd Bytes / sec (`RECEIVED_BYTES_R ATE`)	The number of bytes received per second by the port	HILO	`double`	No	--	--
Rcvd Frames (`RECEIVED_FRAMES`)	The number of frames received by the port	HILO	`double`	Yes	--	--
Rcvd Frames / sec (`RECEIVED_FRAMES_ RATE`)	The number of frames received per second by the port	HILO	`double`	No	--	`RECEIVED_ FRAMES / INTERVAL`
Rcvd Kbytes (`RECEIVED_KBYTES`)	The number of kilobytes received by the port	HILO	`double`	Yes	--	--
Rcvd Multicast Frames (`RECEIVED_MULTICA ST_FRAMES`)	The number of multicast frames received by the port	COPY	`double`	Yes	Brocade (Network Advisor SMI Agent): Ports of the switch Brocade (DCFM SMI Agent): Ports of the switch	--
Record Time (`RECORD_TIME`)	Interval ending date and time (in GMT)	COPY	`time_t`	No	--	--
Record Type (`INPUT_RECORD_TYP E`)	Record type identifier (always `PTS`)	COPY	`char(8)`	No	--	--
Switch WWN (`SWITCH_WWN`)	WWN of the switch (***Example:*** `1000006069121 6D8`)	COPY	`string( 20)`	No	--	--
Xmitd Bytes / sec (`TRANSMITTED_BYTE S_RATE`)	The number of bytes sent per second by the port	HILO	`double`	No	--	--
Xmitd Frames	The number of frames sent by the port	HILO	`double`	Yes	--	--

Port Summary (PI_PTS)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Unsupported**	**Data Source**
(`TRANSMITTED_FRAMES`)						
Xmitd Frames / sec (`TRANSMITTED_FRAMES_RATE`)	The number of frames sent per second by the port	HILO	`double`	No	--	`TRANSMITTED_FRAMES / INTERVAL`
Xmitd Kbytes (`TRANSMITTED_KBYTES`)	The number of kilobytes sent by the port	HILO	`double`	Yes	--	--
Xmitd Multicast Frames (`TRANSMITTED_MULTICAST_FRAMES`)	The number of multicast frames sent by the port	COPY	`double`	Yes	Brocade (Network Advisor SMI Agent): Ports of the switch Brocade (DCFM SMI Agent): Ports of the switch	--

Switch Detail (PD)

Function

The Switch Detail (`PD`) record stores configuration information about switches in the monitored fabric. However, if the switches are connected to a Cisco switch (seed switch), configuration information is collected about the seed switch only. This is a multi-instance record.

Table 2-186 Switch Detail (PD) Default and Changeable Values

Item	**Default Value**	**Changeable?**
`Collection Interval`	3600	Yes
`Collection Offset`	0	
`Log`	Yes	
`LOGIF`	(Blank)	

Key Fields

Switch WWN (`SWITCH_WWN`)

Lifetime

None

Record Size

- Fixed part: 733 bytes
- Variable part: 202 bytes

Table 2-187 Switch Detail (PD) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Unsupported	Data Source
Switch Detail (PD)						
Domain ID (`DOMAIN_ID`)	The domain identifier of the switch, displayed as a base-10 (decimal) number from 1 to 255. Switches on the same domain have the same Domain ID. For the Cisco switch, a switch that uses the VSAN function has multiple Domain IDs, but only the first detected Domain ID is stored.	--	`short`	No	--	--
Fabric Name (`FABRIC_NAME`)	Fabric name	--	`string(32)`	No	--	--
Firmware Version (`FIRMWARE_VERSION`)	Firmware version of the switch (**Example:** `Brocade Version 2.6`)	--	`string(64)`	No	--	--
Interval (`INTERVAL`)	Interval in seconds for storing the record	--	`ulong`	No	--	--
Model Name (`MODEL_NAME`)	Model name of the switch:	--	`string(32)`	No	--	--

Switch Detail (PD)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Unsupported**	**Data Source**

	For Brocade switches (B-Model):
	
	Example:
	`Brocade 48000`
	
	For Cisco:
	
	Example:
	`MDS9513`					

Port Count (`PORT_COUNT`)	Number of ports that belong to the switch. The number of iSCSI and FCIP ports is not counted.	--	`short`	No	--	--
Port Module Count (`PORT_MODULE_COUNT`)	Number of port modules that belong to the switch. For the Cisco switch, the number of IPS modules is also counted.	--	`short`	No	--	--
Principal Switch WWN (`PRINCIPAL_SWITCH_WWN`)	WWN of the principal switch (***Example:*** `10000060691216D8`). The principal switch has the domain address manager facilities. If multiple fabrics are being monitored, the first detected WWN of the principal switch is stored. For a Cisco switch (seed switch), the WWN of the	--	`string(20)`	No	--	--

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Switch Detail (PD)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delt a**	**Unsuppor ted**	**Data Source**
	first detected switch is stored.					
Record Time (`RECORD_TIME`)	Interval ending date and time (in GMT)	--	`time_t`	No	--	--
Record Type (`INPUT_RECORD_TYP E`)	Record type identifier (always `PD`)	--	`char(8)`	No	--	--
Switch Name (`SWITCH_NAME`)	Switch name (***Example:*** `Switch A`)	--	`string( 32)`	No	--	--
Switch Role (`SWITCH_ROLE`)	Role of the switch: • `Principal`: Primary switch • `Subordina te`: Enabled, but not the primary switch For a Cisco switch (seed switch), `Principal` is stored for the first detected switch, and `Subordinate` is stored for the other switches.	--	`string( 16)`	No	--	--
Switch WWN (`SWITCH_WWN`)	WWN of the switch (***Example:*** `1000006069121 6D8`)	--	`string( 20)`	No	--	--
Vendor Name (`VENDOR_NAME`)	Vendor name of the switch (***Example:*** `Brocade Communication s, INC`)	--	`string( 32)`	No	--	--

Switch Error Summary (PI_SWES)

Function

The Switch Error Summary (`PI_SWES`) record stores performance error and status information about a switch. It provides switch performance information by totaling performance errors at the switch's ports. This is a multi-instance record.

Table 2-188 Switch Error Summary (PI_SWES) Default and Changeable Values

Item	Default value	Changeable?
Collection Interval	60	Yes
Collection Offset	0	
Log	Yes	
LOGIF	(Blank)	

Key Fields

Switch WWN (`SWITCH_WWN`)

Lifetime

None

Record Size

- Fixed part: 681 bytes
- Variable part: 150 bytes

Table 2-189 Switch Error Summary (PI_SWES) Fields

Switch Error Summary (PI_SWES)						
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Unsupported	Data Source
CRC Error Count (`CRC_ERROR_COUNT`)	Sum of the number of times a CRC error was detected at each port for the switch	COPY	double	No	--	--
Domain ID (`DOMAIN_ID`)	Domain identifier of the switch. The domain identifier is a base-10	COPY	short	No	--	--

Switch Error Summary (PI_SWES)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Unsupported**	**Data Source**
(decimal) number from 1 to 255. All switches that belong to the same domain have the same Domain ID. For the Cisco switch, a switch that uses the VSAN function has multiple Domain IDs, but only the first detected Domain ID is stored.						
Encoding Disparity Count (`ENCODING_DISPARITY_COUNT`)	The total number of encoding errors and disparity errors, for each switch, that was detected on each port	COPY	`double`	No	Brocade (Network Advisor SMI Agent): Ports of the switch Brocade (DCFM SMI Agent): Ports of the switch	--
Interval (`INTERVAL`)	Interval in seconds for storing the record	COPY	`ulong`	No	--	--
Loss of Signal Count (`LOSS_OF_SIGNAL_COUNT`)	The total number of times, for each switch, that a lost optical signal was detected on each port	COPY	`double`	No	Brocade (DCFM SMI Agent): Ports of the switch	--
Loss of Sync Count (`LOSS_OF_SYNC_COUNT`)	The total number of times, for each switch, that a Sync Loss was detected on each port	COPY	`double`	No	--	--

Switch Error Summary (PI_SWES)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Unsupported**	**Data Source**

Model Name (`MODEL_NAME`)	Model name of the switch:
	
	For Brocade (B-Model):
	Example:
	`Brocade 48000`
	
	For Cisco:
	Example:
	`MDS9513`
		COPY	`string(32)`	No	--	--

Record Time (`RECORD_TIME`)	Interval ending date and time (in GMT)	COPY	`time_t`	No	--	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier (always `SWES`)	COPY	`char(8)`	No	--	--
Switch Mode (`SWITCH_MODE`)	Operation mode of the switch: • `Offline` • `Online`	COPY	`string(16)`	No	--	--
Switch Name (`SWITCH_NAME`)	Switch name (***Example:*** `Switch A`)	COPY	`string(32)`	No	--	--
Switch Ops Status (`SWITCH_OPERATION_STATUS`)	Operating status of the switch: • `Faulty` • `Ok` • `Warning`	COPY	`string(16)`	No	--	--
Switch WWN (`SWITCH_WWN`)	WWN of the switch (***Example:*** `10000060691216D8`)	COPY	`string(20)`	No	--	--

Switch Summary (PI_SWS)

Function

The Switch Summary (`PI_SWS`) record stores performance information about a switch. It provides the switch performance information by averaging and adding the performance of the switch's ports. This is a multi-instance record.

Table 2-190 Switch Summary (PI_SWS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes
Collection Offset	0	
Log	Yes	
LOGIF	(Blank)	

Key Fields

Switch WWN (`SWITCH_WWN`)

Lifetime

None

Record Size

- Fixed part: 681 bytes
- Variable part: 390 bytes

Table 2-191 Switch Summary (PI_SWS) Fields

Switch Summary (PI_SWS)						
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Unsupported	Data Source
Buffer Credit Zero State Count (`BUFFER_CREDIT_ZERO_STATE_COUNT`)	The total number of times, for each switch, that the credit count for Buffer-to-Buffer flow control for each port was 0	COPY	double	No	--	--
Domain ID (`DOMAIN_ID`)	Domain identifier of the switch. The domain identifier is a base-10	COPY	short	No	--	--

Switch Summary (PI_SWS)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delt a**	**Unsuppor ted**	**Data Source**
	(decimal) number from 1 to 255. All switches that belong to the same domain have the same Domain ID. For the Cisco switch, a switch that uses the VSAN function has multiple Domain IDs, but only the first detected Domain ID is stored.					
Input Buffers Full Count (`INPUT_BUFFERS_FU LL_COUNT`)	The total number of times, for each switch, that the buffer for each port became full	COPY	`double`	No	Brocade (Network Advisor SMI Agent): Ports of the switch Brocade (DCFM SMI Agent): Ports of the switch Brocade (SMI Agent for FOS): Ports of the switch	--
Interval (`INTERVAL`)	Interval in seconds for storing the record	COPY	`ulong`	No	--	--
Model Name (`MODEL_NAME`)	Model name of the switch: For Brocade (B-Model): ***Example:*** `Brocade 48000` For Cisco: ***Example:***	COPY	`string( 32)`	No	--	--

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Switch Summary (PI_SWS)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Unsupported**	**Data Source**
	`MDS9513`					
Rcvd Bytes / sec (`RECEIVED_BYTES_R ATE`)	The total number of bytes, for each switch, received per second by each port	HILO	`double`	No	--	--
Rcvd Frames (`RECEIVED_FRAMES`)	The total number of frames, for each switch, received by each port	HILO	`double`	No	--	--
Rcvd Frames / sec (`RECEIVED_FRAMES_ RATE`)	The total number of frames, for each switch, received per second by each port	HILO	`double`	No	--	`RECEIVED_ FRAMES / INTERVAL`
Rcvd Kbytes (`RECEIVED_KBYTES`)	The total number of kilobytes, for each switch, received by each port	HILO	`double`	No	--	--
Record Time (`RECORD_TIME`)	Interval ending date and time (in GMT)	COPY	`time_t`	No	--	--
Record Type (`INPUT_RECORD_TYP E`)	Record type identifier (always `SWS`)	COPY	`char(8)`	No	--	--
Switch Name (`SWITCH_NAME`)	Switch name (***Example:*** `Switch A`)	COPY	`string( 32)`	No	--	--
Switch WWN (`SWITCH_WWN`)	WWN of the switch (***Example:*** `1000006069121 6D8`)	COPY	`string( 20)`	No	--	--
Xmitd Bytes / sec (`TRANSMITTED_BYTE S_RATE`)	The total number of bytes, for each switch, sent per second by each port	HILO	`double`	No	--	--

Switch Summary (PI_SWS)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delt a**	**Unsuppor ted**	**Data Source**
Xmitd Frames (`TRANSMITTED_FRAM ES`)	The total number of frames, for each switch, sent by each port	HILO	`double`	No	--	--
Xmitd Frames / sec (`TRANSMITTED_FRAM ES_RATE`)	The total number of frames, for each switch, sent per second by each port	HILO	`double`	No	--	`TRANSMITT ED_FRAMES / INTERVAL`
Xmitd Kbytes (`TRANSMITTED_KBYT ES`)	The total number of kilobytes, for each switch, sent by each port	HILO	`double`	No	--	--

System Summary (PI)

Function

The System Summary (`PI`) record stores information such as the number of switches in the monitored fabric and the number of devices connected to the fabric. If the switches or devices are connected to a Cisco switch (seed switch), configuration information is collected only about the seed switch and the number of devices connected to the seed switch. If the switches or devices are connected to a Cisco switch (DCNM-SAN SMI-S Agent) and the DCNM-SAN version is 5.2, information is collected only about the number of switches in the monitored fabric and the number of hosts connected to the fabric.

Table 2-192 System Summary (PI) Default and Changeable Values

Item	**Default Value**	**Changeable?**
`Collection Interval`	60	Yes
`Collection Offset`	0	
`Log`	Yes	
`LOGIF`	(Blank)	

Key Fields

None

Lifetime

None

Record Size

- Fixed part: 691 bytes
- Variable part: None

Table 2-193 System Summary (PI) Fields

System Summary (PI)						
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Unsupported**	**Data Source**
Device Count (`DEVICE_COUNT`)	This field cannot be used because it is reserved.					
Interval (`INTERVAL`)	Interval in seconds for storing the record	COPY	`ulong`	No	--	--
Node Count (`NODE_COUNT`)	The number of nodes connected to the fabric	COPY	`short`	No	--	--
Port Count (`PORT_COUNT`)	The sum total of the following: • The number of ports for switches that exist in the fabric • The number of ports for the hosts and storage systems connected to the fabric The number of iSCSI and FCIP ports is not counted.	COPY	`short`	No	--	--
Port Module Count (`PORT_MODULE_COUNT`)	Number of port modules in the fabric.	COPY	`short`	No	--	--

System Summary (PI)						
View Name (Manager Name)	Description	Sum Rule	Format	Delt a	Unsuppor ted	Data Source
	For an instance that monitors the Cisco switch, the number of IPS port modules is also counted.					
Record Time (`RECORD_TIME`)	Interval ending date and time (in GMT)	COPY	`time_t`	No	--	--
Record Type (`INPUT_RECORD_TYP E`)	Record type identifier (always `PI`)	COPY	`char(8)`	No	--	--
Switch Count (`SWITCH_COUNT`)	Number of switches in the fabric	COPY	`short`	No	--	--

Agent for NAS Records (for Hitachi Data Ingestor)

lists the records that can be collected by Agent for NAS and the information that is stored in each record.

Note that the following file servers are collectively called *Hitachi Data Ingestor*:

- Hitachi Data Ingestor
- Hitachi Capacity Optimization
- Hitachi NAS Platform F1000 Series
- Hitachi Essential NAS Platform

Table 2-194 Agent for NAS Records (for Hitachi Data Ingestor)

Record Name	Record ID	Information Stored in Record
Channel Node Configuration	`PD_CHC`	NAS system configuration information
Channel Node Platform Configuration	`PD_CPC`	NAS system platform configuration information
Device Detail	`PI_DEVD`	Performance data that describes the use of local disk devices in the NAS system in set intervals of time
Device Summary	`PI_DEVS`	Summary of performance data that describes the use of all local disk devices that are

Record Name	Record ID	Information Stored in Record
		defined as logical units in the NAS system at set intervals of time
File System Configuration	PD_FSC	File system and logical device mapping configuration information
File System Detail - Local	PD_FSL	Performance data that indicates the capacity of the local file system in the NAS system at a particular point in time
IP Address Configuration	PD_IAC	IP address configuration information for the NAS system
Process Detail	PD	Performance data that indicates the status of processes running in the NAS system at a particular point in time
System Summary Overview	PI	Performance data that describes the entire NAS system in set intervals of time

Channel Node Configuration (PD_CHC)

Function

The Channel Node Configuration (PD_CHC) record stores NAS system configuration information.

Table 2-195 Channel Node Configuration (PD_CHC) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	Yes
Collection Offset	0	
Log	Yes	
LOGIF	(Blank)	

Key Fields

None

Lifetime

From when the NAS system configuration is established to when it is modified

Record Size

- Fixed part: 937 bytes
- Variable part: 0 bytes

Table 2-196 Channel Node Configuration (PD_CHC) Fields

Channel Node Configuration (PD_CHC)					
View Name (Manager Name)	Description	Sum Rule	Format	Delta	Data Source
CHN Number (CHN_NUMBER)	NAS system channel node number	--	ulong	No	--
Host Name (HOST_NAME)	NAS system host name	--	string(256)	No	--
Record Time (RECORD_TIME)	Time in GMT when the record is stored	--	time_t	No	--
Record Type (INPUT_RECORD_TYPE)	Record type identifier, which is always set to CHC	--	string(8)	No	--

Channel Node Platform Configuration (PD_CPC)

Function

The Channel Node Platform Configuration (PD_CPC) record stores NAS system platform configuration information.

Table 2-197 Channel Node Platform Configuration (PD_CPC) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	Yes
Collection Offset	0	
Log	Yes	
LOGIF	(Blank)	

Key Fields

None

Lifetime

From when the NAS system platform configuration is established to when it is modified

Record Size

- Fixed part: 1,111 bytes
- Variable part: 0 bytes

Table 2-198 Channel Node Platform Configuration (PD_CPC) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Data Source
Host Name (`HOST_NAME`)	NAS system host name	--	`string(256)`	No	--
IP Address (`IP_ADDRESS`)	From among the IP addresses of the NAS system that was specified as a monitoring target via `destination_address` or `detour_address` during the Agent for NAS instance set up, the IP address that the NAS system, which is a monitoring target of Agent for NAS, uses for connections when a record is created	--	`string(50)`	No	--
OS Name (`OS_NAME`)	NAS system OS name	--	`string(64)`	No	--
OS Version (`OS_VERSION`)	NAS system OS version	--	`string(64)`	No	--
Record Time (`RECORD_TIME`)	Time in GMT when the record is stored	--	`time_t`	No	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to `CPC`	--	`string(8)`	No	--

Device Detail (PI_DEVD)

Function

The Device Detail (`PI_DEVD`) record holds performance data regarding the use of a local disk device in the NAS system over a specified time unit period. Data is stored for each logical unit. Each time performance data is collected, one Device Detail (`PI_DEVD`) record is created for each local disk device that is defined as a logical unit. This record is a multi-instance record. This record is not created at the first information collection event after Agent for NAS has been started or after the NAS system has been started.

Table 2-199 Device Detail (PI_DEVD) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes
Collection Offset	0	
Log	Yes	
LOGIF	(Blank)	

Key Fields

Device Name (DEVICE_NAME)

Lifetime

None

Record Size

- Fixed part: 677 bytes
- Variable part: 624 bytes

Table 2-200 Device Detail (PI_DEVD) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Data Source
Device Name (DEVICE_NAME)	Local disk device name	COPY	string(128)	No	--
Host Name (HOST_NAME)	NAS system host name	COPY	string(256)	No	--
I/O Mbytes (TOTAL_IO_MBYTES)	Total transfer size (in megabytes) of block I/O operations for logical units. If the collected information is invalid, the value is set to 0.	AVG	double	No	TOTAL_READ_MBYTES + TOTAL_WRITE_MBYTES
Interval (INTERVAL)	Length (in seconds) of the interval at which the Device Detail (PI_DEVD) record is stored. If the collected information is invalid, the value is set to 0.	ADD	double	No	--

Device Detail (PI_DEVD)					
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Data Source**
Mbytes Xferd/sec (`MBYTES_TRANSFERRED_PER_SECOND`)	Average block I/O speed for logical units (megabytes per second)	%	`double`	No	`TOTAL_IO_MBYTES` / `INTERVAL`
Read Mbytes (`TOTAL_READ_MBYTES`)	Transfer size (in megabytes) of read operations for logical unit blocks. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	--
Read Ops (`READ_OPS`)	Number of times logical unit read operations were performed. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	--
Read Ops % (`READ_OPS_PERCENT`)	Percentage of read operations to all I/O operations for logical units	%	`float`	No	`READ_OPS` / `TOTAL_IO_OPS` * 100
Read Ops/sec (`READ_OPS_PER_SECOND`)	Frequency of read operations for logical units (number of times per second)	%	`double`	No	`READ_OPS` / `INTERVAL`
Record Time (`RECORD_TIME`)	Time in GMT when the record is stored	COPY	`time_t`	No	--
Record Type (`INPUT_RECORD_TYPE`)	Record type, which is always set to `DEVD`	COPY	`string(8)`	No	--
Total I/O Ops (`TOTAL_IO_OPS`)	Number of times I/O operations for logical units occurred. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	--
Total I/O Ops/sec (`TOTAL_IO_OPS_PER_SECOND`)	Frequency of I/O operations for logical units (number of times per second)	%	`double`	No	`TOTAL_IO_OPS` / `INTERVAL`
Write Mbytes (`TOTAL_WRITE_MBYTES`)	Transfer size (in megabytes) of write operations for logical unit blocks.	AVG	`double`	No	--

Device Detail (PI_DEVD)					
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delt a**	**Data Source**
	If the collected information is invalid, the value is set to 0.				
Write Ops (WRITE_OPS)	Number of times write operations for logical units occurred. If the collected information is invalid, the value is set to 0.	AVG	double	No	--
Write Ops % (WRITE_OPS_PERCEN T)	Percentage of write operations to all I/O operations for logical units	%	float	No	WRITE_OPS / TOTAL_IO_O PS * 100
Write Ops/sec (WRITE_OPS_PER_SE COND)	Frequency of write operations for logical units (number of times per second)	%	double	No	WRITE_OPS / INTERVAL

Device Summary (PI_DEVS)

Function

The Device Summary (PI_DEVS) record holds a summary of performance data regarding the use of all local disk devices that are defined as logical units in the NAS system over a period of a certain unit of time. This record is not created at the first information collection event after Agent for NAS has been started or after the NAS system has been started.

Table 2-201 Device Summary (PI_DEVS) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	60	Yes
Collection Offset	0	
Log	No	
LOGIF	(Blank)	

Key Fields

None

Lifetime

None

Record Size

- Fixed part: 1,177 bytes
- Variable part: 0 bytes

Table 2-202 Device Summary (PI_DEVS) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Data Source
Device Summary (PI_DEVS)					
Devices (`DEVICE_COUNT`)	Number of local disk devices	COPY	`ulong`	No	--
Host Name (`HOST_NAME`)	NAS system host name	COPY	`string(256)`	No	--
I/O Mbytes (`TOTAL_IO_MBYTES`)	Total transfer size (in megabytes) of block I/O operations for logical units. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	`TOTAL_READ_MBYTES + TOTAL_WRITE_MBYTES`
Interval (`INTERVAL`)	Length (in seconds) of the interval at which the Device Summary (`PI_DEVS`) record is stored. If the collected information is invalid, the value is set to `0`.	ADD	`double`	No	--
Mbytes Xferd/sec (`MBYTES_TRANSFERRED_PER_SECOND`)	Average block I/O speed for logical units (megabytes per second)	%	`double`	No	`TOTAL_IO_MBYTES / INTERVAL`
Read Mbytes (`TOTAL_READ_MBYTES`)	Transfer size (in megabytes) of read operations for logical unit blocks. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	--
Read Ops (`READ_OPS`)	Number of times a logical unit read operation was performed. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	--
Read Ops % (`READ_OPS_PERCENT`)	Percentage of read operations to all I/O operations for logical units	%	`float`	No	`READ_OPS / TOTAL_IO_OPS * 100`

Device Summary (PI_DEVS)					
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Data Source**
Read Ops/sec (`READ_OPS_PER_SECOND`)	Frequency of read operations for logical units (number of times per second)	%	`double`	No	`READ_OPS` / `INTERVAL`
Record Time (`RECORD_TIME`)	Time in GMT when the record was created	COPY	`time_t`	No	--
Record Type (`INPUT_RECORD_TYPE`)	Record type, which is always set to `DEVS`	COPY	`string(8)`	No	--
Total I/O Ops (`TOTAL_IO_OPS`)	Number of times I/O operations for logical units occurred. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	--
Total I/O Ops/sec (`TOTAL_IO_OPS_PER_SECOND`)	Frequency of I/O operations for logical units (number of times per second)	%	`double`	No	`TOTAL_IO_OPS` / `INTERVAL`
Write Mbytes (`TOTAL_WRITE_MBYTES`)	Transfer size (in megabytes) of write operations for logical unit blocks. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	--
Write Ops (`WRITE_OPS`)	Number of times write operations for logical units occurred. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	--
Write Ops % (`WRITE_OPS_PERCENT`)	Percentage of write operations to all I/O operations for logical units	%	`float`	No	`WRITE_OPS` / `TOTAL_IO_OPS` * `100`
Write Ops/sec (`WRITE_OPS_PER_SECOND`)	Frequency of write operations for logical units (number of times per second)	%	`double`	No	`WRITE_OPS` / `INTERVAL`

File System Configuration (PD_FSC)

Function

The File System Configuration (`PD_FSC`) record holds file-system-to-logical-device mapping configuration information. One File System Configuration (`PD_FSC`) record is created for each logical device. This record is a multi-instance record.

Table 2-203 File System Configuration (PD_FSC) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	Yes
Collection Offset	0	
Log	Yes	
LOGIF	(Blank)	

Key Fields

Device Name (`DEVICE_NAME`), File System Name (`FILE_SYSTEM_NAME`), LDEV Number (`LDEV_NUMBER`), Port Number (`PORT_NUMBER`), Serial Number (`SERIAL_NUMBER`), Unit ID (`UNIT_ID`), Vendor ID (`VENDOR_ID`)

Lifetime

From when the file-system-to-logical-device mapping configuration is established to when it is modified

Record Size

- Fixed part: 677 bytes
- Variable part: 1,779 bytes

Table 2-204 File System Configuration (PD_FSC) Fields

File System Configuration (PD_FSC)					
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Data Source**
Device Name (`DEVICE_NAME`)	Device special file name	--	string(128)	No	--
File System Name (`FILE_SYSTEM_NAME`)	Mount point of the file system[#1]	--	string(1024)	No	--
Host Name (`HOST_NAME`)	NAS system host name	--	string(256)	No	--

File System Configuration (PD_FSC)					
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Data Source**
LDEV Number (`LDEV_NUMBER`)	Logical device number (of the storage system) (hexadecimal). [#2] The format is as follows: *CU-number* : *LDEVID* Both *CU-number* and *LDEVID* are 2 digits each. ***Example:*** `01:0F`	--	`string(16)`	No	--
LU Number (`LU_NUMBER`)	Logical unit number (of the host) (decimal number)	--	`word`	No	--
Port Number (`PORT_NUMBER`)	Port number (of the storage system). ***Example:*** `CL1-A;0`	--	`string(64)`	No	--
Product ID (`PRODUCT_ID`)	Emulation type. ***Example:*** `OPEN-9`	--	`string(64)`	No	--
Product Name (`PRODUCT_NAME`)	Product name of the storage system[#2][#3]	--	`string(64)`	No	--
RAID ID (`RAID_ID`)	Character strings that represents the model of the storage system	--	`string(64)`	No	--
Record Time (`RECORD_TIME`)	Time in GMT when the record is stored	--	`time_t`	No	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier, which is always set to `FSC`	--	`string(8)`	No	--
Serial Number (`SERIAL_NUMBER`)	Serial number of the storage system.[#2] Device ID (decimal, with no preceding zeros)	--	`string(32)`	No	--
Unit ID (`UNIT_ID`)	Unit identifier. ***Example:*** `0x08`	--	`unsigned char`	No	--
Vendor ID	Vendor name	--	`string(64)`	No	--

File System Configuration (PD_FSC)					
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delt a**	**Data Source**
(`VENDOR_ID`)					

#1:

> During HCO node monitoring, if a file system other than DRFS appears, an underscore (_) is appended to the beginning of the name of the file system.

#2:

> If target LDEV is the virtual volume of the global-active device, virtual storage machine information related to the volume will be stored.

#3:

> If the storage system Hitachi AMS2010 or Hitachi AMS2100 is connected to an external network, the value of the Product Name field is AMS2100.

File System Detail - Local (PD_FSL)

Function

The File System Detail - Local (`PD_FSL`) record stores performance data that indicates the status of the local file system capacity of the NAS system at a particular point in time. One record is created for each local file system. This record is a multi-instance record.

Note: In certain file systems, there are times when values cannot be collected. For example, the remote file system might be handled as a local file system if the remote host name cannot be acquired.

Table 2-205 File System Detail - Local (PD_FSL) Default and Changeable Values

Item	**Default Value**	**Changeable?**
`Collection Interval`	3600	Yes
`Collection Offset`	0	
`Log`	Yes	
`LOGIF`	(Blank)	

Key Fields

File System Name (`FILE_SYSTEM_NAME`)

Lifetime

From when the local file system is mounted on the NAS system to when it is unmounted

Record Size

- Fixed part: 677 bytes
- Variable part: 1,520 bytes

Table 2-206 File System Detail - Local (PD_FSL) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delta	Data Source
File System Detail - Local (PD_FSL)					
Block Size (`BLOCKSIZE`)	Block size of the local file system (in bytes). Fixed to `512`.	--	`ulong`	No	--
Blocks Free (`TOTAL_BLOCKS_FRE E`)	Number of blocks not in use in the local file system	--	`double`	No	--
Blocks in Use (`TOTAL_BLOCKS_IN_ USE`)	Number of blocks in use in the local file system	--	`double`	No	--
Device Name (`DEVICE_NAME`)	Name of the device for which a file system is created	--	`string(128)`	No	--
File System Name (`FILE_SYSTEM_NAME`)	Mount point of the file system[#]	--	`string(1024)`	No	--
File System Type (`FILE_SYSTEM_TYPE`)	File system type. ***Example:*** `UFS`, `HFS`	--	`string(20)`	No	--
Host Name (`HOST_NAME`)	NAS system host name	--	`string(256)`	No	--
Mbytes Free (`TOTAL_MBYTES_FRE E`)	Number of megabytes not in use in the local file system	--	`double`	No	`TOTAL_SIZE _IN_MBYTES - TOTAL_MBYT ES_IN_USE`
Mbytes Free % (`TOTAL_MBYTES_FRE E_PERCENT`)	Percentage of megabytes not in use in the local file system	--	`float`	No	`TOTAL_MBYT ES_FREE` / `TOTAL_SIZE _IN_MBYTES` `* 100`

File System Detail - Local (PD_FSL)					
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Data Source**
Mbytes in Use (`TOTAL_MBYTES_IN_USE`)	Number of megabytes in use in the local file system	--	`double`	No	--
Mbytes in Use % (`TOTAL_MBYTES_IN_USE_PERCENT`)	Percentage of megabytes in use in the local file system	--	`float`	No	`TOTAL_MBYTES_IN_USE` / `TOTAL_SIZE_IN_MBYTES` * 100
Record Time (`RECORD_TIME`)	Time in GMT when the record is stored	--	`time_t`	No	--
Record Type (`INPUT_RECORD_TYPE`)	Record type, which is always set to `FSL`	--	`string(8)`	No	--
Total Inodes (`TOTAL_NUMBER_OF_INODES`)	Number of inodes in the file local system	--	`double`	No	--
Total Inodes Free (`TOTAL_INODES_FREE`)	Number of inodes not in use in the local file system	--	`double`	No	`TOTAL_NUMBER_OF_INODES` - `TOTAL_INODES_IN_USE`
Total Inodes Free % (`TOTAL_INODES_FREE_PERCENT`)	Percentage of inodes not in use in the local file system	--	`float`	No	`TOTAL_INODES_FREE` / `TOTAL_NUMBER_OF_INODES` * 100
Total Inodes in Use (`TOTAL_INODES_IN_USE`)	Number of inodes in use in the local file system	--	`double`	No	--
Total Inodes in Use % (`TOTAL_INODES_IN_USE_PERCENT`)	Percentage of inodes in use in the local file system	--	`float`	No	`TOTAL_INODES_IN_USE` / `TOTAL_NUMBER_OF_INODES` * 100
Total Size Blocks (`TOTAL_SIZE_IN_BLOCKS`)	Number of blocks in the file system	--	`double`	No	--
Total Size Mbytes (`TOTAL_SIZE_IN_MBYTES`)	Number of megabytes in the file system	--	`double`	No	--

#:

During HCO node monitoring, if a file system other than DRFS appears, an underscore (_) is appended to the beginning of the name of the file system.

IP Address Configuration (PD_IAC)

Function

The IP Address Configuration (PD_IAC) record stores IP address configuration information for the NAS system. This record is a multi-instance record.

Table 2-207 IP Address Configuration (PD_IAC) Default and Changeable Values

Item	Default Value	Changeable?
Collection Interval	3600	Yes
Collection Offset	0	
Log	Yes	
LOGIF	(Blank)	

Key Fields

IP Address (IP_ADDRESS)

Lifetime

From when the NAS system IP address configuration is established to when it is modified

Record Size

- Fixed part: 677 bytes
- Variable part: 326 bytes

Table 2-208 IP Address Configuration (PD_IAC) Fields

IP Address Configuration (PD_IAC)					
View Name (Manager Name)	Description	Sum Rule	Format	Delt a	Data Source
Host Name (HOST_NAME)	NAS system host name	--	string(256)	No	--
IP Address (IP_ADDRESS)	IP address for the NAS system	--	string(50)	No	--
Record Time (RECORD_TIME)	Time in GMT when the record is stored	--	time_t	No	--

IP Address Configuration (PD_IAC)					
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delt a**	**Data Source**
Record Type (`INPUT_RECORD_TYP E`)	Record type identifier, which is always set to `IAC`	--	`string(8)`	No	--
Sub Net Mask (`SUB_NET_MASK`)	Subnet mask# for the NAS system See **Note**	--	`string(20)`	No	--

#

For IPv6 addresses, no value is stored in this property.

Process Detail (PD)

Function

The Process Detail (`PD`) record stores performance data about the processes running in the NAS system at a particular point in time. However, if the process ends between the point in time when the performance data was collected and the following collection, the performance data for that process will not be collected.

One Process Detail (`PD`) record is created for each process running in the system. This record is a multi-instance record.

Table 2-209 Process Detail (PD) Default and Changeable Values

Item	**Default Value**	**Changeable?**
`Collection Interval`	60	Yes
`Collection Offset`	0	
`Log`	No	
`LOGIF`	(Blank)	

Key Fields

PID (`PID`)

Lifetime

From when the NAS system process starts to when it terminates

Record Size

- Fixed part: 677 bytes

- Variable part: 809 bytes

Table 2-210 Process Detail (PD) Fields

View Name (Manager Name)	Description	Sum Rule	Format	Delt a	Data Source
Argument List (`ARGUMENT_LIST`)	Process argument	--	`string(120 )`	No	--
CPU % (`CPU_PERCENT_USED )`	Percentage of the CPU in use for the process	--	`float`	No	--
Elapsed Time (`ELAPSED_TIME`)	Time elapsed since the process was started	--	`double`	No	--
Group ID (`GROUP_ID`)	ID of the group that actually executes the process	--	`long`	No	--
Group Name (`GROUP_NAME`)	Name of the group that actually executes the process. This value can be obtained only for NAS Manager Modular and NAS Blade Manager.	--	`string(36)`	No	--
Host Name (`HOST_NAME`)	NAS system host name	--	`string(256 )`	No	--
Major Faults (`MAJOR_FAULTS`)	Number of times a physical page fault occurred since the process started	--	`double`	No	--
Minor Faults (`MINOR_FAULTS`)	Number of times a logical page fault occurred since the process started	--	`double`	No	--
Niceness (`NICENESS`)	Process nice value	--	`long`	No	--
Parent PID (`PARENT_PID`)	Parent process ID	--	`long`	No	--
Parent Process List (`PARENT_PROCESS_L IST`)	List of parent processes	--	`string(128 )`	No	--
PID (`PID`)	Process ID	--	`long`	No	--
Priority (`PRIORITY`)	Process priority order	--	`long`	No	--

Process Detail (PD)					
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Data Source**
Process Group ID (`PROCESS_GROUP_ID`)	Process group ID	--	`long`	No	--
Program Name (`PROGRAM_NAME`)	Name of the program being executed	--	`string(32)`	No	--
Program PID (`PROGRAM_PID`)	Name of the program being executed and the process ID	--	`string(43)`	No	`PROGRAM_NA ME` + / + `PID`
Real Memory Kbytes (`REAL_MEMORY_KBYT ES`)	The actual memory size (in kilobytes) of the process in use	--	`ulong`	No	--
Real User ID (`REAL_USER_ID`)	Actual process user ID	--	`long`	No	--
Real User Name (`REAL_USER_NAME`)	Actual process user name. This value can be obtained only for NAS Manager Modular and NAS Blade Manager.	--	`string(36)`	No	--
Record Time (`RECORD_TIME`)	Time in GMT when the record is stored	--	`time_t`	No	--
Record Type (`INPUT_RECORD_TYP E`)	Record type, which is always set to `PD`	--	`string(8)`	No	--
Start Time (`START_TIME`)	Time at which the process starts	--	`time_t`	No	--
State (`STATE`)	Process status	--	`string(10)`	No	--
Terminal Name (`TERMINAL_NAME`)	Name of the terminal on which process is being executed	--	`string(40)`	No	--
Total Process Kbytes (`TOTAL_PROCESS_KB YTES`)	Process size (in kilobytes). This value is the sum of the process data size and the stack segment size.	--	`ulong`	No	--
User ID (`USER_ID`)	ID of the group that actually executes the process	--	`long`	No	--

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Process Detail (PD)					
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Data Source**
User Name (`USER_NAME`)	Name of the group that actually executes the process. This value can be obtained only for NAS Manager Modular and NAS Blade Manager.	--	`string(36)`	No	--

System Summary Overview (PI)

Function

The System Summary Overview (`PI`) record stores performance data that uses a predetermined amount of time as a unit and applies to the entire NAS system. This record is not created at the first information collection event after Agent for NAS has been started or after the NAS system has been started.

Note: The NAS system manages, in units of days, information collected by the `sar` command. Creation of that information starts after a fixed period from 00:00. If Agent for NAS starts collecting PI record information when the information collected by the `sar` command has not been created, collection fails, and then the KAVF24139-W and KAVF24140-W error messages are output to the common message log.

Table 2-211 System Summary Overview (PI) Default and Changeable Values

Item	**Default Value**	**Changeable?**
`Collection Interval`	60	Yes
`Collection Offset`	0	
`Log`	Yes	
`LOGIF`	(Blank)	

Key Fields

None

Lifetime

None

Record Size

- Fixed part: 1,721 bytes
- Variable part: 0 bytes

Table 2-212 System Summary Overview (PI) Fields

System Summary Overview (PI)					
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Data Source**
1-Minute Run Queue Avg (`ONE_MINUTE_RUN_QUEUE_AVG`)	Average number of processes that were waiting in execution queues and disk I/O queues in the past minute	%	`float`	No	--
5-Minute Run Queue Avg (`FIVE_MINUTE_RUN_QUEUE_AVG`)	Average number of processes that were waiting in execution queues and disk I/O queues in the past 5 minutes	%	`float`	No	--
15-Minute Run Queue Avg (`FIFTEEN_MINUTE_RUN_QUEUE_AVG`)	Average number of processes that were waiting in execution queues and disk I/O queues in the past 15 minutes	%	`float`	No	--
Active CPUs (`NUMBER_OF_ACTIVE_CPUS`)	Number of processors	COPY	`ulong`	No	--
Alloc Mem % (`ALLOCATED_MEMORY_PERCENT`)	Percentage of actual memory in use to the actual memory installed in the NAS system (in megabytes)	%	`float`	No	`ALLOCATED_MEMORY_MBYTES` / `TOTAL_MEMORY_MBYTES` * 100
Alloc Mem Mbytes (`ALLOCATED_MEMORY_MBYTES`)	Number of megabytes of actual memory in use in the actual memory installed in the NAS system	AVG	`float`	No	`TOTAL_MEMORY_MBYTES` - `FREE_MEMORY_MBYTES`
Block I/O Ops (`BLOCKIO_IO_OPS`)	Number of times a block I/O operation was performed. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	`BLOCKIO_READ_OPS` + `BLOCKIO_WRITE_OPS`
Block Read Ops (`BLOCKIO_READ_OPS`)	Number of times a block read operation was performed.	AVG	`double`	No	--

System Summary Overview (PI)					
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Data Source**
	If the collected information is invalid, the value is set to `0`.				
Block Read Ops/sec (`BLOCKIO_READ_OPS_PER_SECOND`)	Frequency of block read operations (number of times per second)	%	`double`	No	`BLOCKIO_READ_OPS` / `INTERVAL`
Block Write Ops (`BLOCKIO_WRITE_OPS`)	Number of times a block write operation was performed. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	--
Block Write Ops/sec (`BLOCKIO_WRITE_OPS_PER_SECOND`)	Frequency of block write operations (number of times per second)	%	`double`	No	`BLOCKIO_WRITE_OPS` / `INTERVAL`
Boot Time (`CURRENT_SYSTEM_BOOT_TIME`)	Time of the last boot of the NAS system	COPY	`time_t`	No	--
Context Switches (`CONTEXT_SWITCHES`)	Number of times a context switch was executed. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	--
Context Switches/sec (`CONTEXT_SWITCHES_PER_SECOND`)	Frequency of the context switch executions (number of times per second)	%	`double`	No	`CONTEXT_SWITCHES` / `INTERVAL`
CPU % (`KERNELMODE_USERMODE_PERCENT`)	CPU usage	%	`float`	No	(`TOTAL_KERNELMODE_TIME` + `TOTAL_USERMODE_TIME`) / (`TOTAL_KERNELMODE_TIME` + `TOTAL_USERMODE_TIME` + `TOTAL_IDLE_TIME`) * 100

Working with Records

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System Summary Overview (PI)					
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Data Source**
Free Memory % (`FREE_MEMORY_PERCENT`)	Percentage of actual memory not in use to the actual memory installed in the NAS system	%	`float`	No	`FREE_MEMORY_MBYTES` / `TOTAL_MEMORY_MBYTES` * 100
Free Memory Mbytes (`FREE_MEMORY_MBYTES`)	Number of megabytes of actual memory not in use in the actual memory installed in the NAS system	AVG	`float`	No	--
Host Name (`HOST_NAME`)	NAS system host name	COPY	`string(256)`	No	--
ICMP Pkts In (`ICMP_PACKETS_IN`)	Number of ICMP packets received via the IPv4 and IPv6 protocols. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	--
ICMP Pkts Out (`ICMP_PACKETS_OUT`)	Number of ICMP packets sent via the IPv4 and IPv6 protocols. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	--
Idle % (`IDLE_TIME_PERCENT`)	Percentage of the CPU idle time	%	`float`	No	`TOTAL_IDLE_TIME` / (`TOTAL_IDLE_TIME` + `TOTAL_USERMODE_TIME` + `TOTAL_KERNELMODE_TIME`) * 100
Interrupts (`INTERRUPTS`)	Number of times an interrupt occurred. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	--
Interrupts/sec (`INTERRUPTS_PER_SECOND`)	Frequency of interrupts (number of times per second)	%	`double`	No	`INTERRUPTS` / `INTERVAL`

System Summary Overview (PI)					
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delt a**	**Data Source**
Interval (`INTERVAL`)	Length (in seconds) of the interval at which the System Summary Overview (`PI`) record is stored. If the collected information is invalid, the value is set to `0`.	ADD	`double`	No	--
IP Pkts In (`IP_PACKETS_IN`)	Number of IP packets received via the IPv4 and IPv6 protocols. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	--
IP Pkts Out (`IP_PACKETS_OUT`)	Number of IP packets sent via the IPv4 and IPv6 protocols. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	--
Kernel CPU % (`KERNELMODE_PERCE NT`)	Percentage of the period in which the CPU was running in kernel mode	%	`float`	No	`TOTAL_KERN ELMODE_TIM E` / (`TOTAL_IDL E_TIME` + `TOTAL_USER MODE_TIME` + `TOTAL_KERN ELMODE_TIM E`) * 100
Physical I/O Ops (`PHYSICAL_IO_OPS`)	Number of times a physical I/O operation was performed. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	`PHYSICAL_R EAD_OPS` + `PHYSICAL_W RITE_OPS`
Physical Read Ops (`PHYSICAL_READ_OP S`)	Number of times a physical read operation was performed. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	--
Physical Write Ops (`PHYSICAL_WRITE_O PS`)	Number of times a physical write operation was performed.	AVG	`double`	No	--

System Summary Overview (PI)					
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delt a**	**Data Source**
	If the collected information is invalid, the value is set to `0`.				
Processes (`CURRENT_PROCESS_COUNT`)	Number of processes within the system	AVG	`ulong`	No	--
Record Time (`RECORD_TIME`)	Time in GMT when the record is stored	COPY	`time_t`	No	--
Record Type (`INPUT_RECORD_TYPE`)	Record type, which is always set to `PI`	COPY	`string(8)`	No	--
Run Queue (`PROCESSES_IN_RUN_QUEUE`)	Number of processes waiting in the execution queue or disk I/O queue	AVG	`float`	No	--
System Up Time (`CURRENT_BOOT_SYSTEM_UP_TIME`)	Amount of time since the last boot of the NAS system	COPY	`string(24)`	No	--
TCP Pkts In (`TCP_PACKETS_IN`)	Number of TCP packets received via the IPv4 and IPv6 protocols. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	--
TCP Pkts Out (`TCP_PACKETS_OUT`)	Number of TCP packets sent via the IPv4 and IPv6 protocols. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	--
Total Idle Time (`TOTAL_IDLE_TIME`)	Period of time in which the CPU was idle. If the collected information is invalid, the value is set to `0`.	AVG	`utime`	No	--
Total Kernel-mode Time (`TOTAL_KERNELMODE_TIME`)	Period of time in which the CPU was running in kernel mode. If the collected information is invalid, the value is set to `0`.	AVG	`utime`	No	--
Total Physical Memory Mbytes	Number of megabytes in actual memory	COPY	`float`	No	--

System Summary Overview (PI)					
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delta**	**Data Source**
(`TOTAL_MEMORY_MBYTES`)					
Total Pkts (`TOTAL_PACKETS`)	Total number of packets sent and received via the IPv4 and IPv6 protocols. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	`TOTAL_PACKETS_IN` + `TOTAL_PACKETS_OUT`
Total Pkts In (`TOTAL_PACKETS_IN`)	Number of packets received via the IPv4 and IPv6 protocols. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	`IP_PACKETS_IN`
Total Pkts Out (`TOTAL_PACKETS_OUT`)	Number of packets sent via the IPv4 and IPv6 protocols. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	`IP_PACKETS_OUT`
Total User-mode Time (`TOTAL_USERMODE_TIME`)	Period of time in which the CPU was running in user mode. If the collected information is invalid, the value is set to `0`.	AVG	`utime`	No	--
UDP Pkts In (`UDP_PACKETS_IN`)	Number of UDP packets received via the IPv4 and IPv6 protocols. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	--
UDP Pkts Out (`UDP_PACKETS_OUT`)	Number of UDP packets sent via the IPv4 and IPv6 protocols. If the collected information is invalid, the value is set to `0`.	AVG	`double`	No	--
User CPU % (`USERMODE_PERCENT`)	Percentage of the period in which the CPU was running in user mode	%	`float`	No	`TOTAL_USERMODE_TIME` / (`TOTAL_IDLE_TIME` + `TOTAL_USERMODE_TIME` + `TOTAL_KERN`

System Summary Overview (PI)					
View Name (Manager Name)	**Description**	**Sum Rule**	**Format**	**Delt a**	**Data Source**
					`ELMODE_TIM E`) * 100
Users (`CURRENT_USER_COU NT`)	Actual number of users since the previous data was collected	AVG	`ulong`	No	--

Records associated with Agent for NAS (for NAS Platform monitoring)

This section shows a list of the records that can be collected to monitor NAS Platform activity.

The following table shows the records that can be collected for NAS Platform monitoring and the information stored in those records, sorted by record name and record ID.

Table 2-213 Agent for NAS Records(for NAS Platform)

Record name	**Record ID**	**Stored information**
HNAS EVS Configuration	`PD_HEC`	Information about the configuration of the EVS assigned to a cluster that is managed by a monitored SMU/NAS Manager.
HNAS File System Configuration	`PD_HFSC`	Information about the configuration and capacity of file systems assigned to a cluster that is managed by a monitored SMU/NAS Manager.
HNAS File System Summary	`PI_HFSS`	Information about the performance of the file systems assigned to a cluster that is managed by a monitored SMU/NAS Manager.
HNAS Node Configuration	`PD_HNC`	Configuration information and capacity information for each node of NAS Platform that is managed by the monitored SMU/NAS Manager.
HNAS Node CPU Summary	`PI_HNCS`	Performance information about a CPU for individual NAS Platform nodes that are managed by a monitored SMU/NAS Manager.
HNAS Node HSSI Summary	`PI_HNHS`	Performance information about HSSI for individual NAS Platform nodes that are managed by a monitored SMU/NAS Manager.
HNAS Node Summary	`PI_HNS`	Performance information for individual NAS Platform nodes that are managed by a monitored SMU/NAS Manager.

Record name	Record ID	Stored information
HNAS SMU Configuration	PD_HSMU	Basic information about a monitored SMU/NAS Manager.
HNAS Storage Pool Configuration	PD_HPLC	Information about the configuration and capacity of storage pools assigned to a cluster that is managed by a monitored SMU/NAS Manager.
HNAS System Drive Configuration	PD_HSDC	Information about the configuration and capacity of system drives assigned to a cluster that is managed by a monitored SMU/NAS Manager.

HNAS EVS Configuration (PD_HEC)

Description

The HNAS EVS Configuration (PD_HEC) record stores the configuration information of the EVSs assigned to the clusters managed by monitored SMU/NAS Manager. This is a multi-instance record.

Note:

In real-time reports, the values of the most recently collected historical record are displayed for the record.

If the obtained data exceeds the number of records that can be created at one collection time, no records are created for the excess data.

Table 2-214 Defaults and definable values of HNAS EVS Configuration (PD_HEC) records

Item	Default value	Definable
Sync Collection With	Detail Records, PD_HSMU	No
Log	Yes	Yes
LOGIF	Blank	No

Key fields

Node/Cluster UUID (NODE_CLUSTER_UUID) and EVS ID (EVS_ID)

Lifetime

From the time an EVS is established in a cluster managed by a monitored SMU/NAS Manager, until the time the EVS is modified.

Record size

- Fixed part: 677 bytes
- Variable part: 1,344 bytes

The maximum number of records that can be created in one collection is 320.

Table 2-215 Fields in HNAS EVS Configuration (PD_HEC) records

HNAS EVS Configuration (PD_HEC)					
View name (Manager name)	**Description**	**Summary rule**	**Format**	**Delta**	**Data source**
EVS ID (`EVS_ID`)	ID of the EVS	--	`string(4)`	No	--
EVS Name (`EVS_NAME`)	Name of the EVS.	--	`string(260)`	No	--
Interval (`INTERVAL`)	Length (in seconds) of the interval at which the HNAS EVS Configuration (PD_HEC) record is stored.If the collected information is invalid, 0 is set.	--	`double`	No	--
IP Address (`IP_ADDRESS`)	A list of IP addresses allocated to the EVS If multiple IP addresses are allocated, addresses are separated by commas (`,`). This field can contain a maximum of 512 bytes. Excess data is truncated. A maximum of 32 IPv4 addresses or 13 IPv6 addresses can be stored.	--	`string(512)`	No	--
Node Name (`NODE_NAME`)	Name of the node. If the EVS is disabled, `N/A` appears in this field.	--	`string(260)`	No	--
Node/Cluster Name (`NODE_CLUSTER_NAM E`)	Name of the cluster or node. For nodes that are not in a cluster	--	`string(260)`	No	--

HNAS EVS Configuration (PD_HEC)					
View name (Manager name)	**Description**	**Summary rule**	**Format**	**Delta**	**Data source**
	environment, the node name is shown.				
Node/Cluster UUID (`NODE_CLUSTER_UUID`)	UUID of the cluster or node. Example: `dc78e3a2-2f93-11ce-9000-629bd044f325` This is a 36 character string that uniquely identifies the cluster. For nodes that are not in a cluster environment, the UUID of the node is shown.	--	`string(40)`	No	--
Record Time (`RECORD_TIME`)	Time (GMT) at which the record was created.	--	`time_t`	No	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier. The record type is always `HEC`.	--	`string(8)`	No	--

HNAS File System Configuration (PD_HFSC)

Description

The HNAS File System Configuration (`PD_HFSC`) record stores information about the configuration and capacity of the file systems assigned to the clusters managed by monitored SMU/NAS Manager. This is a multi-instance record.

Note:

In real-time reports, the values of the most recently collected historical record are displayed for the record.

If the obtained data exceeds the number of records that can be created at one collection time, no records are created for the excess data.

Table 2-216 Defaults and definable values of HNAS File System Configuration (PD_HFSC) records

Item	Default value	Definable
Sync Collection With	Detail Records, HSMU	No
Log	Yes	Yes
LOGIF	Blank	No

Key fields

Node/Cluster UUID (NODE_CLUSTER_UUID) and File System Name (FILE_SYSTEM_NAME)

Lifetime

From the time a file system is created in an NAS Platform node that is managed by a monitored SMU/NAS Manager, until the time the file system is modified.

Record size

- Fixed part: 677 bytes
- Variable part: 876 bytes

The maximum number of records that can be created in one collection is 640.

Table 2-217 Fields in HNAS File System Configuration (PD_HFSC) records

HNAS File System Configuration (PD_HFSC)					
View name (Manager name)	**Description**	**Summary rule**	**Format**	**Delta**	**Data source**
Capacity (CAPACITY)	Capacity of the file system (GB).	--	double	No	--
EVS ID (EVS_ID)	ID of the EVS.	--	string(4)	No	--
File System Name (FILE_SYSTEM_NAME)	Name of the file system.	--	string(260)	No	--
Free % (FREE_PERCENT)	Percentage of free capacity of the file system (%).	--	float	No	--
Free Capacity (FREE_CAPACITY)	Free capacity of the file system (GB).	--	double	No	--
Interval	Length (in seconds) of the	--	double	No	--

HNAS File System Configuration (PD_HFSC)					
View name (Manager name)	**Description**	**Summa ry rule**	**Format**	**Delta**	**Data source**
(`INTERVAL`)	interval at which the HNAS File System Configuration (PD_HFSC) record is stored.If the collected information is invalid, 0 is set.				
Node/Cluster Name (`NODE_CLUSTER_NAM E`)	Name of the cluster or node. For nodes not in a cluster environment, the node name is shown.	--	`string( 260)`	No	--
Node/Cluster UUID (`NODE_CLUSTER_UUI D`)	UUID of the cluster or node. Example: `dc78e3a2-2f93-1 1ce-9000-629bd0 44f325` This is a 36 character string that uniquely identifies the cluster. For nodes not in a cluster environment, the UUID of the node is shown.	--	`string( 40)`	No	--
Record Time (`RECORD_TIME`)	Time (GMT) when the record was created.	--	`time_t`	No	--
Record Type (`INPUT_RECORD_TYP E`)	Record type identifier. The record type is always `HFSC`.	--	`string( 8)`	No	--
Status (`STATUS`)	Status of the file system. The status that is output to this field might differ from the displayed SMU/NAS Manager's	--	`string( 16)`	No	--

HNAS File System Configuration (PD_HFSC)					
View name (Manager name)	Description	Summary rule	Format	Delta	Data source
	information. For details about the status, check the SMU/NAS Manager. Example: `Mount – The file system has been mounted.` `MntRO – The file system has been mounted read-only.` `UnMnt – The file system is unmounted.` `RepTg – The file system is mounted as replication target.` `SysLk – The file system is mounted but syslocked; it is read-only to protocols, but read-write to NDMP.`				
Storage Pool Name (`STORAGE_POOL_NAM E`)	Names of the storage pools with which the file system is associated	--	`string( 260)`	No	--
Used Capacity (`USED_CAPACITY`)	Used capacity of the file system (GB).	--	`double`	No	--

HNAS File System Summary (PI_HFSS)

Description

The HNAS File System Summary (`PI_HFSS`) record stores performance information of the file systems assigned to the clusters managed by monitored SMU/NAS Manager. This is a multi-instance record.

Note:

When you add file systems, records are not created for those file systems until the next time the system collects HNAS File System Configuration (PD_HFSC) records.

When you delete file systems, 0 is recorded as the performance data value for those file systems until the next time the system collects HNAS File System Configuration (PD_HFSC) records. After this, no further records are created for the deleted file systems.

If `Log=No` is specified for all PD records related to NAS Platform monitoring, the key fields in these records are not updated.

In real-time reports, the values of the most recently collected historical record are displayed for the record.

All performance values are represented by integers. Therefore, the displayed values might differ from the actual values.

If the obtained data exceeds the number of records that can be created at one collection time, no records are created for the excess data.

Table 2-218 Defaults and definable values of HNAS File System Summary (PI_HFSS) records

Item	Default value	Definable
Sync Collection With	Interval Records, HNS	No
Log	Yes	Yes
LOGIF	Blank	No

Key fields

Node/Cluster UUID (`NODE_CLUSTER_UUID`) and File System Name (`FILE_SYSTEM_NAME`)

Lifetime

From the time a file system is created in an NAS Platform node that is managed by a monitored SMU/NAS Manager, until the time the file system is modified.

Record size

- Fixed part: 677 bytes
- Variable part: 628 bytes

The maximum number of records that can be created in one collection is 640.

Table 2-219 Fields in HNAS File System Summary (PI_HFSS) records

HNAS File System Summary (PI_HFSS)					
View name (Manager name)	**Description**	**Summary rule**	**Format**	**Delta**	**Data source**
File System Name (`FILE_SYSTEM_NAME`)	Name of the file system.	COPY	`string(260)`	No	--
Interval (`INTERVAL`)	Length (in seconds) of the interval at which the HNAS File System Summary (PI_HFSS) record is stored. If the collected information is invalid, 0 is set.	ADD	`double`	No	--
Node/Cluster Name (`NODE_CLUSTER_NAME`)	Name of the cluster or node. For nodes not in a cluster environment, the node name is shown.	COPY	`string(260)`	No	--
Node/Cluster UUID (`NODE_CLUSTER_UUID`)	UUID of the cluster or node. Example: `dc78e3a2-2f93-11ce-9000-629bd044f325` This is a 36 character string that uniquely identifies the cluster. For nodes not in a cluster environment, the UUID of the node is shown.	COPY	`string(40)`	No	--
Read Transfer Rate (`READ_TRANSFER_RATE`)	Read transfer rate of the file system (MB per second).	AVG	`double`	No	--
Record Time (`RECORD_TIME`)	Time (GMT) when the record was created.	COPY	`time_t`	No	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier. The record type is always `HFSS`.	COPY	`string(8)`	No	--

HNAS File System Summary (PI_HFSS)					
View name (Manager name)	**Description**	**Summary rule**	**Format**	**Delta**	**Data source**
Total Ops/sec (`TOTAL_OPS_PER_SECOND`)	Number of operations per second of the file system (number of times per second).	AVG	`double`	No	--
Write Transfer Rate (`WRITE_TRANSFER_RATE`)	Write transfer rate of the file system (MB per second).	AVG	`double`	No	--

HNAS Node Configuration (PD_HNC)

Description

The HNAS Node Configuration (`PD_HNC`) record stores information about the configuration and capacity of the nodes managed by monitored SMU/NAS Manager. This is a multi-instance record.

Note:

In real-time reports, the values of the most recently collected historical record are displayed for the record.

If the obtained data exceeds the number of records that can be created at one collection time, no records are created for the excess data.

Table 2-220 Defaults and definable values of HNAS Node Configuration (PD_HNC) records

Item	**Default value**	**Definable**
`Sync Collection With`	Detail Records, HSMU	No
`Log`	Yes	Yes
`LOGIF`	Blank	No

Key fields

Node/Cluster UUID (`NODE_CLUSTER_UUID`) and Node Name (`NODE_NAME`)

Lifetime

From the time an NAS Platform node to be managed by a monitored SMU/NAS Manager is created, until the time the NAS Platform node is modified.

Record size

- Fixed part: 677 bytes
- Variable part: 616 bytes

The maximum number of records that can be created in one collection is 20.

Table 2-221 Fields in HNAS Node Configuration (PD_HNC) records

HNAS Node Configuration (PD_HNC)					
View name (Manager name)	**Description**	**Summary rule**	**Format**	**Delta**	**Data source**
Cluster Mode (HEALTH)	Mode of the cluster. In a cluster environment, Clustered or Cluster capable is displayed. In a non-cluster environment, Not clustered is displayed.	--	string(32)	No	--
Filesystem Free Capacity (FILESYSTEM_FREE_ CAPACITY)	Total free capacity of the file systems managed in the cluster or node (GB).	--	double	No	--
Filesystem Used Capacity (FILESYSTEM_USED_ CPACITY)	Total used capacity of the file systems managed in the cluster or node (GB).	--	double	No	--
Interval (INTERVAL)	Length (in seconds) of the interval at which the HNAS Node Configuration (PD_HNC) record is stored. If the collected information is invalid, 0 is set.	--	double	No	--
Node Name (NODE_NAME)	Name of the node.	--	string(260)	No	--
Node/Cluster Name (NODE_CLUSTER_NAM E)	Name of the cluster or node. For nodes not in a cluster	--	string(260)	No	--

HNAS Node Configuration (PD_HNC)					
View name (Manager name)	**Description**	**Summary rule**	**Format**	**Delta**	**Data source**
	environment, the node name is shown.				
Node/Cluster UUID (`NODE_CLUSTER_UUID`)	UUID of the cluster or node. Example: `dc78e3a2-2f93-11ce-9000-629bd044f325` This is a 36 character string that uniquely identifies the cluster. For nodes not in a cluster environment, the UUID of the node is shown.	--	`string(40)`	No	--
Record Time (`RECORD_TIME`)	Time (GMT) when the record was created.	--	`time_t`	No	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier. The record type is always `HNC`.	--	`string(8)`	No	--

HNAS Node CPU Summary (PI_HNCS)

Description

The HNAS Node CPU Summary (`PI_HNCS`) record stores performance information about CPUs for each node managed by a monitored SMU/NAS Manager. This is a multi-instance record.

Note:

When you add nodes, performance information is not collected for those nodes until the next time the system collects HNAS Node Configuration (PD_HNC) records.

When you delete nodes, 0 is recorded as the performance data value for those nodes until the system next collects HNAS Node Configuration (PD_HNC) records. After this, no further records are created for the deleted nodes.

If you change the IP address of a node, 0 is recorded as the performance data for the node until the system next collects HNAS Node Configuration (PD_HNC) records.

If `Log=No` is specified for all PD records related to NAS Platform monitoring, the key fields in these records are not updated.

In real-time reports, the values of the most recently collected historical record are displayed for the record.

All performance values are represented by integers. Therefore, the displayed values might differ from the actual values.

If the obtained data exceeds the number of records that can be created at one collection time, no records are created for the excess data.

Table 2-222 Defaults and definable values of HNAS Node CPU Summary (PI_HNCS) records

Item	Default value	Definable
Sync Collection With	Interval Records, HNS	No
Log	Yes	Yes
LOGIF	Blank	No

Key fields

Node/Cluster UUID (`NODE_CLUSTER_UUID`), Node Name (`NODE_NAME`) and CPU Number (`CPU_NUMBER`)

Lifetime

From the time an NAS Platform node to be managed by a monitored SMU/NAS Manager is created, until the time the NAS Platform node is modified.

Record size

- Fixed part: 677 bytes
- Variable part: 616 bytes

The maximum number of records that can be created in one collection is 160.

Table 2-223 Fields in HNAS Node CPU Summary (PI_HNCS) records

HNAS Node CPU Summary (PI_HNCS)					
View name (Manager name)	Description	Summary rule	Format	Delta	Data source
CPU Number (`CPU_NUMBER`)	Number of the CPU. Example: 0 or 1	COPY	string(32)	No	--
Interval (`INTERVAL`)	Length (in seconds) of the interval at which	ADD	double	No	--

HNAS Node CPU Summary (PI_HNCS)					
View name (Manager name)	**Description**	**Summary rule**	**Format**	**Delta**	**Data source**
	the HNAS Node CPU Summary (PI_HNCS) record is stored. If the collected information is invalid, 0 is set.				
Load % (`LOAD_PERCENT`)	CPU load (%).	`%`	`float`	No	--
Node Name (`NODE_NAME`)	Name of the node.	COPY	`string(260)`	No	--
Node/Cluster Name (`NODE_CLUSTER_NAME`)	Name of the cluster or node. For nodes not in a cluster environment, the node name is shown.	COPY	`string(260)`	No	--
Node/Cluster UUID (`NODE_CLUSTER_UUID`)	UUID of the cluster or node. Example: `dc78e3a2-2f93-11ce-9000-629bd044f325` This is a 36 character string that uniquely identifies the cluster. For nodes not in a cluster environment, the UUID of the node is shown.	COPY	`string(40)`	No	--
Record Time (`RECORD_TIME`)	Time (GMT) when the record was created.	COPY	`time_t`	No	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier. The record type is always `HNCS`.	COPY	`string(8)`	No	--

HNAS Node HSSI Summary (PI_HNHS)

Description

The HNAS Node HSSI Summary (`PI_HNHS`) record stores performance information about HSSI for each node managed by a monitored SMU/NAS Manager. This is a multi-instance record.

Note:

When you add nodes, performance information is not collected for those nodes until the next time the system collects HNAS Node Configuration (PD_HNC) records.

When you delete nodes, 0 is recorded as the performance data value for those nodes until the system next collects HNAS Node Configuration (PD_HNC) records. After this, no further records are created for the deleted nodes.

If you change the IP address of a node, 0 is recorded as the performance data for the node until the system next collects HNAS Node Configuration (PD_HNC) records.

If `Log=No` is specified for all PD records related to NAS Platform monitoring, the key fields in these records are not updated.

In real-time reports, the values of the most recently collected historical record are displayed for the record.

All performance values are represented by integers. Therefore, the displayed values might differ from the actual values.

If the obtained data exceeds the number of records that can be created at one collection time, no records are created for the excess data.

Table 2-224 Defaults and definable values of HNAS Node HSSI Summary (PI_HNHS) records

Item	Default value	Definable
Sync Collection With	Interval Records, HNS	No
Log	Yes	Yes
LOGIF	Blank	No

Key fields

Node/Cluster UUID (`NODE_CLUSTER_UUID`), Node Name (`NODE_NAME`) and HSSI Number (`HSSI_NUMBER`)

Lifetime

From the time an NAS Platform node to be managed by a monitored SMU/NAS Manager is created, until the time the NAS Platform node is modified.

Record size

- Fixed part: 677 bytes
- Variable part: 640 bytes

The maximum number of records that can be created in one collection is 160.

Table 2-225 Fields in HNAS Node HSSI Summary (PI_HNHS) records

HNAS Node HSSI Summary (PI_HNHS)					
View name (Manager name)	**Description**	**Summary rule**	**Format**	**Delta**	**Data source**
HSSI Number (`HSSI_NUMBER`)	Number of the HSSI. See **Note** Example: 0 or 1	COPY	`string(32)`	No	--
Interval (`INTERVAL`)	Length (in seconds) of the interval at which the HNAS Node HSSI Summary (PI_HNHS) record is stored. If the collected information is invalid, 0 is set.	ADD	`double`	No	--
Node Name (`NODE_NAME`)	Name of the node.	COPY	`string(260)`	No	--
Node/Cluster Name (`NODE_CLUSTER_NAME`)	Name of the cluster or node. For nodes not in a cluster environment, the node name is shown.	COPY	`string(260)`	No	--
Node/Cluster UUID (`NODE_CLUSTER_UUID`)	UUID of the cluster or node. Example: `dc78e3a2-2f93-11ce-9000-629bd044f325` This is a 36 character string that uniquely identifies the cluster. For nodes not in a cluster environment, the UUID of the node is shown.	COPY	`string(40)`	No	--

HNAS Node HSSI Summary (PI_HNHS)					
View name (Manager name)	**Description**	**Summary rule**	**Format**	**Delta**	**Data source**
Record Time (`RECORD_TIME`)	Time (GMT) when the record was created.	COPY	`time_t`	No	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier. The record type is always `HNHS`.	COPY	`string(8)`	No	--
Throughput RX (`THROUGHPUT_RX`)	Amount of HSSI data received per second (Mb per second).	AVG	`double`	No	--
Throughput TX (`THROUGHPUT_TX`)	Amount of HSSI data sent per second (Mb per second).	AVG	`double`	No	--

> **Note:** "0" is stored as the HSSI number only if what is being monitored is NAS Platform in a storage system on which a NAS module is installed.

HNAS Node Summary (PI_HNS)

Description

The HNAS Node Summary (`PI_HNS`) record stores performance information of the nodes managed by monitored SMU/NAS Manager. This is a multi-instance record.

Note:

When you add nodes, performance information is not collected for those nodes until the next time the system collects HNAS Node Configuration (PD_HNC) records.

When you delete nodes, 0 is recorded as the performance data value for those nodes until the system next collects HNAS Node Configuration (PD_HNC) records. After this, no further records are created for the deleted nodes.

If you change the IP address of a node, 0 is recorded as the performance data for the node until the system next collects HNAS Node Configuration (PD_HNC) records.

If `Log=No` is specified for all PD records related to NAS Platform monitoring, the key fields in these records are not updated.

In real-time reports, the values of the most recently collected historical record are displayed for the record.

All performance values are represented by integers. Therefore, the displayed values might differ from the actual values.

If the obtained data exceeds the number of records that can be created at one collection time, no records are created for the excess data.

Table 2-226 Defaults and definable values of HNAS Node Summary (PI_HNS) records

Item	Default value	Definable
Collection Interval	60	Yes[#]
Collection Offset	0	Yes
Log	Yes	Yes
LOGIF	Blank	No

\#

A value from 60 to 3,600 that is a multiple of 60 and a divisor of 3,600.

Key fields

Node/Cluster UUID (NODE_CLUSTER_UUID) and Node Name (NODE_NAME)

Lifetime

From the time an NAS Platform node to be managed by a monitored SMU/NAS Manager is created, until the time the NAS Platform node is modified.

Record size

- Fixed part: 677 bytes
- Variable part: 1,044 bytes

The maximum number of records that can be created in one collection is 20.

Table 2-227 Fields in HNAS Node Summary (PI_HNS) records

HNAS Node Summary (PI_HNS)					
View name (Manager name)	Description	Summary rule	Format	Delta	Data source
CPU Load % (CPU_LOAD_PERCENT)	Average CPU load (%) of the latest 10 seconds. Supplementary information This field exists to maintain compatibility with earlier versions. The value is the	%	float	No	--

HNAS Node Summary (PI_HNS)					
View name (Manager name)	**Description**	**Summa ry rule**	**Format**	**Delta**	**Data source**
	same as "CPU Load % Averaged Over 10sec".				
CPU Load % Averaged Over 1sec (`CPU_LOAD_PERCENT_ AVG_ONE_SEC`)	Average CPU load (%) of the latest 1 second.	%	`float`	No	--
CPU Load % Averaged Over 10sec (`CPU_LOAD_PERCENT_ AVG_TEN_SEC`)	Average CPU load (%) of the latest 10 seconds.	%	`float`	No	--
CPU SMP Load % (`CPU_SMP_LOAD_PERC ENT`)	CPU load (%) in SMP mode.	%	`float`	No	--
Disk Read Latency (`DISK_READ_LATENCY`)	Disk read latency (in milliseconds).	AVG	`double`	No	--
Disk Stripe Write Latency (`DISK_STRIPE_WRITE _LATENCY`)	Disk stripe write latency (in milliseconds).	AVG	`double`	No	--
Disk Write Latency (`DISK_WRITE_LATENC Y`)	Disk write latency (in milliseconds).	AVG	`double`	No	--
Ethernet Throughput RX (`ETHERNET_THROUGHP UT_RX`)	Amount of Ethernet data received per second (Mb per second).	AVG	`double`	No	--
Ethernet Throughput TX (`ETHERNET_THROUGHP UT_TX`)	Amount of Ethernet data sent per second (Mb per second).	AVG	`double`	No	--
Fibre Channel Throughput RX (`FIBRE_CHANNEL_THR OUGHPUT_RX`)	Amount of Fibre Channel data received per second (Mb per second).	AVG	`double`	No	--
Fibre Channel Throughput TX (`FIBRE_CHANNEL_THR OUGHPUT_TX`)	Amount of Fibre Channel data sent per second (Mb per second).	AVG	`double`	No	--

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HNAS Node Summary (PI_HNS)					
View name (Manager name)	**Description**	**Summary rule**	**Format**	**Delta**	**Data source**
File System Data Transfer Rate (`FILE_SYSTEM_DATA_TRANSFER_RATE`)	Total value of the read transfer rate and write transfer rate for the file systems managed by the cluster or node (MB per second).	AVG	`double`	No	--
File System Total Ops/sec (`FILE_SYSTEM_TOTAL_OPS_PER_SECOND`)	Total number of operations of the file systems managed by the cluster or node (number of times per second).	AVG	`double`	No	--
FPGA Load % (`FPGA_LOAD_PERCENT`)	Average FPGA load (%).	%	`float`	No	--
FS Load % (`FS_LOAD_PERCENT`)	Average file system load (%). The value that is output is the load on the CPU or FPGA (whichever is higher) at the moment when information is collected.	%	`float`	No	--
FSI Cache Usage (`FSI_CACHE_USAGE`)	FSI cache usage rate (%).	%	`float`	No	--
FTP Ops/sec (`FTP_OPS_PER_SECOND`)	Number of FTP operations per second (number of times per second).	AVG	`double`	No	--
Heap Usage (`HEAP_USAGE`)	Heap usage rate (%).	%	`float`	No	--
Interval (`INTERVAL`)	Length (in seconds) of the interval at which the HNAS Node Summary (PI_HNS) record is stored.If the collected information is invalid, 0 is set.	ADD	`double`	No	--

HNAS Node Summary (PI_HNS)					
View name (Manager name)	**Description**	**Summa ry rule**	**Format**	**Delta**	**Data source**
I-SCSI Ops/sec (`ISCSI_OPS_PER_SEC OND`)	Number of iSCSI operations per second (number of times per second).	AVG	`double`	No	--
NFS Ops/sec (`NFS_OPS_PER_SECON D`)	Number of NFS operations per second (number of times per second).	AVG	`double`	No	--
Node Name (`NODE_NAME`)	Name of the node.	COPY	`string( 260)`	No	--
Node Ops/Sec (`NODE_OPS_PER_SECO ND`)	Number of Total operations per second (number of times per second) in the node.	AVG	`double`	No	--
Node/Cluster Name (`NODE_CLUSTER_NAME )`	Name of the cluster or node. For nodes not in a cluster environment, the node name is shown.	COPY	`string( 260)`	No	--
Node/Cluster UUID (`NODE_CLUSTER_UUID )`	UUID of the cluster or node. Example: `dc78e3a2-2f93- 11ce-9000-629b d044f325` This is a 36 character string that uniquely identifies the cluster. For nodes not in a cluster environment, the UUID of the node is shown.	COPY	`string( 40)`	No	--
NVRAM Waited Allocs (`NVRAM_WAITED_ALLO CS`)	Total number of times the node has waited for memory to be allocated since starting.	COPY	`double`	No	--

HNAS Node Summary (PI_HNS)					
View name (Manager name)	**Description**	**Summary rule**	**Format**	**Delta**	**Data source**
Record Time (`RECORD_TIME`)	Time (GMT) when the record was created.	COPY	`time_t`	No	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier. The record type is always `HNS`.	COPY	`string(8)`	No	--
Running Bossock Fibers (`RUNNING_BOSSOCK_FIBERS`)	Number of threads to manage available network socket in the node.	AVG	`double`	No	--
Running Pi-Tcp-Socks Rcv Fibers (`RUNNING_PI_TCP_SOCKS_RCV_FIBERS`)	Number of threads to manage available network socket in the node.	AVG	`double`	No	--
SMB Ops/sec (`SMB_OPS_PER_SECOND`)	Number of SMB operations per second (number of times per second).	AVG	`double`	No	--
SMB2 Ops/sec (`SMB2_OPS_PER_SECOND`)	Number of SMB2 operations per second (number of times per second).	AVG	`double`	No	--

HNAS SMU Configuration (PD_HSMU)

Description

The HNAS SMU Configuration (`PD_HSMU`) record stores basic information about monitored SMU/NAS Manager.

Note:

In real-time reports, the values of the most recently collected historical record are displayed for the record.

Table 2-228 Defaults and definable values of HNAS SMU Configuration (PD_HSMU) records

Item	Default value	Definable
Collection Interval	3600	No
Collection Offset	0	No

Item	Default value	Definable
`Log`	Yes	Yes
`LOGIF`	Blank	No

Key fields

IP Address (`IP_ADDRESS`)

Lifetime

From the time the IP address configuration of the monitored SMU/NAS Manager is defined, until the time the IP address is changed.

Record size

- Fixed part: 1,023 bytes
- Variable part: 0 bytes

The maximum number of records that can be created in one collection is 1.

Table 2-229 Fields in HNAS SMU Configuration (PD_HSMU) records

HNAS SMU Configuration (PD_HSMU)					
View name (Manager name)	**Description**	**Summary rule**	**Format**	**Delta**	**Data source**
File System Capacity (`FILE_SYSTEM_CAPACITY`)	Total capacity of the file systems managed by the SMU/NAS Manager (GB).	--	`double`	No	--
Host Name (`HOST_NAME`)	Host name of the SMU/NAS Manager.	--	`string(260)`	No	--
Interval (`INTERVAL`)	Length (in seconds) of the interval at which the HNAS SMU Configuration (PD_HSMU) record is stored. If the collected information is invalid, 0 is set.	--	`double`	No	--
IP Address (`IP_ADDRESS`)	IP address of the SMU/NAS Manager.	--	`string(50)`	No	--
Num of Clusters (`NUM_OF_CLUSTERS`)	Number of clusters managed	--	`short`	No	--

HNAS SMU Configuration (PD_HSMU)					
View name (Manager name)	Description	Summary rule	Format	Delta	Data source
	by the SMU/NAS Manager.				
Num of Nodes (NUM_OF_NODES)	Number of nodes managed by the SMU/NAS Manager.	--	short	No	--
Record Time (RECORD_TIME)	Time (GMT) when the record was created.	--	time_t	No	--
Record Type (INPUT_RECORD_TYP E)	Record type identifier. The record type is always HSMU	--	string(8)	No	--

HNAS Storage Pool Configuration (PD_HPLC)

Description

The HNAS Storage Pool Configuration (PD_HPLC) record stores information about the configuration and capacity of the storage pools assigned to the clusters managed by monitored SMU/NAS Manager. This is a multi-instance record.

Note:

In real-time reports, the values of the most recently collected historical record are displayed for the record.

If the obtained data exceeds the number of records that can be created at one collection time, no records are created for the excess data.

Table 2-230 Defaults and definable values of HNAS Storage Pool Configuration (PD_HPLC) records

Item	Default value	Definable
Sync Collection With	Detail Records, HSMU	No
Log	Yes	Yes
LOGIF	Blank	No

Key fields

Node/Cluster UUID (NODE_CLUSTER_UUID) and Storage Pool Name (STORAGE_POOL_NAME)

Lifetime

From the time the storage pools are established in an NAS Platform node that is managed by a monitored SMU/NAS Manager, until the time the storage pools are modified.

Record size

- Fixed part: 677 bytes
- Variable part: 606 bytes

The maximum number of records that can be created in one collection is 640.

Table 2-231 Fields in HNAS Storage Pool Configuration (PD_HPLC) records

HNAS Storage Pool Configuration (PD_HPLC)					
View name (Manager name)	**Description**	**Summary rule**	**Format**	**Delta**	**Data source**
Capacity (`CAPACITY`)	Capacity of the storage pool (GB).	--	`double`	No	--
Free % (`FREE_PERSENT`)	Percentage of free capacity of the storage pool (%).	--	`float`	No	--
Free Capacity (`FREE_CAPACITY`)	Free capacity of the storage pool (GB).	--	`double`	No	CAPACITY FREE
Interval (`INTERVAL`)	Length (in seconds) of the interval at which the HNAS Storage Pool Configuration (PD_HPLC) record is stored. If the collected information is invalid, 0 is set.	--	`double`	No	--
Node/Cluster Name (`NODE_CLUSTER_NAME`)	Name of the cluster or node. For nodes not in a cluster environment, the node name is shown.	--	`string(260)`	No	--
Node/Cluster UUID (`NODE_CLUSTER_UUID`)	UUID of the cluster or node. Example: `dc78e3a2-2f93-11ce-9000-629bd044f325`	--	`string(40)`	No	--

HNAS Storage Pool Configuration (PD_HPLC)					
View name (Manager name)	**Description**	**Summary rule**	**Format**	**Delta**	**Data source**
	This is a 36 character string that uniquely identifies the cluster. For nodes not in a cluster environment, the UUID of the node is shown.				
Num of System Drives (`NUM_OF_SYSTEM_DR IVES`)	Number of system drives that constitute the storage pool.	--	`short`	No	--
Record Time (`RECORD_TIME`)	Time (GMT) when the record was created.	--	`time_t`	No	--
Record Type (`INPUT_RECORD_TYP E`)	Record type identifier. The record type is always `HPLC`	--	`string( 8)`	No	--
Status (`STATUS`)	Status of the storage pool. Either "Healthy" or "Not Healthy". The SMU/NAS Manager GUI might display "Pool belongs to another cluster" regardless of the status of Storage Pool.	--	`string( 64)`	No	--
Storage Pool Name (`STORAGE_POOL_NAM E`)	Name of the storage pool.	--	`string( 260)`	No	--
Used Capacity (`USED_CAPACITY`)	Used capacity of the storage pool (GB).	--	`double`	No	CAPACITY FREE

HNAS System Drive Configuration (PD_HSDC)

Description

The HNAS System Drive Configuration (`PD_HSDC`) record stores information about the configuration and capacity of the system drives assigned to the

clusters managed by monitored SMU/NAS Manager. This is a multi-instance record.

Note:

In real-time reports, the values of the most recently collected historical record are displayed for the record.

If the obtained data exceeds the number of records that can be created at one collection time, no records are created for the excess data.

Table 2-232 Defaults and definable values of HNAS System Drive Configuration (PD_HSDC) records

Item	Default value	Definable
Sync Collection With	Detail Records, HSMU	No
Log	Yes	Yes
LOGIF	Blank	No

Key fields

Node/Cluster UUID (NODE_CLUSTER_UUID) and System Drive ID (SYSTEM_DRIVE_ID)

Lifetime

From the time a system drive is set up in an NAS Platform node that is managed by a monitored SMU/NAS Manager, until the time the system drive is modified.

Record size

- Fixed part: 677 bytes
- Variable part: 696 bytes

The maximum number of records that can be created in one collection is 2560.

Table 2-233 Fields in HNAS System Drive Configuration (PD_HSDC) records

HNAS System Drive Configuration (PD_HSDC)					
View name (Manager name)	**Description**	**Summary rule**	**Format**	**Delta**	**Data source**
Capacity (CAPACITY)	Capacity of the system drive (GB).	--	double	No	--
Interval (INTERVAL)	Length (in seconds) of the interval at which the HNAS System	--	double	No	--

HNAS System Drive Configuration (PD_HSDC)					
View name (Manager name)	**Description**	**Summa ry rule**	**Format**	**Delta**	**Data source**
	Drive Configuration (PD_HSDC) record is stored. If the collected information is invalid, 0 is set.				
LDEV Number (`LDEV_NUMBER`)	LDEV number of the storage system to which the system drive is attached. [1], [2]	--	`string( 16)`	No	--
Node/Cluster Name (`NODE_CLUSTER_NAME`)	Name of the cluster or node. For nodes not in a cluster environment, the node name is shown.	--	`string( 260)`	No	--
Node/Cluster UUID (`NODE_CLUSTER_UUID`)	UUID of the cluster or node. Example: `dc78e3a2-2f93- 11ce-9000-629b d044f325` This is a 36 character string that uniquely identifies the cluster. For nodes not in a cluster environment, the UUID of the node is shown.	--	`string( 40)`	No	--
Record Time (`RECORD_TIME`)	Time (GMT) when the record was created.	--	`time_t`	No	--
Record Type (`INPUT_RECORD_TYPE`)	Record type identifier. The record type is always `HSDC`	--	`string( 8)`	No	--
Serial Number (`SERIAL_NUMBER`)	Serial number of the storage system to which the system drive is attached.[1], [2]	--	`string( 32)`	No	--

Working with Records

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HNAS System Drive Configuration (PD_HSDC)					
View name (Manager name)	**Description**	**Summary rule**	**Format**	**Delta**	**Data source**
Storage Pool Name (STORAGE_POOL_NAME)	Name of the storage pool that uses the system drive.	--	string(260)	No	--
Storage System Name (STORAGE_SYSTEM_NAME)	Name of the storage system to which the system drive is attached. [1, 2, 3] If the storage system is not supported, this is NULL.	--	string(64)	No	--
System Drive ID (SYSTEM_DRIVE_ID)	ID of the system drive.	--	string(8)	No	--

Note: 1: If the external storage connection function (Universal Volume Manager) of a storage system, to which the system drive is attached, is used, information about internal storage systems is stored.
The information to be stored is not information about externally connected storage systems.

Note: 2: If a storage system, to which the system drive is attached, is configured by using global-active device, information about virtual storage machine is stored.

Note: 3: If the storage system to which the system drive is attached is a VSP G1000 and the NAS Platform firmware version is 13.0 or later, the value stored in the Storage System Name field is VSP G1000 G1500 F1500.

Working with Records

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Acronyms and Abbreviations

This manual uses the following acronyms and abbreviations:

A

ALU
  Administrative Logical Unit

C

CHA
  Channel Adapter

CHP
  Channel Processor

CLPR
  Cache Logical Partition

CPU
  Central Processing Unit

CRC
  Cyclic Redundancy Check

D

DDL
  Data Definition Language

DKC
    Disk Controller

DRFS
    Data Reduction File System

F

FMC
    Flash Memory Compressed

FMD
    Flash Module Drive

G

GBIC
    Gigabit Interface Converter

GUI
    Graphical User Interface

H

HBA
    Host Bus Adapter

HCO
    Hitachi Capacity Optimization

HDU
    Hard Disk Unit

I

I/O
    Input/Output

ICMP
    Internet Control Message Protocol

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ID
Identifier, Identification

IP
Internet Protocol

IPv4
Internet Protocol version 4

IPv6
Internet Protocol version 6

L

LAN
Local Area Network

LDEV
Logical Device Unit

LU
Logical Unit

LUSE
Logical Unit Size Expansion

M

MB
Megabyte

MP
Microprocessor

N

NAS
Network Attached Storage

O

OS
Operating System

P

P-VOL
Primary Volume

R

RAID
Redundant Array of Inexpensive Disks

RCU
Remote Control Unit

RIO
Remote Input Output

S

S-VOL
Secondary Volume

SAN
Storage Area Network

SCSI
Small Computer System Interface

SLPR
Storage Logical Partition

SLU
Subsidiary Logical Unit

SNMP
Simple Network Management Protocol

SSD
solid-state drive

T

TCP
Transmission Control Protocol

TPF
Transaction Processing Facility

U

UDP
User Datagram Protocol

V

V-VOL
Virtual Volume

VVol
vSphere Virtual Volume

W

WWN
World Wide Name

#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

Acronyms-6

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Hitachi Vantara