

# Hitachi Virtual Storage Platform G130, G/F350, G/F370, G/F700, G/F900

SVOS RF 8.3

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## SIM Reference Guide

This document describes and provides an overview of SIM (Service Information Message) and the SIM code lists for Hitachi Virtual Storage Platform G130, G/F350, G/F370, G/F700, G/F900 storage systems.

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## Preface

This document describes and provides an overview of SIM (Service Information Message) and the SIM code lists for Hitachi Virtual Storage Platform G350, G370, G700, G900, and Hitachi Virtual Storage Platform F350, F370, F700, F900.

Please read this document carefully to understand how to use this product, and maintain a copy for reference purposes.

## Intended audience

This document is intended for system administrators, Hitachi Vantara representatives, and authorized service providers who install, configure, and operate .

Readers of this document should be familiar with the following:

- Data processing and RAID storage systems and their basic functions.

## Product version

This document revision applies to:

- Firmware 88-03-0x or later
- SVOS RF 8.3 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>.

## Changes in this revision

- Added a footnote #4 to [SIM code list for troubleshooting by service personnel \(on page 14\)](#).
- Changed the alert level of the following reference codes in [SIM code list for troubleshooting by users \(on page 12\)](#):
  - 627xxx
  - 628000

## Referenced documents

- *Hitachi Audit Log User Guide*, MK-97HM85024
- *Provisioning Guide*, MK-97HM85026
- *Hitachi SNMP Agent User Guide*, MK-97HM85027
- *System Administrator Guide*, MK-97HM85028
- *Hitachi Thin Image User Guide*, MK-97HM85032

## Document conventions


This document uses the following storage system terminology conventions:




Convention	Description
VSP Fx00 models	Refers to all of the following models, unless otherwise noted. <ul style="list-style-type: none"> <li>▪ Hitachi Virtual Storage Platform F350</li> <li>▪ Hitachi Virtual Storage Platform F370</li> <li>▪ Hitachi Virtual Storage Platform F700</li> <li>▪ Hitachi Virtual Storage Platform F900</li> </ul>
VSP Gx00 models	Refers to all of the following models, unless otherwise noted. <ul style="list-style-type: none"> <li>▪ Hitachi Virtual Storage Platform G350</li> <li>▪ Hitachi Virtual Storage Platform G370</li> <li>▪ Hitachi Virtual Storage Platform G700</li> <li>▪ Hitachi Virtual Storage Platform G900</li> </ul>

This document uses the following typographic conventions:

Convention	Description
<b>Bold</b>	<ul style="list-style-type: none"> <li>Indicates text in a window, including window titles, menus, menu options, buttons, fields, and labels. Example: Click <b>OK</b>.</li> <li>Indicates emphasized words in list items.</li> </ul>
<i>Italic</i>	<ul style="list-style-type: none"> <li>Indicates a document title or emphasized words in text.</li> <li>Indicates a variable, which is a placeholder for actual text provided by the user or for output by the system. Example: <code>pairdisplay -g group</code></li> </ul> <p>(For exceptions to this convention for variables, see the entry for angle brackets.)</p>
Monospace	Indicates text that is displayed on screen or entered by the user. Example: <code>pairdisplay -g oradb</code>
< > angle brackets	Indicates variables in the following scenarios: <ul style="list-style-type: none"> <li>Variables are not clearly separated from the surrounding text or from other variables. Example: <code>Status-&lt;report-name&gt;&lt;file-version&gt;.csv</code></li> <li>Variables in headings.</li> </ul>
[ ] 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. { 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.

Icon	Label	Description
	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.

## Accessing product documentation

Product user 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](https://support.hitachivantara.com/en_us/contact-us.html).

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## Comments

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**Thank you!**

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# Chapter 1: Service Information Message (SIM) overview

SIMs are a type of messages issued from storage systems. You can configure when and how the SIMs (Service Information Message) are generated, and the notification methods.

## Message types

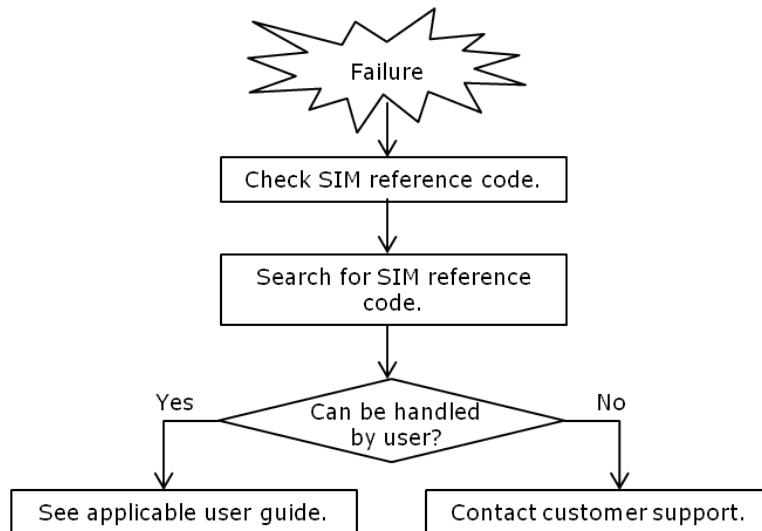
The following table lists the types of messages output from storage systems.

Message types	Description
Device Manager - Storage Navigator message	Output when Device Manager - Storage Navigator and maintenance utility are being used. For details, see the <i>Hitachi Device Manager - Storage Navigator Messages</i> .
SIM	Output from channels, paths, microprocessors of storage systems. For details, see <a href="#">SIM code lists (on page 11)</a> .
Other messages	Output when Storage Device List is being used or when a batch command is being executed on the SVP. See the following HTML file in the SVP: <ul style="list-style-type: none"><li>▪ <code>&lt;SVP installation directory&gt;\wk\supervisor\sdlst\help\sdl_message_ja.html</code></li><li>▪ The default <code>&lt;SVP installation directory&gt;</code> is "C:\Mapp".</li></ul>

## Actions to take when a SIM is output

When a storage system requires maintenance, a message is output. This is called a failure of a storage system (SIM: Service Information Message). SIMs are output from channels, paths, microprocessors, and so on, of the storage system. The following figure illustrates actions to take after a failure occurs.





## Checking SIM reference codes

All SIMs are recorded in the storage system. When a SIM is output, Warning or Failed is displayed at the upper left of the Maintenance Utility window to notify users.

You can check SIMs on the Alert tab in the Maintenance Utility window. For details, see the *System Administrator Guide*.

## Searching for SIM reference codes

In the SIM code lists, SIM codes that begin with the same digits are listed as a single code. For example, 602001 is shown as 602xxx (xxx indicates a pool number) in the SIM code list. Therefore, when searching for a SIM code, use the first few digits, 602 in this case, as a key word.

## Handling failures

There are two types of SIMs. One can be handled by users, and the other must be handled by service personnel. For SIMs that can be handled by users, see the recovery procedures of the SIMs described in the applicable user guide to solve the problem. For the SIMs that must be handled by service personnel, contact the customer support. See [SIM code list for troubleshooting by users \(on page 12\)](#) or [SIM code list for troubleshooting by service personnel \(on page 14\)](#) for the SIM code lists.

## Setting failure notification methods

SIMs can be checked on the Alert tab. In addition, they can be notified by email messages, Syslog, SNMP, or Windows Event Log. For the procedures for setting email, Syslog, and Windows Event Log notifications, see the *System Administrator Guide*. For the procedure for configuring the SNMP notification, see the *Hitachi SNMP Agent User Guide*.

## Chapter 2: SIM code lists

This chapter describes the lists of the SIM reference codes that are reported when failures occur in storage systems, and a matrix of drive box numbers, CDEV numbers, and RDEV numbers.

### Columns in the SIM code lists

The SIM code list tables have columns shown below.

Reference code	Failure		Alert level (Severity)	Host report <sup>1</sup>	Reference document
601.xxx <sup>2</sup>	Pool utilization threshold excess	DKC environment	MODERATE	Yes	Thin Image

1                      2                      3                      4                      5                      6

The description of each column is as follows:

- 1: SIM code number. *x* is a variable value.
- 2: Brief description of the failure
- 3: Failed location in the storage system
- 4: Severity of the failure

Item	Description
SERVICE	Reports the start and end of the processing
MODERATE	Error to be paid attention
SERIOUS	Severe failure
ACUTE	Most severe failure

- 5: With or without host report
- 6: Document to be referenced for troubleshooting by users. For the document title, see the legends for the table in [SIM code list for troubleshooting by users \(on page 12\)](#). Only that table has this column.

## SIM code list for troubleshooting by users

The following table lists and describes SIM codes that require action or restoration by users. xxx in the following table indicates the port number.

If you select Host Report for Notification Alert in the **Set Up Alert Notifications** window, alert notification for SIMs which are reported to the host is sent. If you select All, alert notification of all SIMs are sent.

Reference code	Failure		Alert level (Severity)	Host report	Reference document
602xxx	Pool blocking	DKC environment	MODERATE	Yes	Thin Image
602ffe	Pools blocking by SM volatile	DKC environment	MODERATE	Yes	Thin Image
603000	SM Space Warning	DKC environment	MODERATE	Yes	Thin Image
604xxx	Exceeded Threshold of actual pool use rate	DKC environment	MODERATE	Yes	Thin Image
605xxx	Actual pool use rate reaches upper limit	DKC environment	MODERATE	Yes	Thin Image
606xxx	Exceeded Fixed outage Threshold of pool use rate	DKC environment	MODERATE	Yes	Thin Image
624000	SM Full	DKC environment	MODERATE	Yes	Provisioning
627xxx	The DP POOL LDEV blockade	DKC environment	SERIOUS	Yes	Provisioning
628000	DP Protect attribute setting of DRU	DKC environment	SERIOUS	Yes	Provisioning
629xxx	Exceeded Warning Threshold of DP pool use rate	DKC environment	MODERATE	Yes	Provisioning
62axxx	Actual DP pool use rate reaches upper limit	DKC environment	MODERATE	Yes	Provisioning
62b000	Threshold of DP pool use rate remains exceeded	DKC environment	MODERATE	Yes	Provisioning

Reference code	Failure	Alert level (Severity)	Host report	Reference document	
62cxxx	Exceeded Depletion Threshold of DP pool use rate	DKC environment	MODERATE	Yes	Provisioning
62dxxx	Exceeded Fixed outage Threshold of DP pool use rate	DKC environment	MODERATE	Yes	Provisioning
62exxx	Exceeded DP pool depletion threshold for TI pairs	DKC environment	MODERATE	Yes	Provisioning
631xxx	Auto pool expansion failed due to system error	DKC environment	MODERATE	Yes	Provisioning
634xxx	Auto pool expansion failed due to no more LDEV IDs	DKC environment	MODERATE	Yes	Provisioning
641xxx	Tier relocation is not completed	DKC environment	SERVICE	Yes	Provisioning
660100	No free encryption key	DKC environment	MODERATE	Yes	Encryption License Key
660200	Remaining free encryption key warning	DKC environment	SERVICE	Yes	Encryption License Key
670000	Warning for depletion of cache management devices	Cache	MODERATE	Yes	Thin Image
681xxx	Operation error of deduplication system data volume automatic deletion was detected.	DKC environment	MODERATE	Yes	Provisioning
682000	Deduplication system data volume automatic deletion was suspended.	DKC environment	MODERATE	Yes	Provisioning
7c1xxx <sup>1</sup>	Error in server registered by using HSAE	DKC environment	MODERATE	Yes	CCI

Reference code	Failure		Alert level (Severity)	Host report	Reference document
7d030x <sup>2</sup>	GUM AuditLog lost	DKC environment	MODERATE	Yes	Audit Log
7d040x <sup>2</sup>	GUM AuditLog Warning Threshold was exceeded	DKC environment	MODERATE	Yes	Audit Log
<p>Legend:</p> <ul style="list-style-type: none"> <li>▪ <b>Yes:</b> This SIM performs the host report.</li> <li>▪ <b>No:</b> This SIM does not perform the host report.</li> <li>▪ <b>x:</b> A hexadecimal number from 0 to f.</li> <li>▪ <b>Audit Log:</b> SIM Codes in the <i>Hitachi Audit Log User Guide</i></li> <li>▪ <b>Encryption License Key:</b> Troubleshooting in the <i>Encryption License Key User Guide</i></li> <li>▪ <b>Provisioning:</b> Troubleshooting for provisioning in the <i>Provisioning Guide</i>.</li> <li>▪ <b>Thin Image:</b> Troubleshooting Thin Image in the <i>Hitachi Thin Image User Guide</i>.</li> <li>▪ <b>CCI:</b> Troubleshooting in the <i>Command Control Interface User and Reference Guide</i>.</li> </ul> <ol style="list-style-type: none"> <li>1. xxx indicates the server ID of Storage Advisor Embedded.</li> <li>2. x = 1: An error occurred in CTL1. x = 2: An error occurred in CTL2.</li> </ol>					

## SIM code list for troubleshooting by service personnel

The following table lists and describes the SIM codes that require action or restoration by service personnel. If a SIM in the table is output, contact customer support.

If you select Host Report for Notification Alert in the **Set Up Alert Notifications** window, alert notification for SIMs which are reported to the host is sent. If you select All, alert notification of all SIMs are sent.

Reference code	Description	Section	Alert level (Severity)	Host report
180000	Audit Log lost	DKC environment	MODERATE	Yes
1C0000	Detected a specific error code SSB	DKC environment	SERVICE	Yes

Reference code	Description	Section	Alert level (Severity)	Host report
2120xx	Channel port blocking	DKC environment	MODERATE	Yes
2130xx	CHB blocking	DKC environment	MODERATE	Yes
2140xx	DKB blocking	DKC environment	MODERATE	Yes
2153xx	PECB blocking	DKC environment	MODERATE	Yes
2154xx	SWPK blocking	DKC environment	MODERATE	Yes
2157xx	PECB warning	DKC environment	MODERATE	Yes
2180xx	RIO path closed	DKC environment	MODERATE	Yes
2190xx	AL_PA value conflict	DKC environment	SERVICE	Yes
2193xx	Link failure1	DKC environment	SERIOUS	Yes
2194xx	Link failure2	DKC environment	SERIOUS	Yes
21a8xx	SFP wrong type	DKC environment	MODERATE	Yes
21aaxx	SFP TxFault	DKC environment	MODERATE	Yes
21d0xx	External storage system connection path blocking	DKC environment	MODERATE	Yes
21d1xx	External storage system connection path restore	DKC environment	SERVICE	Yes
21d2xx	External subsystem path response timeout	DKC environment	SERVICE	Yes
3070xx	CHK1A threshold over	Processor	SERVICE	Yes
3071xx	CHK1B threshold over	Processor	SERVICE	Yes
3072xx	CHK3 threshold over	Processor	SERVICE	Yes

Reference code	Description	Section	Alert level (Severity)	Host report
3073xx	Processor blocking	Processor	MODERATE	Yes
3075xx	CFM Failure	Cache	MODERATE	Yes
3076xx	Incorrect SUM value of FM	Processor	SERVICE	Yes
3077xx	Processor memory temporary error	Processor	SERVICE	Yes
3078xx	BFM error	Processor	SERIOUS	Yes
3080xx	WCHK1 dump	Processor	MODERATE	Yes
388f00	PS OFF impossible	PS(DKC)	MODERATE	Yes
389f00	PS OFF impossible (Device reserved)	PS(DKC)	MODERATE	Yes
3990xx	Undefined Package is mounted	Processor	MODERATE	Yes
3991xx	V-R or serial number is inconsistent	Processor	MODERATE	Yes
3993xx	Replace failed	Processor	MODERATE	Yes
399dxx	Injustice dc voltage control	DKC environment	MODERATE	Yes
399exx	Injustice CEMODE	DKC environment	MODERATE	Yes
399fxx	Injustice CEDT	DKC environment	MODERATE	Yes
39a000	The upper temperature limit was exceeded	DKC environment	SERVICE	Yes
39b0xx	MP patrol check error	DKC environment	SERVICE	Yes
3a0xxx	LDEV Blockade (Effect of microcode error)	Drive	MODERATE	Yes
3c9500	CHB/DKB Type disagreement	DKC environment	MODERATE	Yes
3c9600	No CHB mounted	Processor	MODERATE	Yes
410000	Format complete (Normal end)	Drive	SERVICE	Yes



Reference code	Description	Section	Alert level (Severity)	Host report
410001	Format complete (Abnormal end)	Drive	SERVICE	Yes
410002	Format complete (Partial abnormal end)	Drive	SERVICE	Yes
410100	Quick Format finish	Drive	SERVICE	Yes
434xxx <sup>1</sup>	Drive media error	Drive	SERVICE	Yes
43bxxx <sup>1</sup>	Drive blockade (media)(with redundancy)	Drive	SERIOUS	Yes
43cxxx <sup>1</sup>	Drive blockade (media) (without redundancy)	Drive	SERIOUS	Yes
451xxx <sup>1</sup>	Correction copy start	Drive	SERVICE	Yes
452xxx <sup>1</sup>	Correction copy normal end	Drive	SERVICE	Yes
453xxx <sup>1</sup>	Correction copy abnormal end	Drive	SERIOUS	Yes
454xxx <sup>1</sup>	Correction copy discontinued	Drive	SERVICE	Yes
455xxx <sup>1</sup>	Correction copy warning end	Drive	SERVICE	Yes
461xxx <sup>1</sup>	Dynamic sparing start(Drive copy)	Drive	SERVICE	Yes
462xxx <sup>1</sup>	Dynamic sparing normal end(Drive copy)	Drive	SERVICE	Yes
463xxx <sup>1</sup>	Dynamic sparing abnormal end (Drive copy)	Drive	MODERATE	Yes
464xxx <sup>1</sup>	Dynamic sparing discontinued (Drive copy)	Drive	SERVICE	Yes
465xxx <sup>1</sup>	Dynamic Sparing(Drive Copy) warning end	Drive	SERVICE	Yes
468xxx	Collection Copy/Copyback disabled(drive replace)	Drive	MODERATE	Yes
47dxxx	Shadow Image Copy abnormal end	DKC environment	MODERATE	Yes
47e700	Forcible suspend by SM volatile	DKC environment	MODERATE	Yes

Reference code	Description	Section	Alert level (Severity)	Host report
47ec00	Forcible suspend by SM volatile	DKC environment	MODERATE	Yes
47fxxx <sup>4</sup>	Volume Migration abnormal end	DKC environment	MODERATE	Yes
4910xx	Cache overload condition	Cache	SERVICE	Yes
4a80xx	Expander Micro Exchange failed	DKC environment	MODERATE	Yes
4b3xxx	Thin Image Option abnormal end	DKC environment	MODERATE	Yes
4c1xxx	PDEV Erase Start	Drive	SERVICE	Yes
4c2xxx	PDEV Erase Normal End	Drive	SERVICE	Yes
4c3xxx	PDEV Erase Abnormal End	Drive	SERVICE	Yes
4c4xxx	Flash module drive initialization failed	Drive	MODERATE	Yes
4d1xxx	Differential area blocking	Drive	SERIOUS	Yes
501xxx	Drive temporary error	Drive	SERVICE	Yes
502xxx	Drive media error	Drive	SERVICE	Yes
505xxx <sup>1</sup>	Flash module drive internal battery error (ORM)	Drive	SERVICE	Yes
508xxx <sup>1</sup>	Flash module drive internal battery error	Drive	MODERATE	Yes
50bxxx <sup>1</sup>	Flash drive End of life	Drive	SERVICE	Yes
50cxxx <sup>1</sup>	Flash module drive End of life	Drive	SERVICE	Yes
50dxxx <sup>1</sup>	Flash module drive battery warning	Drive	SERVICE	Yes
50exxx <sup>1</sup>	Flash module drive battery capacity shortage	Drive	MODERATE	Yes
50f000	Flash module drive micro-program version warning	Drive	MODERATE	Yes
610001	Backup/restore SM Information failed (Backup)	SM	MODERATE	Yes

Reference code	Description	Section	Alert level (Severity)	Host report
610002	Backup/restore SM Information failed (Restore)	SM	MODERATE	Yes
623xxx	The DP POOL error is detected	DKC environment	MODERATE	Yes
623ffe	DP Pools blocking by Shared Memory volatile	DKC environment	MODERATE	Yes
632xxx	Auto pool expansion failed due to pool error	DKC environment	MODERATE	Yes
633xxx	Failed to create, expand, or delete pools	DKC environment	MODERATE	Yes
660100	No free encryption key	DKC environment	MODERATE	Yes
660200	Remaining free encryption key warning	DKC environment	SERVICE	Yes
6610xx	Acquisition of encryption key from KMS failed	DKC environment	MODERATE	Yes
6800xx <sup>2</sup>	Dedupe and compression abnormality detect	DKC environment	MODERATE	Yes
760000	CUDG detected error	DKC environment	MODERATE	Yes
7900xx	BOOT detected error	DKC environment	MODERATE	Yes
7d000x	GUM error	DKC environment	MODERATE	Yes
7d010x	LAN error (Internal Network)	DKC environment	MODERATE	Yes
7d020x	LAN error (CTL1-CTL2)	DKC environment	MODERATE	Yes
7d050x	Notification of Alert failed	DKC environment	MODERATE	Yes
7d06xx	MP error	Processor	MODERATE	Yes
7d07xx	GUM security error detected	DKC environment	MODERATE	Yes

Reference code	Description	Section	Alert level (Severity)	Host report
7d08xx	Failed to recover GUM configuration information	DKC environment	MODERATE	Yes
7d0900	DKC warning	Processor	SERIOUS	Yes
7d0axx	GUM version warning	DKC environment	MODERATE	Yes
7d0bxx	Configuration backup failed	DKC environment	MODERATE	Yes
7ff102	SI	DKC environment	SERVICE	No
7ff104	TI	DKC environment	SERVICE	No
7ff106 <sup>4</sup>	Volume Migration Pair	DKC environment	SERVICE	No
7ff7xx	The term of validity is over	DKC environment	MODERATE	Yes
7ff8xx	The capacity of validity is over	DKC environment	MODERATE	Yes
7ff9xx	The PP is invalid by assumption PP invalidity	DKC environment	MODERATE	Yes
7ffa00	Synchronization time failure	DKC environment	SERVICE	Yes
ac50xx	DB power off	PS(DKU)	MODERATE	Yes
ac51xx	DB power recovered	PS(DKU)	SERVICE	Yes
ac6000	DKC was set to power error mode	PS(DKC)	MODERATE	Yes
ac6100	DKC was released from power error mode	PS(DKC)	SERVICE	Yes
ac6200	Destaging startup normal	PS(DKC)	SERVICE	Yes
ac6300	Destaging startup failed	PS(DKC)	MODERATE	Yes
ac800x	Server failure	DKC environment	SERIOUS	Yes
af00xx	Injustice JP Warning	DKC environment	MODERATE	Yes

Reference code	Description	Section	Alert level (Severity)	Host report
af10xx	MP Temperature abnormality warning	DKC environment	MODERATE	Yes
af11xx	External temperature warning	DKC environment	MODERATE	Yes
af12xx	External temperature alarm	DKC environment	MODERATE	Yes
af13xx	Thermal monitor warning	DKC environment	MODERATE	Yes
af20xx	DKCPS warning	PS(DKC)	MODERATE	Yes
af21xx	DKCPS input voltage abnormality	PS(DKC)	MODERATE	Yes
af30xx	Environmental microcomputer warning	DKC environment	MODERATE	Yes
af31xx	Device movement mode warning	DKC environment	MODERATE	Yes
af32xx	Environmental Firmware Update warning	DKC environment	MODERATE	Yes
af33xx	Voltage change setting warning	PS(DKC)	MODERATE	Yes
af40xx	BKM/BKMF warning	DKC environment	MODERATE	Yes
af41xx	Battery replacement should be scheduled	Battery	MODERATE	Yes
af42xx	CHBB environmental microcontroller warning	DKC environment	MODERATE	Yes
af43xx	SCM environmental microcontroller warning	DKC environment	MODERATE	Yes
af44xx	CHBB environmental firmware update warning	DKC environment	MODERATE	Yes
af45xx	SCM environmental firmware update warning	DKC environment	MODERATE	Yes
af46xx	SWPK temperature warning	DKC environment	MODERATE	Yes

Reference code	Description	Section	Alert level (Severity)	Host report
af48xx	CHBB voltage change failure warning	DKC environment	MODERATE	Yes
af49xx	SCM voltage change failure warning	DKC environment	MODERATE	Yes
af4axx	CHBBPS warning	DKC environment	MODERATE	Yes
af4bxx	CHBBPS abnormal input voltage	DKC environment	MODERATE	Yes
af4cxx	CHBBFAN warning	DKC environment	MODERATE	Yes
af4dxx	Panel switch warning	DKC environment	MODERATE	Yes
af4exx	Invalid PS ON warning	DKC environment	MODERATE	Yes
af50xx	DBPS warning	PS(DKU)	MODERATE	Yes
af60xx	DBPS input voltage abnormality	PS(DKU)	MODERATE	Yes
af7000	DB External temperature warning	DKU environment	MODERATE	Yes
af7100	DB External temperature Alarm	DKU environment	MODERATE	Yes
af80xx	ENC warning	DKU environment	MODERATE	Yes
afa0xx	CHBB environmental firmware update started	DKC environment	SERVICE	Yes
afa1xx	CHBB environmental firmware update is complete	DKC environment	SERVICE	Yes
afa2xx	CHBB environmental firmware update was applied	DKC environment	SERVICE	Yes
afe4xx	Life expiry warning for DB air filter	DKU environment	SERVICE	Yes
aff0xx	UPS warning	PS(DKC)	MODERATE	Yes
aff1xx	GUM warning	DKC environment	MODERATE	Yes

Reference code	Description	Section	Alert level (Severity)	Host report
aff2xx	CFM error	Cache	MODERATE	Yes
aff3xx	FAN warning	Fan(DKC)	MODERATE	Yes
aff400	Life expiry warning for DKC air filter	DKC environment	SERVICE	Yes
bfc010	DKC ALARM LED light on	Processor	SERIOUS	Yes
cf10xx	SAS CTL blocking	DKC environment	MODERATE	Yes
cf11xx	SAS Port (WideLink) is partially blocked	DKC environment	SERVICE	Yes
cf12xx <sup>3</sup>	SAS PORT BLOCK	DKC environment	MODERATE	Yes
cf13xx	SAS-CTL Error detection	DKC environment	SERIOUS	Yes
cf14xx <sup>3</sup>	Recovered from ENC temporary failure successfully	DKC environment	SERVICE	Yes
cf88xx	CTL blocking	DKC environment	MODERATE	Yes
cf8axx	CTL blockade due to CTL interconnect path failure	DKC environment	MODERATE	Yes
d00xxx	Remote Copy start	DKC environment	SERVICE	Yes
d01xxx	Remote Copy normal end	DKC environment	SERVICE	Yes
d02xxx	Pair end	DKC environment	SERVICE	Yes
d10xxx	HRC pair status change(MCU command), SMPL -> COPY	DKC environment	SERVICE	Yes
d11xxx	HRC pair status change(MCU command), SMPL -> PAIR	DKC environment	SERVICE	Yes
d12xxx	HRC pair status change(MCU command), COPY -> PAIR	DKC environment	SERVICE	Yes
d13xxx	HRC pair status change(MCU command), COPY -> PSUx	DKC environment	SERVICE	Yes

Reference code	Description	Section	Alert level (Severity)	Host report
d14xxx	HRC pair status change(MCU command), PAIR -> PSUx	DKC environment	SERVICE	Yes
d15xxx	HRC pair status change(MCU command), PAIR -> SMPL	DKC environment	SERVICE	Yes
d16xxx	HRC pair status change(MCU command), COPY -> SMPL	DKC environment	SERVICE	Yes
d17xxx	HRC pair status change(MCU command), PSUx -> SMPL	DKC environment	SERVICE	Yes
d18xxx	HRC pair status change(MCU command), PSUx -> COPY	DKC environment	SERVICE	Yes
d19xxx	HRC pair status change(MCU command), COPY -> PSUx	DKC environment	SERVICE	Yes
d1axxx	HRC pair status change(MCU command), COPY -> PSUx	DKC environment	SERVICE	Yes
d1bxxx	HRC pair status change(MCU command), PSUx -> PSUx	DKC environment	SERVICE	Yes
d40xxx	Pair suspend(RIO path closed)	DKC environment	SERIOUS	Yes
d41xxx	Pair suspend(P-VOL error)	DKC environment	SERIOUS	Yes
d42xxx	Pair suspend(S-VOL error)	DKC environment	SERIOUS	Yes
d44xxx	Pair suspend(RVOL Suspend report)	DKC environment	SERIOUS	Yes
d45xxx	Pair suspend(S-VOL Simplex report)	DKC environment	SERIOUS	Yes
d46xxx	Pair suspend(Communication error at RCU)	DKC environment	SERIOUS	Yes
d47xxx	Pair suspend(Error detected at RCU)	DKC environment	SERIOUS	Yes
d4fxxx	Pair status incorrect	DKC environment	SERIOUS	Yes
d80xxx	Volume to be used by UR was defined	DKC environment	SERVICE	Yes



Reference code	Description	Section	Alert level (Severity)	Host report
d81xxx	Volume used by UR began copying	DKC environment	SERVICE	Yes
d82xxx	Volume used by UR completed copying	DKC environment	SERVICE	Yes
d83xxx	Volume used by UR received suspension request	DKC environment	SERVICE	Yes
d84xxx	Volume used by UR completed suspension transaction	DKC environment	SERVICE	Yes
d85xxx	Volume used by UR received request for deletion	DKC environment	SERVICE	Yes
d86xxx	Volume used by UR completed deletion	DKC environment	SERVICE	Yes
d87xxx	Volume used by UR was defined	DKC environment	SERVICE	Yes
d88xxx	Volume used by UR was defined in hold	DKC environment	SERVICE	Yes
d89xxx	PVOL used by UR was defined in hold	DKC environment	SERVICE	Yes
d90xxx	Change to SVOL was received from MCU, SMPL -> COPY	DKC environment	SERVICE	Yes
d91xxx	Change to SVOL was received from MCU, SMPL -> PAIR	DKC environment	SERVICE	Yes
d92xxx	Change to SVOL was received from MCU, COPY -> PAIR	DKC environment	SERVICE	Yes
d93xxx	Change to SVOL was received from MCU, COPY -> PSUx	DKC environment	SERVICE	Yes
d94xxx	Change to SVOL was received from MCU, PAIR -> PSUx	DKC environment	SERVICE	Yes

Reference code	Description	Section	Alert level (Severity)	Host report
d95xxx	Change to SVOL was received from MCU, PAIR -> SMPL	DKC environment	SERVICE	Yes
d96xxx	Change to SVOL was received from MCU, COPY -> SMPL	DKC environment	SERVICE	Yes
d97xxx	Change to SVOL was received from MCU, PSUx -> SMPL	DKC environment	SERVICE	Yes
d98xxx	Change to SVOL was received from MCU, PSUx -> COPY	DKC environment	SERVICE	Yes
d99xxx	Change to SVOL was received from MCU, HOLD -> PAIR	DKC environment	SERVICE	Yes
d9axxx	Change to SVOL was received from MCU, HOLD -> COPY	DKC environment	SERVICE	Yes
d9bxxx	Change to SVOL was received from MCU, HOLD -> SMPL	DKC environment	SERVICE	Yes
d9cxxx	Change to SVOL was received from MCU, SMPL -> PSUx	DKC environment	SERVICE	Yes
d9dxxx	Change to SVOL was received from MCU, SMPL -> HOLD	DKC environment	SERVICE	Yes
d9exxx	Change to SVOL was received from MCU, PSUx -> HOLD	DKC environment	SERVICE	Yes
d9fxxx	Change to SVOL was received from MCU, PAIR -> COPY	DKC environment	SERVICE	Yes
da0xxx	Change to SVOL was received from RCU, SUSPEND REQ.	DKC environment	SERVICE	Yes

Reference code	Description	Section	Alert level (Severity)	Host report
da1xxx	Change to SVOL was received from RCU, SUSPEND END	DKC environment	SERVICE	Yes
da2xxx	Change to SVOL was received from RCU, PSUx -> SMPL	DKC environment	SERVICE	Yes
da3xxx	Change to SVOL was received from RCU, COPY -> SMPL	DKC environment	SERVICE	Yes
da4xxx	Change to SVOL was received from RCU, PAIR -> SMPL	DKC environment	SERVICE	Yes
da5xxx	Change to SVOL was received from RCU, DELETING END	DKC environment	SERVICE	Yes
da6xxx	Change to SVOL was received from RCU, HOLD -> SMPL	DKC environment	SERVICE	Yes
dc0xxx	Pair suspend(RIO path closed)	DKC environment	SERIOUS	Yes
dc1xxx	Pair suspend(M-VOL error)	DKC environment	SERIOUS	Yes
dc2xxx	Pair suspend(R-VOL error)	DKC environment	SERIOUS	Yes
dc4xxx	Pair suspend(Suspend report)	DKC environment	SERIOUS	Yes
dc5xxx	Pair suspend(Simplex report)	DKC environment	SERIOUS	Yes
dc6xxx	Pair suspend(Communication error at RCU)	DKC environment	SERIOUS	Yes
dc7xxx	Pair suspend(Error detected at RCU)	DKC environment	SERIOUS	Yes
dc8xxx	Pair suspend(MCU P/S OFF)	DKC environment	SERVICE	Yes

Reference code	Description	Section	Alert level (Severity)	Host report
dc9xxx	Pair suspend(Delta volume error)	DKC environment	SERIOUS	Yes
dcaxxx	Pair suspend(Spread by error of another affiliate)	DKC environment	SERIOUS	Yes
dce0xx	UR M-JNL Meta overflow warning	DKC environment	MODERATE	Yes
dce1xx	UR M-JNL Data overflow warning	DKC environment	MODERATE	Yes
dce2xx	UR R-JNL Meta overflow warning	DKC environment	MODERATE	Yes
dce3xx	UR R-JNL Data overflow warning	DKC environment	MODERATE	Yes
dcf0xx	HUR read JNL was interrupted for 1 minute (at MCU)	DKC environment	MODERATE	Yes
dcf1xx	HUR read JNL was interrupted for 5 minute (at MCU)	DKC environment	SERIOUS	Yes
dcf2xx	HUR read JNL was interrupted for 1 minute (at RCU)	DKC environment	MODERATE	Yes
dcf3xx	HUR read JNL was interrupted for 5 minute (at RCU)	DKC environment	SERIOUS	Yes
dcf4xx	URxUR M-JNL Meta full Warning	DKC environment	MODERATE	Yes
dcf5xx	URxUR M-JNL Data full Warning	DKC environment	MODERATE	Yes
dd0xxx	GAD for this volume was suspended (Due to an unrecoverable failure on the remote copy connections)	Failure with paired volumes	SERIOUS	Yes
dd1xxx	GAD for this volume was suspended (Due to a failure on the volume)	Failure with paired volumes	SERIOUS	Yes

Reference code	Description	Section	Alert level (Severity)	Host report
dd2xxx	GAD for this volume was suspended (Due to an internal error condition detected)	Failure with paired volumes	SERIOUS	Yes
dd3xxx	Status of the P-VOL was not consistent with the S-VOL	Failure with paired volumes	SERIOUS	Yes
dee0xx	Quorum Disk Restore	Drive	SERVICE	Yes
def0xx	Quorum Disk Blocked	Drive	SERIOUS	Yes
df6xxx <sup>1</sup>	Drive port temporary error(Drive path: Boundary 0)	Drive	SERVICE	Yes
df7xxx <sup>1</sup>	Drive port temporary error(Drive path: Boundary 1)	Drive	SERVICE	Yes
df8xxx <sup>1</sup>	Drive port blockade(Drive path: Boundary 0)	Drive	MODERATE	Yes
df9xxx <sup>1</sup>	Drive port blockade(Drive path: Boundary 1)	Drive	MODERATE	Yes
dfaxxx <sup>1</sup>	LDEV blockade(Path 0 / Drive port blockade)	Drive	SERIOUS	Yes
dfbxxx <sup>1</sup>	LDEV blockade(Path 1 / Drive port blockade)	Drive	SERIOUS	Yes
dfcxxx <sup>1</sup>	Drive Link Rate Abnormality (Path 0)	Drive	SERVICE	Yes
dfdxxx <sup>1</sup>	Drive Link Rate Abnormality (Path 1)	Drive	SERVICE	Yes
dffxxx <sup>1</sup>	Response late Drive	Drive	SERVICE	Yes
ef0xxx <sup>1</sup>	Drive blockade (drive)(with redundancy)	Drive	SERIOUS	Yes
ef1xxx <sup>1</sup>	Drive blockade (drive) (without redundancy)	Drive	SERIOUS	Yes
ef2xxx <sup>1</sup>	Drive blockade(Effect of Drive Copy normal end)	Drive	SERVICE	Yes
ef4xxx <sup>1</sup>	Pinned slot	Drive	MODERATE	Yes

Reference code	Description	Section	Alert level (Severity)	Host report
ef5xxx <sup>1</sup>	External VOL Write Error	Drive	MODERATE	Yes
ef9xxx <sup>1</sup>	LDEV blockade (Effect of drive blockade)	Drive	SERIOUS	Yes
efaxxx <sup>1</sup>	Drive temporary error	Drive	SERVICE	Yes
efcxxx <sup>1</sup>	Correction access occurred	Drive	SERIOUS	Yes
efd000	External storage system connection device blockade	Drive	SERIOUS	Yes
effcxx	PCI cable connection error	DKC environment	MODERATE	Yes
efexxx	Reboot stopped due to much write pending data	Drive	SERVICE	Yes
effdxx	Expander failure	DKC environment	SERIOUS	Yes
effexx	UNIT connection error	DKC environment	MODERATE	Yes
fe0000	Cache battery is being charged	Cache	SERIOUS	Yes
fe0100	End of Cache Write Through	Cache	SERVICE	Yes
fe0200	Start of Cache Write Through	Cache	MODERATE	Yes
fe030x	CFM type error or CFM shortage	Cache	SERIOUS	Yes
fe040x	Mounting Battery shortage	Battery	SERIOUS	Yes
ff21xx	LANB blocking	DKC environment	MODERATE	Yes
ff4xxx	Pinned slot	Cache	MODERATE	Yes
ff5xxx	External VOL Read Error	Drive	MODERATE	Yes
ffc30x	Cache Package Blockade Processing end	Cache	SERVICE	Yes
ffcbxx	CTL patrol check error	DKC environment	SERVICE	No
ffccxy	CFM patrol check error	Cache	MODERATE	Yes
ffcd0x	Area is volatilized	Cache	SERVICE	Yes

Reference code	Description	Section	Alert level (Severity)	Host report
ffcfx	Module group is volatilized	Cache	SERVICE	Yes
ffd400	Hard implementation out of the definition	DKC environment	MODERATE	Yes
ffe20x	SM area blocking	SM	SERIOUS	Yes
ffe40x	Replace failed	SM	SERIOUS	Yes
ffe700	Shared memory is volatiled	SM	SERIOUS	Yes
ffe800	Definition/Installation mismatch	Cache	ACUTE	Yes
ffea0x	Recovery of area blocked temporarily was completed	SM	SERVICE	Yes
ffee0x	Area temporary blocking	SM	SERVICE	Yes
fff00	Rebooted without volatilization	SM	SERVICE	Yes
fff0xx	Cache correctable error	Cache	SERVICE	Yes
fff400	Area blocking	Cache	SERIOUS	Yes
fff50x	Both area failed	Cache	MODERATE	Yes
fff7xx	GUM blocking	DKC environment	MODERATE	Yes
fff90x	Replace failed	Cache	SERVICE	Yes
fffax	Battery warning	Battery	MODERATE	Yes
ffhex	Warning for forcible volatile mode	DKC environment	MODERATE	Yes
<p>Legend:</p> <ul style="list-style-type: none"> <li>▪ <b>Yes:</b> This SIM performs the host report.</li> <li>▪ <b>No:</b> This SIM does not perform the host report.</li> <li>▪ <i>x</i>: A hexadecimal number from 0 to f.</li> </ul> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>1. <i>xxx</i>: Indicates the drive location. For the correspondence of CDEV number, RDEV number, and the disk drive number, see <a href="#">Obtaining drive box and drive numbers (on page 32)</a>.</li> </ol>				

Reference code	Description	Section	Alert level (Severity)	Host report
2.	<p>xx = 01: An error was detected while dedupe and compression is being performed.</p> <p>xx = 02: An error was detected while capacity saving-enabled DP-VOLs were being deleted without blocking or formatting processing.</p>			
3.	"Recovered from ENC temporary failure successfully" (cf14xx) indicates that "SAS PORT BLOCK" (cf12xx) occurred due to a temporary failure of ENC at the location indicated by the SAS-PORT number (xx) was recovered automatically. Therefore, no action by service personnel is required. However, if the SAS-PORT number indicated by SAS PORT BLOCK (cf12xx) is different from the one in cf14xx, action must be taken by service personnel.			
4.	These SIMs might be handled by users. For details, see the Hitachi Volume Migration User Guide.			

## Obtaining drive box and drive numbers

For certain SIM reference codes, the last three digits of a reference code (in hexadecimal) can be converted to the number of the drive box and drive where the error occurred.

### Procedure

- Convert the last three digits of a reference code from hexadecimal to decimal.  
For example, A9E in hexadecimal is 2,718 in decimal.
- Divide the the number in step 1 by 64. The quotient is the drive box number and the remainder is the drive number.  
For example,  $2,718 / 64 = 42$  with a remainder of 30. Therefore, The drive box number is 42 and the drive number is 30.

### Examples

The following table provides examples of trap reference codes and their corresponding drive box and drive numbers.

Hexadecima l trap value	Decimal value	Decimal value / 64		Drive box number	Drive number
		Quotient	Remainder		
A9E	2,718	42	30	DB-42	HDD42-30
436	1,078	16	54	DB-16	HDD16-54
BFB	3,067	47	59	DB-47	HDD47-59



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