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Hitachi Compute Blade Series
Hitachi Compute Rack Series
Server installation and monitoring tool OS Setup Guide

Hitachi Data Systems

MK-99COM061-07

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Contents

Preface

This document provides the information that should be noted to operate the Hitachi server products. Before starting operation, read the safety instructions well and make yourself familiar with them. Keep this manual in a nearby place so that you can see it as needed.

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Notice: The use of Compute Rack and Compute Blade and all other Hitachi Data Systems products is governed by the terms of your agreement(s) with Hitachi Data Systems.

Intended Audience

This document is intended for the personnel who are involved in planning, managing, and performing the tasks to prepare your site for Compute Blade and Compute Rack installation and to install the same.

This document assumes the following:

- The reader has a background in hardware installation of computer systems.

- The reader is familiar with the location where Compute Blade or Compute Rack will be installed, including knowledge of physical characteristics, power systems and specifications, and environmental specifications.

Product Version

This document revision applies to add Notes and Restrictions of Virtual Machine Queues and SELinux message.

Release Notes

Release notes contain requirements and more recent product information that may not be fully described in this manual. Be sure to review the release notes before installation.

Referenced Documents

- Hitachi Compute Blade Series/Hitachi Compute Rack Series Server installation and monitoring tool User's Guide internal storage monitoring functions, MK-99COM066

- Hitachi Compute Blade 500 Series
    - EFI User's Guide, MK-91CB500024
    - Logical partitioning manager User's Guide, MK-91CB500068
    - OS Installation Guide for Red Hat Enterprise Linux, MK-91CB500025
    - Server Blade Setup Guide, MK-91CB500012

- Hitachi Compute Blade 2000
    - USER'S GUIDE
    - SOFTWARE GUIDE

- Hitachi Compute Blade 2500 Series
  - Getting Started Guide, MK-99CB2500003
  - Logical partitioning manager User Guide, MK-99CB2500006
  - UEFI Setup Guide, MK-99CB2500005
- Hitachi Compute Rack
  - 210H/220H BIOS Guide, MK-90CRH008
  - 220S BIOS Guide, MK-90CRS000
- Common
  - Hitachi Gigabit Fibre Channel Adapter User's Guide (BIOS/EFI Edition), MK-99COM009
  - Hitachi Gigabit Fibre Channel Adapter User's Guide (Support Matrix Edition), MK-99COM012
  - Hitachi Gigabit Fibre Channel Adapter User's Guide (Windows Driver Edition), MK-99COM014
  - The following three doscuments are described as LAN Advanced Function Manual (for * *) in this document.
    - Hitachi Compute Blade LAN Advanced Function Manual for Broadcom, MK-99COM107
    - Hitachi Compute Blade LAN Advanced Function Manual for Emulex, MK-99COM082
  - Hitachi Compute Blade LAN Advanced Function Manual for Intel, MK-91CB500033
  - Hitachi Compute Blade Emulex Adapter User's Guide for Driver, MK-99COM103

Abbreviations of Operating Systems (OS)

The following abbreviations are used for OS name in this manual.

- Microsoft® Windows Server® 2012 R2, Datacenter

  (hereinafter referred to as Windows Server 2012 R2, Datacenter or Windows Server 2012 R2)

- Microsoft® Windows Server® 2012 R2, Standard

  (hereinafter referred to as Windows Server 2012 R2, Standard or Windows Server 2012 R2)

- Microsoft® Windows Server® 2012, Datacenter

  (hereinafter referred to as Windows Server 2012, Datacenter or Windows Server 2012)

- Microsoft® Windows Server® 2012, Standard

  (hereinafter referred to as Windows Server 2012, Standard or Windows Server 2012)

- Microsoft® Windows Server® 2008 R2, Standard

  (hereinafter referred to as Windows Server 2008 R2, Standard or Windows Server 2008 R2)

- Microsoft® Windows Server® 2008 R2, Enterprise

  (hereinafter referred to as Windows Server 2008 R2, Enterprise or Windows Server 2008 R2)

- Microsoft® Windows Server® 2008 Standard

  (hereinafter referred to as Windows Server 2008 Standard or Windows Server 2008, Windows)

- Microsoft® Windows Server® 2008 Enterprise

  (hereinafter referred to as Windows Server 2008 Enterprise or Windows Server 2008, Windows)

- Microsoft® Windows Server® 2008 Standard without Hyper-V™

  (hereinafter referred to as Windows Server 2008 Standard without Hyper-V or Windows Server 2008 Standard, Windows Server 2008, Windows)

- Microsoft® Windows Server® 2008 Enterprise without Hyper-V™

  (hereinafter referred to as Windows Server 2008 Enterprise without Hyper-V or Windows Server 2008 Enterprise, Windows Server 2008, Windows)

- Red Hat Enterprise Linux Server 6.6
  (hereinafter referred to as RHEL 6.6)

- Red Hat Enterprise Linux Server 6.5
  (hereinafter referred to as RHEL 6.5)

- Red Hat Enterprise Linux Server 6.4
  (hereinafter referred to as RHEL 6.4)

Document Organization

The table below 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	Description
Chapter 1, Overview of Server installation and monitoring tool	Describes the overview of OS Installation using Server installation and monitoring tool.
Chapter 2, OS Installation	Provides information about how to install the OS using Server installation and monitoring tool installation assistant.
Chapter 3, Notes and Restrictions on using each OS	Explains the notes and restrictions on using each OS.
Chapter 4, Troubleshooting	Explains the troubleshooting when installing OS using Server installation and monitoring tool.
Chapter 5, Software License	Provides software license information on the Server installation and monitoring tool installation assistant.
Appendix A, Booting Media in UEFI Mode	Describes how to boot DVD media "Compute Blade Series/Compute Rack Series Server installation and monitoring tool" in UEFI mode.

Document Conventions

This term "Compute Blade" refers to all the models of the Compute Blade; the term "Compute Rack" refers to CR 210 and CR 220; unless otherwise noted.

The Hitachi Virtualization Manager (HVM) name has been changed to Hitachi logical partitioning manager (LPAR manager, or LP). If you are using HVM based logical partitioning feature, substitute references to Hitachi logical partitioning manager (LPAR manager, or LP) with HVM.

This document uses the following typographic conventions:

Convention	Description
Regular text bold	In text: keyboard key, parameter name, property name, hardware labels, hardware button, hardware switch. In a procedure: user interface item
Italic	Variable, emphasis, reference to document title, called-out term
`Screen text`	Command name and option, drive name, file name, folder name, directory name, code, file content, system and application output, user input
< > (angled brackets)	Variable (used when italic is not enough to identify variable).
[ ] (square bracket)	Optional values

Convention	Description
{ } braces	Required or expected value
	vertical bar	Choice between two or more options or arguments
(underline)	Default value, for example, [a	b]

Convention 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 storage capacity values (for example, logical device capacity) are calculated based on the following values:

Logical capacity unit	Value
1 block	512 bytes
1 KB	1,024 (2^{10}) bytes
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

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Getting Help

The Hitachi Data Systems customer support staff is available 24 hours a day, seven days a week. If you need technical support, log on to the Hitachi Data Systems Portal for contact information: https://portal.hds.com.

Technical Information and Update Program

It is recommended that you apply the latest drivers, utilities, BIOS, and firmware for using the system unit safely. For the latest version of update programs, contact your reseller.

When maintenance personnel change components due to some failure, basically the latest version of BIOS and firmware are applied to the newly installed components. BIOS and firmware may be updated for not-replaced components in maintenance work.

Comments

Please send us your comments on this document: doc.comments@hds.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 Data Systems Corporation.

Thank you!

Safety guidelines

Safety guidelines include warnings and important safety guidelines for using utilities for Hitachi Compute Rack series and Hitachi Compute Blade series. Read and understand the following information before using utilities.

□ Safety information
□ Common precautions concerning safety
□ Precautions against damage to equipment

Safety information

This document uses the following symbols to emphasize certain information.

Symbol	Label	Description
⚠	WARNING	This indicates the presence of a potential risk that might cause death or severe injury.
⚠	CAUTION	This indicates the presence of a potential risk that might cause relatively mild or moderate injury.
NOTICE	NOTICE	This indicates the presence of a potential risk that might cause severe damage to the equipment and/or damage to surrounding properties.
Note	Note	This indicates notes not directly related to injury or severe damage to equipment.
Tip	Tip	This indicates advice on how to make the best use of the equipment.
!	General Mandatory Sign	This indicates a general action to take. Action by following the instructions in this guide.

Common precautions concerning safety

Please carefully read through these safety instructions to follow:

- When operating the equipment, follow the instructions and procedures provided in the manual.

- Be sure to follow notes, cautionary statements and advice indicated on the equipment or in the manual.

- Referring to manuals attached to other products which you install in the equipment, follow the instructions described in those manuals.

Failure to follow those instructions can cause the system unit to fail or data to be corrupted.

Precautions against damage to equipment

Installation

Use this product with a system unit supporting this product. If you install this product on a system other than that, failure may occur due to the specification difference. See your system unit manual to find whether your system support this product or not.

Logical drive initialization

All data on an initialized logical drive has been deleted. Careful consideration should be given to the initialization. The necessary data must be backed up in advance as appropriate. See page 2-24.

Deleting disk array

When deleting a logical drive, the data on the deleted logical drive has disappeared. Careful consideration should be given to the delete operation. The necessary data must be backed up in advance as appropriate. See page 2-24.

Using the OS Setup Guide

Using the OS Setup Guide describes manuals you can use for OS setup. Read though the following information before starting setup.

☐ Reference Manuals

Reference Manuals

This section describes manuals attached to the product you can see for OS setup. Read those manuals to help you install an OS.

OS Setup/Re-setup

For setting up or re-setting up an OS, see the following manual to set up the OS.

- *Server installation and monitoring tool OS Setup Guide*

Supplied Software

See the following manual for setting up supplied software depending on the OS you use.

- Manual for each of supplied software

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Overview of OS Installation using Server installation and monitoring tool

This chapter describes the overview of OS Installation using Server installation and monitoring tool.

☐ Overview

☐ Supported products

☐ System environment required for operations

☐ Restrictions on OS Server installation and monitoring tool installation assistant

Overview

OS installation function (hereinafter referred to as Server installation and monitoring tool installation assistant) of Server installation and monitoring tool is the integrated comprehensible user interface that enables the following:

- Built-in disk (RAID) setting required for OS installation
- Installation of OS, drivers, and utilities

Server installation and monitoring tool installation assistant enables you to perform the operations of parameter settings and media replacement early during installation of OS and driver. While installing automatically, the operators can work on other operations. Therefore, the multiple operations can run at the same time in a multiple server configuration.

Item			Version of Server installation and monitoring tool				
			02-03-E or earlier	02-10-E or later 02-12-E or earlier	03-00-E or later 03-01-E or earlier	03-10-E or later	03-23-E
Function	Internal RAID configuration		Supported	Supported	Supported	Supported	Supported
	OS installation	BIOS boot	Supported	Supported	Supported	Supported	Supported
		UEFI boot[2]	Not supported	Supported	Supported	Supported	Supported
Supported OS[1]	Windows Server 2012 R2		Not supported	Not supported	Supported	Supported	Supported
	Windows Server 2012		Supported	Supported	Supported	Supported	Supported
	Windows Server 2008 R2		Supported	Supported	Supported	Supported	Supported
	Windows Server 2008		Supported	Supported	Supported	Supported	Supported
	RHEL 6.6		Not supported	Not Supported	Not Supported	Not Supported	Supported
	RHEL 6.5		Not supported	Not Supported	Supported	Supported	Supported
	RHEL 6.4		Not supported	Supported	Supported	Supported	Supported
Supported system unit[1]			Compute Rack or Compute Blade				

1. When using UEFI-boot OSs and devices with installation Assistant, see the user's guide of each OS and device for the support status and how to use UEFI boot.

2. Only Windows OSs: Windows Server 2012 or later support UEFI boot with Installation Assistant. See user's guide for each system for details of UEFI supported devices and how to use UEFI.

Supported Products

See **Support_EN.html** stored on "Hitachi Compute Blade Series/Hitachi Compute Rack Series Server installation and monitoring tool" DVD media for models and OSs supported by Server installation and monitoring tool installation assistant.

System environment required for operations

Server installation and monitoring tool installation assistant can operate under the environment that meets the following conditions:

- Supported system units

  See **Support_EN.html** stored on "Hitachi Compute Blade Series/Hitachi Compute Rack Series Server installation and monitoring tool" DVD media.

- Drive

  DVD drive

- Screen output

  Resolution of greater than or equal to 1024 by 768 pixels

Restrictions on OS Server installation and monitoring tool installation assistant

This section explains the restrictions that should be noted before using Server installation and monitoring tool installation assistant.

- Installing multiple operating systems (Multiboot)

  Server installation and monitoring tool installation assistant does not enable you to create Multiboot configuration by installing multiple operating systems.

2

OS Installation

This chapter provides information about how to install the OS using Server installation and monitoring tool installation assistant.

- [ ] OS installation general flow
- [ ] Precautions before OS installation
- [ ] OS installation procedures
- [ ] OS installation procedures in LP mode
- [ ] How to use associated software

OS installation general flow

This section describes the OS installation general flow.

1. Confirming the OS supported by the system unit where the OS is installed.

   For the type of the supported OS, see the **Support_EN.html** stored on the "Hitachi Compute Blade Series/Hitachi Compute Rack Series Server installation and monitoring tool" DVD media.

2. Confirming the model supported by Server installation and monitoring tool installation assistant.

   For more details of the supported model, see the **Support_EN.html** stored on the "Hitachi Compute Blade Series/Hitachi Compute Rack Series Server installation and monitoring tool" DVD media.

   If a model has not been supported by Server installation and monitoring tool installation assistant, it cannot be installed on that model.

3. Preparing for the OS installation.

   Read page 2-3 "Precautions before OS installation".

   The hardware setup (configuration and setting changes) should be made as appropriate.

4. Confirming Bus numbers of boot options (boot loader RAID controller/HBA).

   For confirming Bus numbers of RAID controller/HBA of boot options, see "Boot/Boot Manager/Boot Menu" in Chapter "System BIOS/BIOS Setup/Server Blade Setup/UEFI setup menu" of *Hitachi Compute Blade/Hitachi Compute Rack (BIOS/EFI) User's Guide*.

5. Installing the OS.

   For the OS installation, see page 2-19 "OS Installation Procedures".

Server installation and monitoring tool OS Setup Guide

Precautions before OS installation

This section describes the precautions before OS installation.

- **Common notes for Windows Server**

   <Common notes for systems >

   – **Data stored on partitions (drives)**

   The all data stored on the partition (drive) where OS is installed are deleted. The data backup must be made in advance as appropriate.

   – **Logical capacity of installed drives**

   For BIOS boot, the capacity of logical drive where OS is installed must be less than 2 TB[*]. For more information about how to set, see the manual for each external disk array device and RAID device where OS is installed.

   > [*] 2 TB is the volume calculated using the convention of 1 KB=1024 bytes. The volume calculated using the convention of 1 KB=1000 bytes is 2199 GB (2,199,023,255,552 bytes).

   – **Setting write cache mode**

   Make sure that write cache on the disk where OS is installed is disabled (write through mode) for built-in disk array type (excluding the type with cache backup).

   When write cache is enabled (write back mode), the mode must be changed to disabled (write through mode). For more information about how to change the mode, see *Hitachi Compute Blade Series/Hitachi Compute Rack Series Server installation and monitoring tool User's Guide internal storage monitoring functions*.

   – **Ejecting media**

   The eject button on DVD drive must not be pressed except for replacing media. If you press the button during installation, the reinstallation of the OS is required.

   – **Setting path**

   When multiple paths (access routes) have been set to the target LU of an external disk array device where OS is installed, a single path configuration must be set before installation. If multiple paths have been set to the target LU where OS is installed, the installation fails. The single path configuration can be set with the management utility for the external disk array device. For more details, see the manual for external disk array devices. Install the multipath software after OS installation, and then set the multiple paths.

– **Partition capacity**

When installing Windows Server on a partition that is no greater than 40 GB, the installation may fail. In addition, applying Service Pack may require large memory space. Therefore, it is highly recommended that a partition greater than 80 GB be created for OS installation.

Tip

- The capacities required for page files or dump files are different based on the installed memory capacity, and therefore 80 GB may be insufficient capacity.
- You should consider the design appropriate to the environment and the purpose.

– **Time required for OS installation**

The OS installation takes some time depending on the amount of installed processors, memory, and devices. Especially in recognizing a device, it requires much more time by the hours based on the size of installation. If it seems to hang up since there has been no change on the window during the installation, do not reset or turn off the power. It is expected to take dozens of minutes or some hours. Especially when a lot of I/O expansion cards are installed, it can be time-consuming.

– **Notes under environment with multiple disks and partitions (drives)**

When multiple disks (Logical Units) exist on the system unit, the multiple disks can be displayed as the candidates for OS installation, however the order and their numbers of the displayed disks are always changeable and not fixed. It is recommended to install OS when single disk is being displayed, and then to add a data disk except a system disk after the completion of the OS installation.

If the installation needs to be performed when multiple disks is being displayed, determine the target disk for OS installation with its size, not with the order or its number of the disk.

If the selection of target disk or partition is not correct, the existing partition (existing data) may be deleted. For more details, see the following Microsoft website:

http://support.microsoft.com/kb/937251/en-us

– **Notes under environment with multiple DVD drives**

When multiple DVD drives exist on the system unit, the setup for replacing media must be performed using only one DVD drive that has initially started the Server installation and monitoring tool. If multiple DVD drives are used, the setup may not complete successfully.

– **Product Activation**

The product activation process is required after installation. For more details, see the following Microsoft website:

http://technet.microsoft.com/en-us/library/hh831612.aspx

– **Note when using retail media for Windows**

When using retail media, generic media sold at shop, for installing, you may be prompted to enter a product key at reboot time during the OS installation process after accepting the license agreement. If so, enter the product key attached to the media correctly.

> **Tip**
> Even when entering a product key, the product activation process is required after the OS installation.

– **ServerCore**

Windows 2008/Windows 2008 R2 Server Core installation is not supported. When Server Core is used for Windows Server 2012/Windows Server 2012 R2, complete the OS installation and setup of each associated software on the fully installed GUI server, and then convert to Server Core. For more details about how to convert, see the following URL:

http://technet.microsoft.com/en-us/library/hh831786.aspx

– **Microsoft Generic IPMI Compliant Device**

When you install ServerConductor/Agent, the Microsoft Generic IPMI Compliant Device may indicate "!" on the device manager, however any operational problem is not caused and you can continue using "as is". See the readme file for ServerConductor/Agent.

– **Setting values in Installation**

Some setting change tools are automatically executed. For details of each tool, see Registry settings for each utility in Support_EN.html contained in DVD media for *Hitachi Compute Blade Series/Hitachi Compute Rack Series Server installation and monitoring tool*.

< Notes only for Compute Rack >

– **When installed with greater than or equal to 1 TB of physical memory**

When installing using installation media without SP1 applied on the Windows Server 2008 R2 Enterprise/Datacenter that is installed with greater than or equal to 1 TB of physical memory, the memory capacity must be reduced by 1 TB for installation. If installation is executed without reducing the memory capacity, the installation may not be completed due to hangup. Apply SP1 after the installation, and then restore the memory capacity.

If the installation is performed without reducing the memory capacity, the installation may not be completed due to the hangup.

– **DVD drive**

For CR 220S, an external DVD-ROM drive is required. Prepare one before installation.

– **When connecting to embedded USB device, such as RDX**

Disable the embedded USB device in BIOS setup menu before installation. See *Hitachi Compute Rack 210H/220H BIOS Guide* or *Hitachi Compute Rack 220S BIOS Guide* for how to disable embedded USB.

< Notes only for Compute Blade 500 >

– **When installed with greater than or equal to 1 TB of physical memory**

When installing using installation media without SP1 applied on the Windows Server 2008 R2 Enterprise/Datacenter that is installed with greater than or equal to 1 TB of physical memory, the memory capacity must be reduced by 1 TB for installation. Apply SP1 or the modification program KB980598 (http://support.microsoft.com/kb/980598) after the installation, and then restore the memory capacity.

The redundant memory function should be used for reducing the memory capacity on the Compute Blade 540A model. Set according to the following steps:

1. Click **EFI** tab on the server blade where OS is installed on the Web console.
2. Click action button **Edit**, and then click **Memory**.
3. Select **Mirroring** in the Memory Mode, and then click **Confirm**.
4. When the confirmation screen is displayed, click **OK**.
5. Install OS and SP1 according to this manual.
6. Reboot the OS.
7. Click **EFI** tab on the server blade where OS was installed on the Web console.
8. Click action button **Edit**, and then click **Memory**.
9. Select **Independent** in the Memory Mode, and then click **Confirm**.
10. When the confirmation window is displayed, click **OK**.
11. Make sure that OS can recognize greater than or equal to 1 TB of the memory capacity.

When reducing the memory capacity on the Compute Blade 520X model, use Memory Deconfiguration Mode. Follow the steps below to set a value.

1. Click **EFI** tab on the server blade where OS is installed on the Web console.
2. Click action button **Edit**, and then click **Memory**.
3. Select **Disable** for all items except Node0: DIMM01-06 and 25-30 in the Memory Deconfiguration Mode and then click **Confirm**.
4. When the confirmation screen is displayed, click **OK**.
5. Install OS and SP1 according to this manual.
6. Reboot the OS.
7. Click **EFI** tab on the server blade where OS was installed on the Web console.

8. Click action button **Edit**, and then click **Memory**.

9. Change all the disabled items to **Enable** in the Memory Deconfiguration Mode, and then click **Confirm**.

10. When the confirmation window is displayed, click **OK**.

11. Make sure that OS can recognize greater than or equal to 1 TB of the memory capacity.

Note — Install OS on the internal RAID in CB 520X where a single virtual drive is created. If creating multiple virtual drives, make sure to install the OS on virtual drive 0.

If the installation is performed without reducing the memory capacity, the installation may not be completed due to the hang during installation.

< Notes only for Compute Blade 2500 >

– **When installed with greater than or equal to 1 TB of physical memory**

When installing using installation media without SP1 applied on the Windows Server 2008 R2 Enterprise/Datacenter that is installed with greater than or equal to 1 TB of physical memory, the memory capacity must be reduced by 1 TB for installation. Apply SP1 or the modification program KB980598 (http://support.microsoft.com/kb/980598) after the installation, and then restore the memory capacity.

See the memory capacity on the Compute Blade 520X model for the procedure.

< Notes only for Compute Blade 2000 >

– **Setting server blade during OS installation**

Before starting the OS installation, configure the server blade Web console EFI setting to: PCI Error Handling Mode: PCIe Error Isolation.

If the setting above has not been created, the installation may fail due to the hang-up or hardware malfunction during the OS installation. Make sure that the OS installation has been successfully completed. After completing the installation, restore the setting of PCI Error Handling Mode to your usual setting. For more information about the setting of PCI Error Handling Mode, see "Details for Server Blade Setting" of *Server installation and monitoring tool User ̕s Guide.*

– **When installed with greater than or equal to 1 TB of physical memory**

When installing using installation media without SP1 applied on the Windows Server 2008 R2 Enterprise/Datacenter that has physical memory greater than or equal to 1 TB, the memory capacity must be reduced by 1 TB and above during the installation. Apply SP1 or the modification program KB980598 (http://support.microsoft.com/kb/980598) after the installation, and then restore the memory capacity.

To reduce the memory capacity on the X57A2 model, set according to the following steps:

1. Turn off the power for the target server blade.
2. Open the server blade Web console with the Web browser, and log in as Administrator.
3. Select Server Operation tab > Server Configuration and Reduction Settings.
4. Select Deconfigured on all settings of Next Planned Reduction Settings to be selectable for the following configurations of CPU/DIMM Planned Reduction Settings, and then click Server Configuration and Reduction Settings > Modify.

[Non-primary blade1] - [CPU0 DIMM]

[Non-primary blade1] - [CPU1 DIMM]

[Non-primary blade2] - [CPU0 DIMM]

[Non-primary blade2] - [CPU1 DIMM]

[Non-primary blade3] - [CPU0 DIMM]

[Non-primary blade3] - [CPU1 DIMM]

Tip　[Non-primary blade2/Non-primary blade3] cannot be displayed depending on the configuration. If this is the case, the setting is not required.

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5. Make sure that all settings you have changed on **Server Configuration and Reduction Settings (confirm)** are set to **Deconfigured**, and then click **Confirm.**

6. Make sure that the settings take effect on CPU/DIMM Planned Reduction Settings of Server Configuration and Reduction Settings.

7. Install the OS, and SP1 or KB980598 according to this manual.

8. Turn off the power for the target server blade.

9. Open the server blade Web console with the Web browser, and log in as Administrator.

10. Select Server Operation tab > Server Configuration and Reduction Settings.

11. Select Configured on all settings of Next Planned Reduction Settings to be selectable for the following configurations of CPU/DIMM Planned Reduction Settings, and then click Server Configuration and Reduction Settings > Modify.

[Non-primary blade1] - [CPU0 DIMM]

[Non-primary blade1] - [CPU1 DIMM]

[Non-primary blade2] - [CPU0 DIMM]

[Non-primary blade2] - [CPU1 DIMM]

[Non-primary blade3] - [CPU0 DIMM]

[Non-primary blade3] - [CPU1 DIMM]

Tip

[Non-primary blade2/Non-primary blade3] cannot be displayed depending on the configuration. If this is the case, the setting is not required.

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12. Make sure that all settings you have changed on **Server Configuration and Reduction Settings (confirm)** are set to **Configured**, and then click **Confirm**.

13. Make sure that the settings take effect on CPU/DIMM Planned Reduction Settings of Server Configuration and Reduction Settings.

14. Start the target server blade.

– **For Windows Server 2008 R2, OS installation procedures when creating SMP connections between server blades with four server blades of X57A2 model**

Under the environment that SMP connections are created between the server blades using four server blades of X57A2 model, when installing Windows Server 2008 R2 using installation media without SP1 applied, change ACPI mode during the installation according to the following steps. Apply SP1 or the modification program KB2398906 (http://support.microsoft.com/kb/2398906) and KB2303458 (http://support.microsoft.com/kb/2303458) after the installation, and then restore the ACPI mode to the original mode.

1. Turn on the power for the target server blade and enter EFI Setup window.
2. Select the Advanced tab > CPU Configuration.
3. On the CPU Configuration window, change ACPI Mode to xAPIC.
4. Store the setting and exit from the EFI Setup window.
5. Install Windows Server 2008 R2 and SP1, or KB2398906 and KB2303458 according to this manual.
6. Turn on the power for the target server blade and enter EFI Setup window.
7. Select the Advanced tab > CPU Configuration.
8. On the CPU Configuration window, change ACPI Mode to Auto.
9. Store the setting and exit from the EFI Setup window.

Tip
For more details about EFI Setup window, see Server installation and monitoring tool User's Guide.

- **For Windows Server 2008, OS installation procedures when creating SMP connections between server blades with four server blades of X57A2 model**

Under the environment that SMP connections are created between the server blades using four server blades of X57A2 model, when installing Windows Server 2008 using installation media without SP1 applied, change ACPI mode during the installation according to the following steps.

1. Turn on the power for the target server blade and enter EFI Setup window.
2. Select the Advanced tab > CPU Configuration.
3. On the CPU Configuration window, change **ACPI Mode** to **xAPIC**.
4. Store the setting and exit from the EFI Setup window.
5. Install Windows Server 2008 according to this manual.

Note — ACPI Mode must not be changed from xAPIC after the completion of Windows Server 2008 set up. If the change has been made, OS cannot be started properly.

Tip — For more details about EFI Setup window, see *Server installation and monitoring tool User's Guide.*

< Notes only for logical partitioning manager (LPAR manager) >

— **Using Remote console**

The power operations can be performed through the remote console on the server blade. The power operations on the server blade in the logical partitioning manager mode (LP mode) affect the all LPARs managed by LP mode. Therefore, turning on/off power operations or reset operation are disabled on the remote console.

The remote console must be used only for the operations during OS installation. For the operations after OS installation, use the remote desktop connections.

— **Shared NIC and Virtual NIC**

When performing the first OS startup after installation, the shared NIC or virtual NIC may not be recognized as a network device. The virtual NIC can be properly recognized by rebooting the OS.

— **Product key**

When entering the product key is required during OS installation, use the product key for a virtual environment since LPAR is enabled in a virtual environment.

— **CB 520X**

For CB 520X, install the OS on a virtual drive on the remote console. The USB port on the front panel is not available.

- **Common notes for Red Hat Enterprise Linux Server**

<Common notes for systems >

— **Data stored on partitions (drives)**

The all data stored on the partition (drive) where OS is installed are deleted. The data backup must be made in advance as appropriate.

— **Logical capacity of installed drives**

For BIOS boot, the capacity of all logical drives connected to the logical unit (LU) must be less than 2 TB[*] respectively. For more information about how to set, see the manual for each external disk array device and RAID device where OS is installed.

> * 2 TB is the volume calculated using the convention of 1 KB=1024 bytes. The volume calculated using the convention of 1 KB=1000 bytes is 2199 GB (2,199,023,255,552 bytes).

– **Ejecting media**

The eject button on DVD drive must not be pressed except for replacing media. If you press the button during installation, the reinstallation of the OS is required.

– **Notes under environment with multiple DVD drives**

When multiple DVD drives exist on the system unit, the setup for replacing media must be performed using only one DVD drive that has initially started the Server installation and monitoring tool. If multiple DVD drives are used, the setup may not be completed successfully.

– **Disk capacity**

Disk capacity 23 GB or greater is required for installing Red Hat Enterprise Linux Server.

– **Package groups to be installed**

The following table shows package groups to be installed.

Category	Package group name
base-system	base
system-management	system-management
desktops	basic-desktop

Tip

Packages required for supplied utilities that are simultaneously installed will be also installed. For details, see manuals for each utility.

– **Setting values when installation is complete**

The following table shows configuration automatically set at the end of installation.

Target file	Description	Configuration
/etc/modprobe.d/ modprobe.conf	Disables EDAC (Error Detection and Correction), which may prevent BIOS log output when hardware error is detected.	install *_edac /bin/true install edac_* /bin/true
	Disables TCP Checksum Offload for the LAN controller because LAN controller failure may corrupt packet data. This is only for a system with devices using e1000 driver. Set the same number of 0: zero as that of ports.	options e1000 XsumRX=0,0,…,0
/etc/modprobe.d/ blacklist.conf	Restricts loading drivers to prevent unnecessary devices from being recognized. Only for CB 2000	blacklist e1000e
	Restricts loading drivers to prevent the hardware error log feature from s.	blacklist iTCO_wdt
/boot/grub/grub.conf	Removes kernel parameters, "quiet" and "rhgb".	Kernel parameters, "quiet" and "rhgb" are removed.
	Changes the trigger for device allocation from unsynchronized to synchronized in order to fix the allocation order of SCSI device names.	Kernel parameter "scsi_mod.scan=sync" is added.
	Disables "nmi_watchdog" to use the parameter to stop the system in hardware failure.	Kernel parameter "nmi_watchdog=0" is added.
	Disables kernel AER.	Kernel parameter "pci=noaer" is added.
	Disables kernel ASPM.	Kernel parameter "pcie_aspm=off" is added.
	Operates Red Hat Enterprise Linux Server 6.4/ Red Hat Enterprise Linux Server 6.5 on LPAR manager. Only for LPAR manager environment	Kernel parameter "no_timer_check" is added.
	Deletes unnecessary parameters set into kernel parameter when RHEL is installed on the iSCSI disk connected to iSCSI software.	Parameter "ifname" is deleted.
	Not recognize RHEL on the multipath configuration. Installation on multipath configuration is not supported.	Kernel parameter "nompath" is added.

Target file	Description	Configuration
/boot/grub/grub.conf	Adds a setting to avoid hangup at OS boot.	Kernel parameter "edd=off" is added.
/etc/inittab	Sets the run level to 3 regardless of whether X Window System is installed or not, which prevents X Window System from using server resources unnecessarily.	id:3:initdefault:
/etc/sysctl.conf	Enables the magic SysRq key to collect information when a problem occurs.	kernel.sysrq = 1
	Adds a setting to panic the kernel when NMI is issued in order to detect failure in hardware or drivers early.	kernel.unknown_nmi_panic = 0 kernel.panic_on_unrecovered_nmi = 1 kernel.panic_on_io_nmi = 1
	Sets the kernel message log level to 3 because output of large amount of kernel messages to the console may cause processing to suspend temporarily, which leads to system slowdown or delayed switching to the redundant path.	kernel.printk = 3 4 1 7
/etc/sysconfig/network-scripts/ifcfg-ethX	Sets ONBOOT parameter not to start the network automatically on the OS boot.	ONBOOT=NO

- **Boot order**

Make sure to set it in the boot order that the boot device to install the OS starts up earlier than the DVD drive. If not, installation fails because the OS in the DVD drive starts up instead of that in the boot device when the OS in the boot device needs to start up. See manuals for your system unit for how to change the boot order.

- **Setting path**

When multiple paths (access routes) have been set to the target LU of an external disk array device where to install an OS, a single path configuration must be set before installation. If multiple paths have been set to the target LU where to install the OS, the installation fails. The single path configuration can be set with the management utility for the external disk array device. For more details, see the manual for external disk array devices.

- **Reboot in setup**

Reboot is automatically executed several times during setup. Even if the login window appears for the first time, setup continues and reboot will be executed once. Wait for setup completion before login.

– **Remote console virtual media function**

If you set up an OS using the remote console virtual media, the system disk may be recognized by other than sda after OS setup completion. If so, terminate the virtual media, and then reboot the server.

< Notes only for Compute Rack >

None.

< Notes only for Compute Blade 500 >

– **iSCSI configuration**

With iSCSI configuration (boot/data connection), automatic installation using Installation Assistant is not supported. See *Hitachi Compute Blade Emulex Adapter User's Guide for Driver* for details.

< Notes only for Compute Blade 2500 >

– **iSCSI configuration**

With iSCSI configuration (boot/data connection), automatic installation using Installation Assistant is not supported. See *Hitachi Compute Blade Emulex Adapter User's Guide for Driver* for details.

– **USB port setting on 520H front panel**

For RHEL 6.5/6.6 installation, the OS may not start up properly if the USB port on the front panel of 520H model is in USB 3.0 mode. Disable XHCI mode in UEFI setup menu, and set the USB port in USB 2.0 mode. See the procedure shown below.

1. Power on the server blade, and start UEFI setup menu.

Tip

See *Hitachi Compute Blade 2500 Series UEFI Setup Guide* for details on UEFI setup menu.

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2. Select **System Settings** menu > **Devices & I/O Ports** submenu > **USB Configuration**.

3. On the USB Configuration, select **Disable** for **XHCI Mode**.

4. Save the setting and exit UEFI setup menu.

5. Install RHEL 6.5/6.6 according to the procedure in this manual.

< Notes only for Compute Blade 2000 >

– Setting server blades

Follow the description in Note on Redundant System Configuration, PCI Error Handling Mode, *Hitachi Compute Blade 2000 USER'S GUIDE* to change PCI Error Handling Mode.

< Notes only for logical partitioning manager (LPAR manager) >

– Using Remote console

The power operations through the remote console can be performed on the server blade. The power operations to a server blade on which the logical partitioning manager is running affect the all LPARs managed by the LPAR manager. Therefore, turning on/off power operations or reset operation are disabled on the remote console.

– Boot order

When re-setting up Red Hat Enterprise Linux Server on the LU with the OS already installed, perform one of the following two procedures depending on the situation. If you do not, installation may not be completed properly.

- Initializing the LU beforehand

Initialize the LU before you install the OS. Then, installation automatically proceeds to the end.

- Changing the boot order during installation

You need to manually change boot orders at the first boot during OS installation.

1. Set the DVD drive on the higher position in the boot order than the LU to install the OS.
2. Start installing the OS.
3. On the first reboot during OS installation, set the LU on the higher position in the boot order than the DVD drive.

OS installation procedures

This section describes OS installation procedures using Server installation and monitoring tool installation assistant.

Note When installing the OS in the LP mode, the preparations are required before the OS installation. See OS installation procedures in LP mode.

Note When not moving between fields with Tab key to operate on the screens, the operations must be performed using mouse.

---

1. Insert the DVD media for "Hitachi Compute Blade Series/Hitachi Compute Rack Series Server installation and monitoring tool" into the DVD drive shortly after turning on the power for the system unit.
2. Find your environment among the three mentioned below. Then, go to the next step following the instruction.

   – OS to install: Red Hat Enterprise Linux; RAID for OS installation: already created.

   >>> Go on to step 3.

   – OS to install: Red Hat Enterprise Linux; RAID for OS installation: create a new one.

   >>> Jump to step 4.

   – OS to install: Windows

   >>> Jump to step 5.

Tip
- If you install RHEL and create new RAID before installing the OS, set the boot order after step 13.
- Creating new RAID includes deleting the existing RAID and then creating a new RAID after the system reboot.

---

3. Configure the boot option to boot a boot device for OS installation earlier than the DVD drive.

	In the case of booting Red Hat Enterprise Linux Server, setting the boot device to the top of the boot order is required as shown in <u>Boot order</u> for Red Hat Enterprise Linux. Therefore, when setting up RedHat Enterprise Linux Server again in the environment where the OS was already installed and the boot device can be selected from the BIOS boot menu, select the DVD drive and boot the DVD media "Hitachi Compute Blade Series/Hitachi Compute Rack Series Server installation and monitoring tool". For how to boot the media, see the following each manual.

・Hitachi Compute Rack : BIOS Guide

・CB500 : EFI User's Guide

・CB2500 : UEFI Setup Guide

In the case of the Hitachi Compute Rack without the boot menu, remove the installed OS first and install it again.

For the details of the removal of the OS that was already installed, see "Hitachi Compute Rack : BIOS Guide".

4. Select the DVD drive in Boot Override/Boot From Device, Save&Exit menu/Boot Manager menu.

	See manuals for each system for how to display Save&Exit menu/Boot Manager menu and how to set them.

5. Boot "Hitachi Compute Blade Series/Hitachi Compute Rack Series Server installation and monitoring tool" DVD media.

	• When the DVD media is booted in BIOS mode, the installed OS is also booted in BIOS mode. When it is booted in EFI mode, the installed OS is booted in UEFI mode. See manuals of your system unit for information on UEFI boot supported. See Appendix A: Booting Media in UEFI Mode for how to boot media in UEFI mode.
	• If you press any key several times when the DVD media is booted in BIOS mode, Windows Boot Manager may start up. If so, select Windows Setup [EMS Enabled] to continue the setup.

6. When Language Selection window is displayed, select **English**.

Note
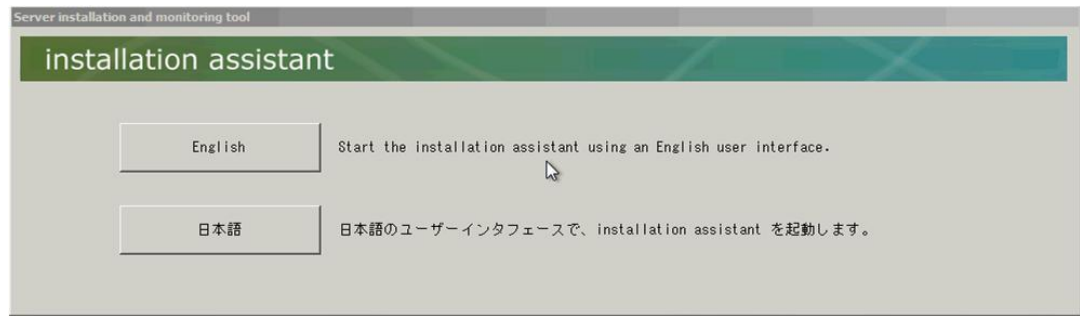
When purchasing this equipment in countries other than Japan, **English** must be selected. If the button at the bottom is selected, the unsupported configuration may be provided.

---

7. Keyboard layout and Image Selection window is displayed.
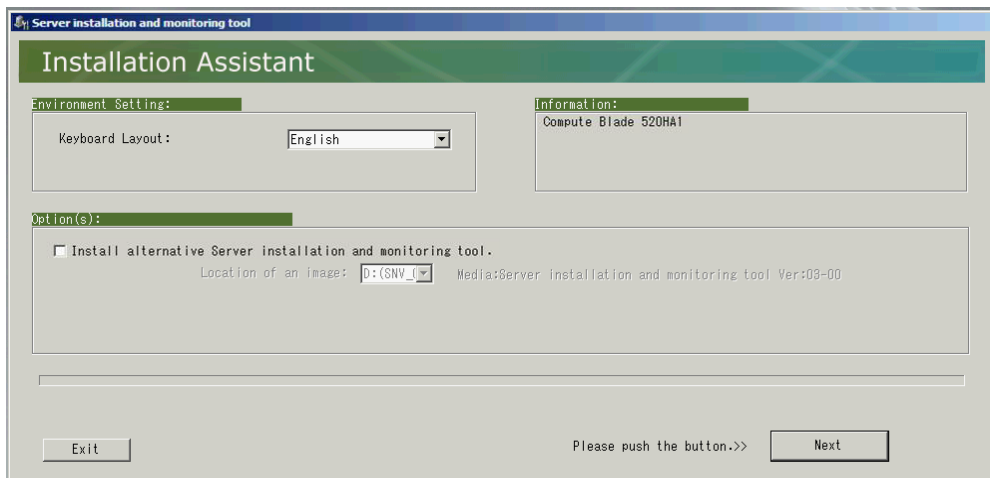
Select the keyboard layout and the image to be used as appropriate, and then click **Next**.

Tip

- When using the updated Server installation and monitoring tool image, check "Install alternative Server installation and monitoring tool" and select a location to store it.
- When using the Server installation and monitoring tool image contained in the Server installation and monitoring tool DVD media attached to the system, not using the updated one, do not check "Install alternative Server installation and monitoring tool".

---

8. Start window is displayed.

When creating RAID before installing the OS, click **Customize Internal RAID Configuration** and go on to step 9.

When installing the OS without RAID configuration, click **Proceed with the OS Installation** and jump to step 14.

Server installation and monitoring tool OS Setup Guide
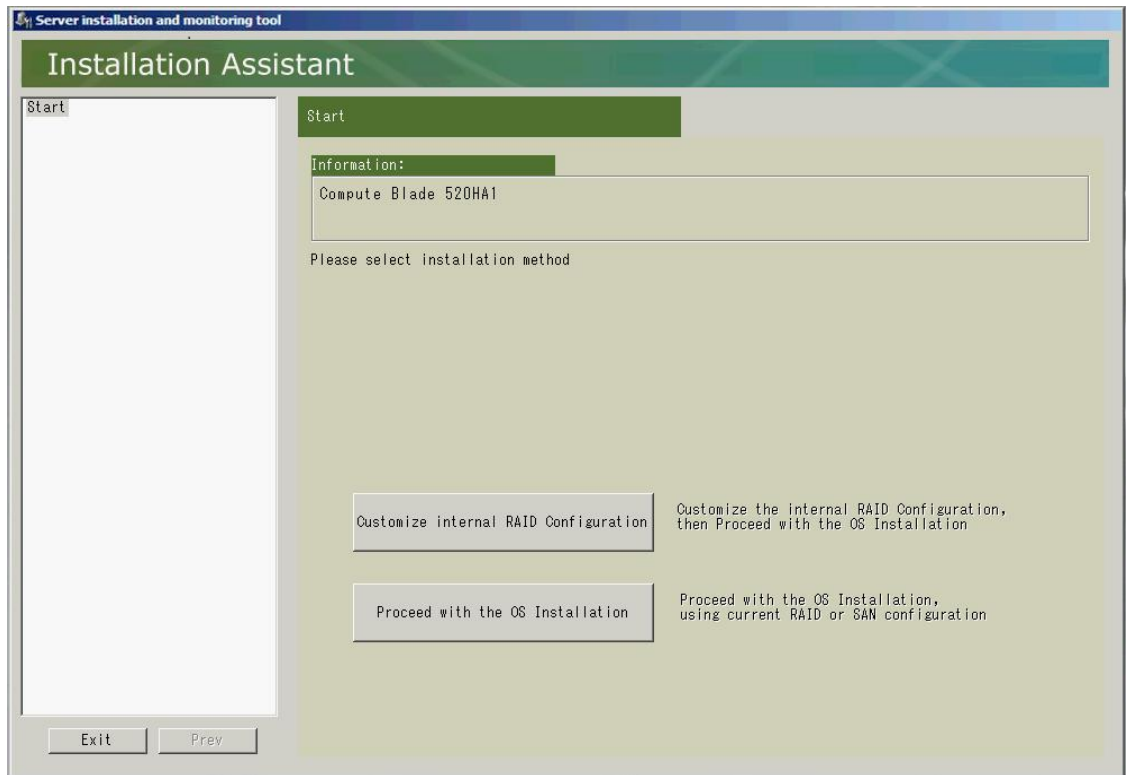
9. Hardware Configuration window is displayed.
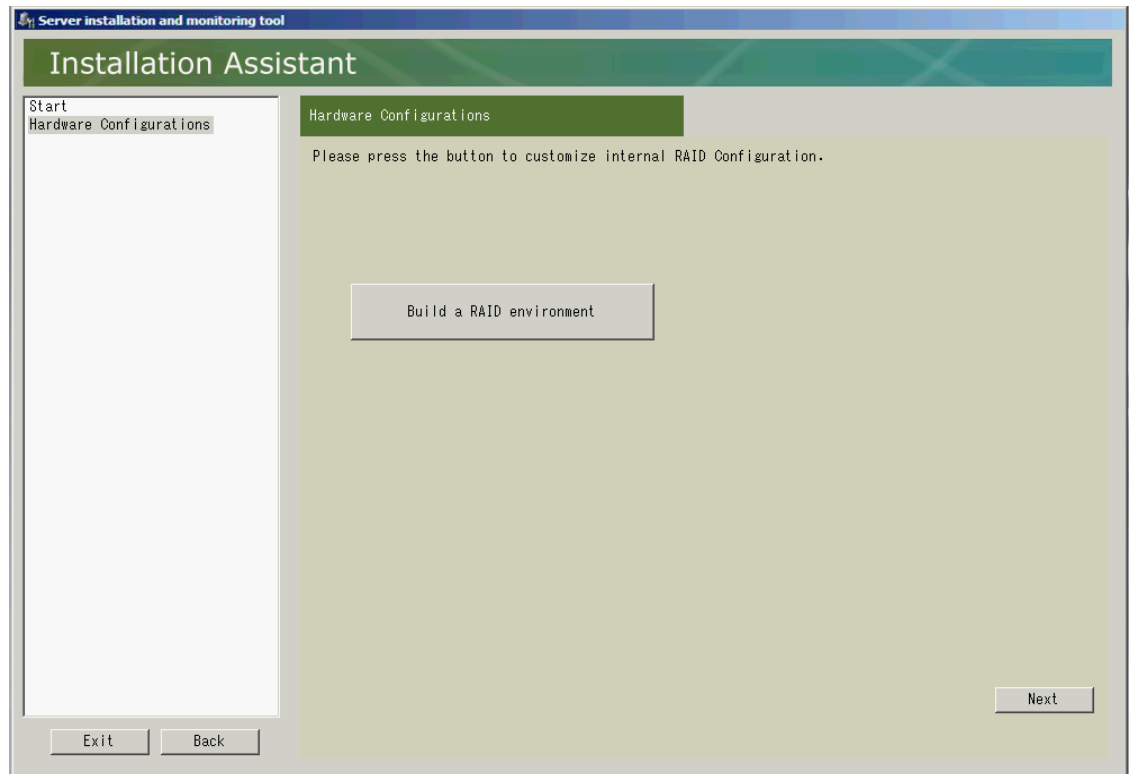
Click **Build a RAID environment.**

For one RAID controller, proceed to step 11.

For two or more RAID controllers, proceed to step 10.

> **Note**
>
> LSI SAS2004 controller is not supported in this function. The following popup is displayed in LSI SAS2004 controller.
>
> Use BIOS menu: LSI Corp Config Utility (SAS Configuration Utility) to configure RAID. For more details, see *Hitachi Compute Blade 500 Series EFI User's Guide*.
>
>

10. RAID Controller Selection window is displayed.

Select the following:

– In the case of installing OS after RAID configuration: Select when installing OS after creating RAID environment. If this is the case, select the RAID controller for booting.

– In the case of RAID configuration only: Select when creating only RAID environment without installing OS.

Tip	When 2 or more RAID controllers have been installed, confirm the Bus numbers of boot options (boot loader RAID controllers) on the boot setting of system BIOS/EFI before installation. For more details, see "Boot/Boot Manager/Boot Menu" in Chapter "System BIOS/BIOS Setup/Server Blade Setup/UEFI setup menu" of *Hitachi Compute Blade/Hitachi Compute Rack (BIOS/EFI) User's Guide*.

11. RAID Configuration window is displayed.
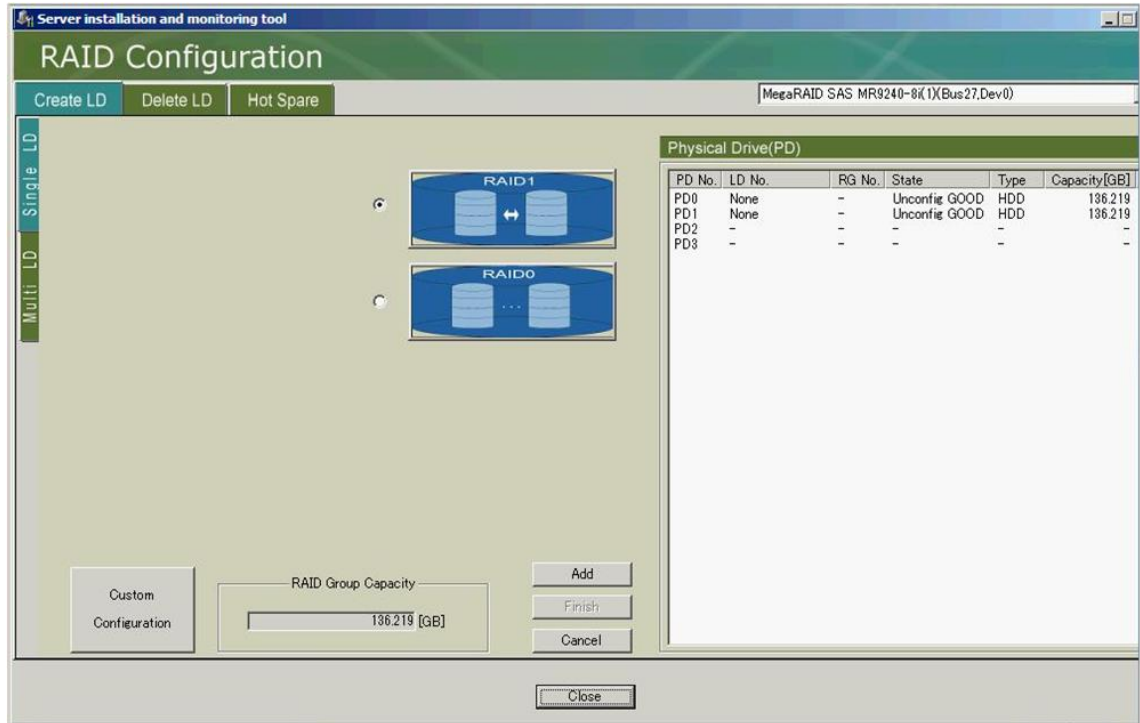
The RAID Configuration window enables the following five functions according to the purpose:

(1) Easily create one logical drive (Single LD)

(2) Easily create two or more logical drives (Multi LD)

(3) Freely create logical drives (Custom Configuration)

(4) Delete logical drives (Delete LD)

(5) Setup and disable Hot Spare (Hot Spare)

- To create logical drives during OS installation, use the functions of (1) Easily create one logical drive (Single LD) or (3) Freely create logical drives (Custom Configuration).

- For more details, see Chapter 3 "Features of internal storage monitor – Building RAID configuration" of *Server installation and monitoring tool User's Guide internal storage monitoring functions*.

- Click **Close** button in RAID Configuration window to proceed to the step of OS installation.

Note The following restrictions should be well noted:

- When creating logical drives during OS installation, it is recommended to create logical drives only for OS to prevent operation errors, and then create logical drives other than OS after the installation.

- This function is available only for a built-in RAID, not for an external RAID.

- The maximum number of logical drives that a built-in RAID can support is 24 for each RAID controller. The logical drives more than 24 must not be created. For more details, see Chapter 3: "Features of internal storage monitor – Building RAID configuration – Create logical drives (disk arrays)" of *Server installation and monitoring tool User's Guide internal storage monitoring functions* or *MegaRAID Storage Manager Instruction Manual*.

- SAS/SATA and HDD/SDD cannot be mixed in a RAID group.

- When physical drives (HDDs) with different rotational speeds are mixed, you can only create logical drives with the same rotational speeds and set up hot spare. See the following Chapters:

  – Create physical drives: Chapter 3 "Features of internal storage monitor – Building RAID configuration – Create logical drives (disk arrays) – Freely create logical drives (Custom Configuration)" of *Server installation and monitoring tool User's Guide internal storage monitoring functions.*

  – Setup Hot Spare: Chapter 3 "Features of internal storage monitor – Building RAID configuration – Create logical drives (disk arrays) – Setup specific Hot Spare" of *Server installation and monitoring tool User's Guide internal storage monitoring functions.*

  For details about how to confirm the rotational speed, see "Drives: viewing physical disk information" in Chapter "MegaRAID Web BIOS" of *Hitachi Compute Blade/Hitachi Compute Rack (BIOS/EFI) User's Guide*.

  For more information about whether physical drives (HDDs) with different rotational speeds can be mixed, see User's Guide for each system unit.

- The logical drive capacity expansion function is not available.

- The logical drive for Snapshot cannot be created.

< Easily create one logical drive (Single LD)>
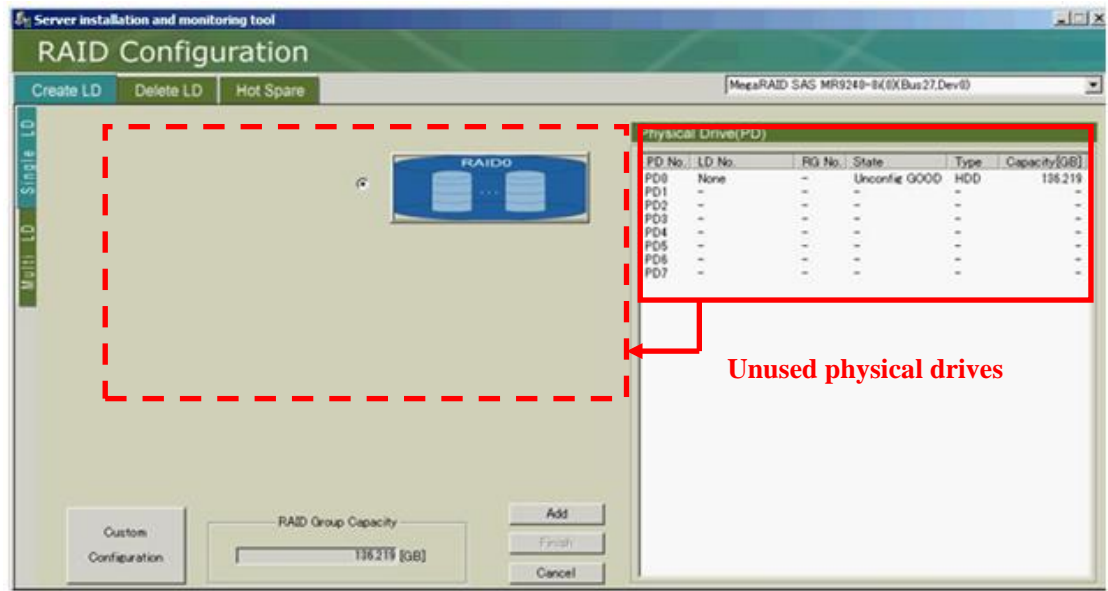
1. Select the level of RAID to be created.
2. Add physical drives by clicking **ADD** button.
3. Determine the selections on the steps 1 and 2 by clicking **Finish** button.

<Freely create logical drives (Custom Configuration)>
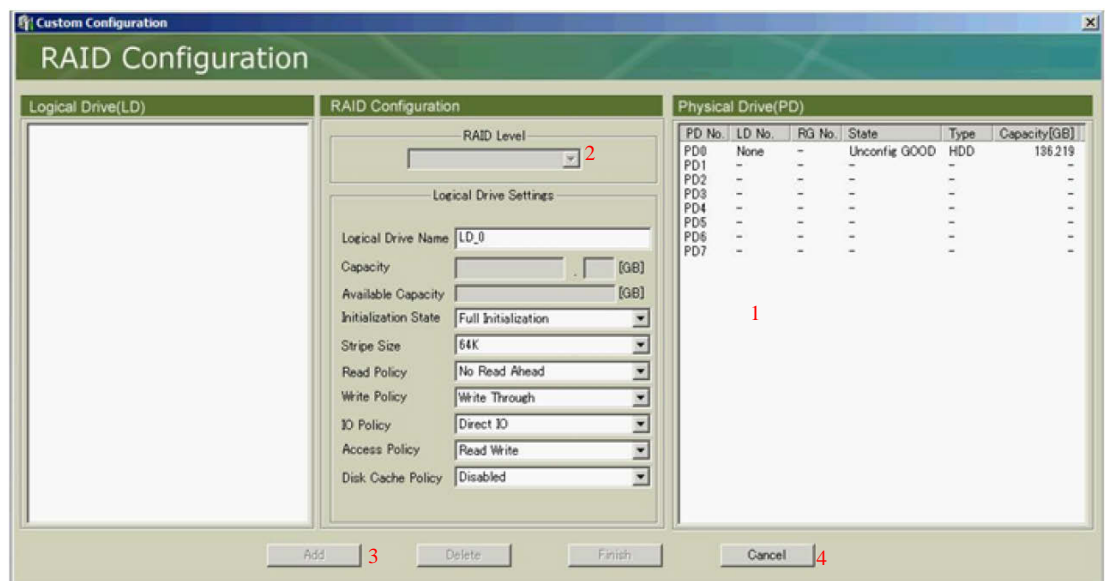
1. Select physical drives.
2. Select the level of RAID to be created.
3. Add physical drives by clicking **ADD** button.

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4. Determine the selections on the steps 1, 2, and 3 by clicking **Finish** button.

Note	• In the case of "Easily create one logical drive (Single LD)", the logical drive initialization is performed with Full Initialization. When LSI Software RAID is used, it is performed with Fast Initialization.
	
	• In the case of "Freely create logical drives (Custom Configuration)", it is recommended that the OS logical drive initialization be performed with Full Initialization. When LSI Software RAID is used, however, it is recommended that the OS logical drive initialization be performed with Fast Initialization.
	
	• When the logical drive initialization is performed with Full Initialization, it can take some time depending on the physical drive capacity. For more details about the estimated time for the logical drive initialization, see Chapter 6: "Appendix—A – Estimated time for processing" of *Server installation and monitoring tool User's Guide internal storage monitoring functions*.
	
	• When the logical drive initialization is performed with Fast Initialization, the consistency check for logical drives must be performed after the OS installation. If the logical drive is configured to RAID0, it is not necessary.
	
	• When the consistency check for logical drives has been completed, the following events are logged:
	  – For internal storage monitor:
	    HRN ID: 000058
	    Type: Information
	    Log messages: HRN_INF04: RAID INFORMATION4
	                    Consistency Check done on LD %d, ID: 000058
	  – For MegaRAID Storage Manager:
	    Event ID: 58
	    Type: Information
	    Log messages: Consistency Check done on VD<VDs>
	
	• For more details about how to perform the consistency check for logical drives, see the following chapters:
	  – For internal storage monitor, see Chapter 3 "Features of internal storage monitor – Building RAID configuration" of Server installation and monitoring tool User's Guide internal storage monitoring functions.
	  – For MegaRAID Storage Manager, see Chapter 2: "Functionality of MegaRAID Storage Manager] - [Logical Drive Consistency Check" of MegaRAID Storage Manager Instruction Manual.

- When the logical drive initialization is performed with Fast Initialization, the data inconsistency event may be logged during the consistency check just after the OS installation, however any operational problem is not caused.
- The RAID controller is under heavy load during the consistency check for logical drives, and its lower performance may be caused. Use it after the completion of the consistency check.

12. After clicking **Finish** button, the Logical drive initialization progress window is displayed. The window is automatically returned to the Hardware setting window after the completion of the logical drive initialization.
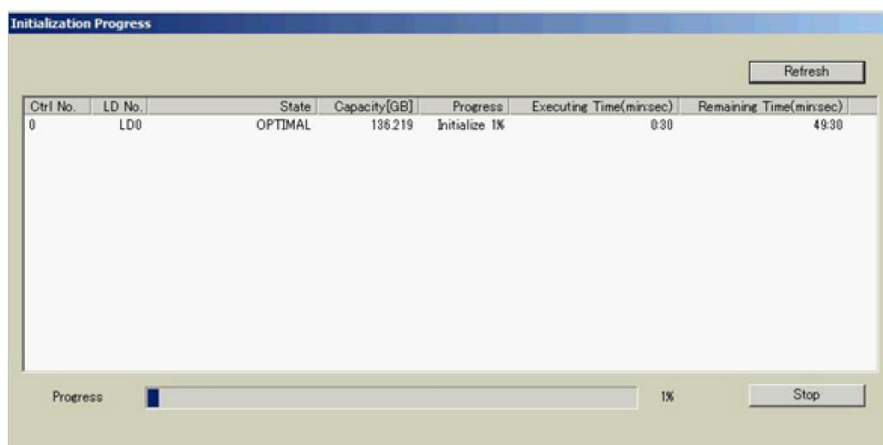
- In case of "Freely create logical drives (Custom Configuration)", this window is displayed after clicking **Close** button in the RAID configuration window.
- For OS logical drives, you cannot proceed to the OS installation step until the initialization is completed.
- Click **Refresh** button at the upper right corner of the window to update the logical drive initialization progress to the latest status.
- Click **Stop** button at the lower right corner of the window to suspend the logical drive initialization. The target logical drive initialization has been suspended. Retry is not required for the logical drive that the initialization has already been completed.

The logical drive initialization can take some time depending on the physical drive capacity. For more details about the estimated time for the logical drive initialization, see Chapter 6: "Appendix–A – Estimated time for processing" of *Server installation and monitoring tool User's Guide internal storage monitoring functions*.

<Deleting logical drives (Delete LD) window>

This window enables you to delete logical drives.
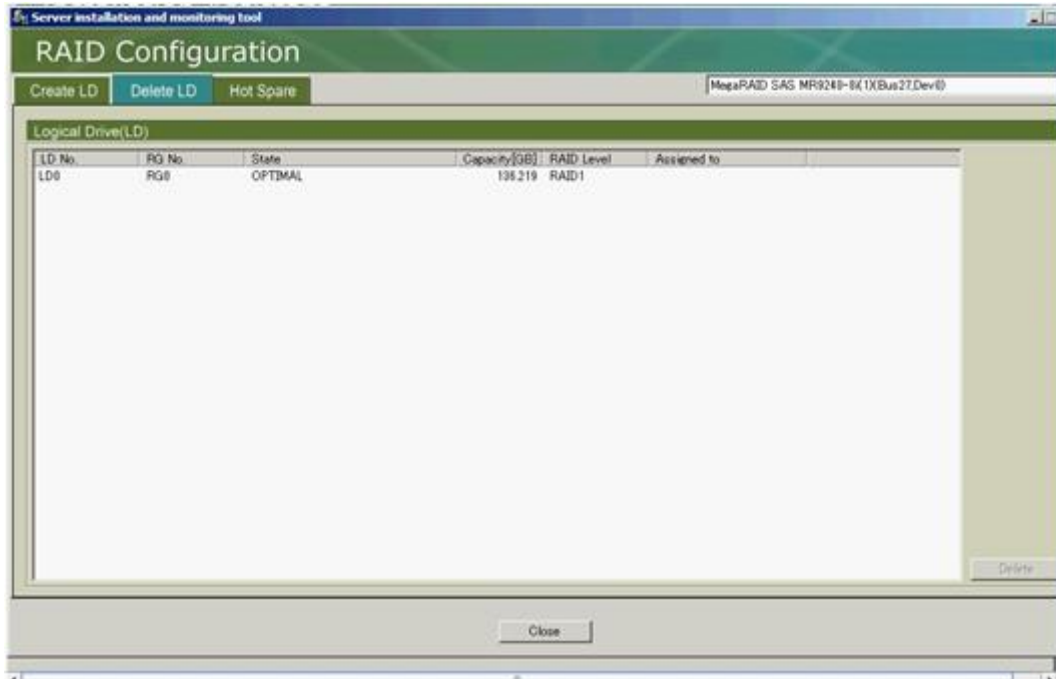
	The logical drives cannot be deleted under the following conditions:
Note	• A logical drive where Snapshot has been set: Delete the logical drive on MegaRAID Web BIOS. For more details, see "Deleting disk arrays]" in Chapter: "MegaRAID Web BIOS" of *Hitachi Compute Blade/Hitachi Compute Rack (BIOS/EFI) User's Guide.*
	• While task is being executed: Wait until the tasks such as logical drive initialization, data consistency check, and rebuild, have been completed. The logical drive initialization can be stopped on the Logical drive initialization progress window.

Tip	The logical drives where drive letters have been assigned can also be deleted.

Tip	Creating new logical drive includes deleting existing logical drive and then creating new logical drive after the system reboot.
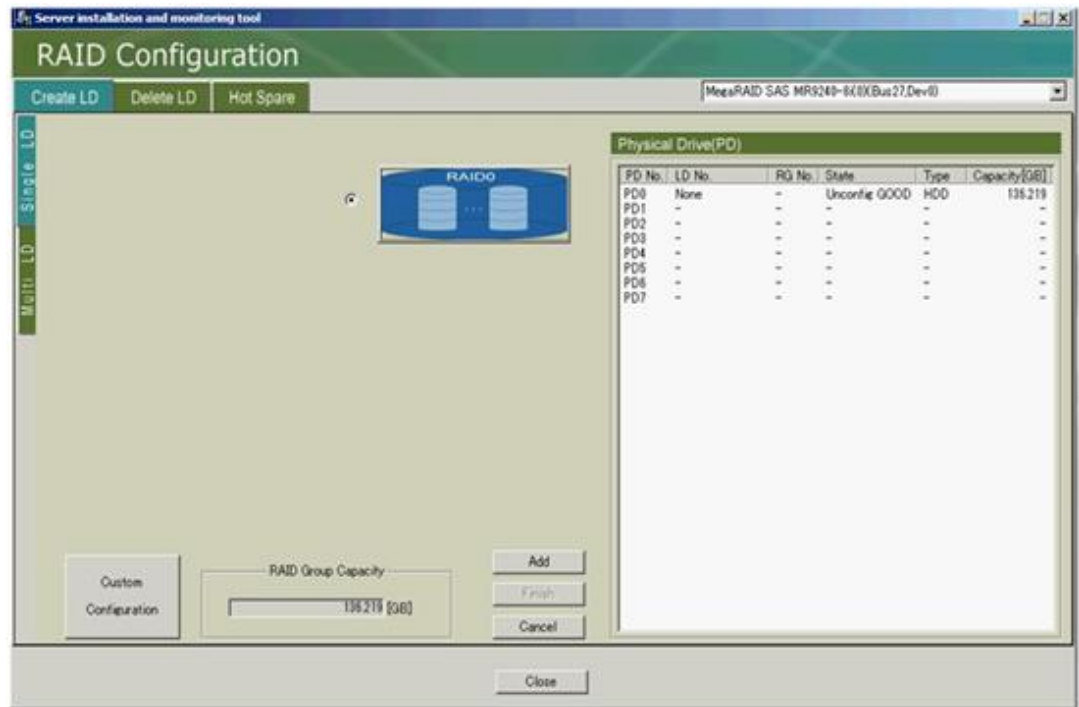
13. Find your environment among the three mentioned below. Then, continue the procedure following the instruction.

   − OS to install: Red Hat Enterprise Linux; a new logical drive: already created in step 11.

   Reboot the system, and then execute step 3 through step 8.

   − OS to install: Red Hat Enterprise Linux; a new logical drive: not created in step 11.

   >>> Go on to step 14.

   − OS to install: Windows

   >>> Go on to step 14.

14. OS Selection window is displayed.
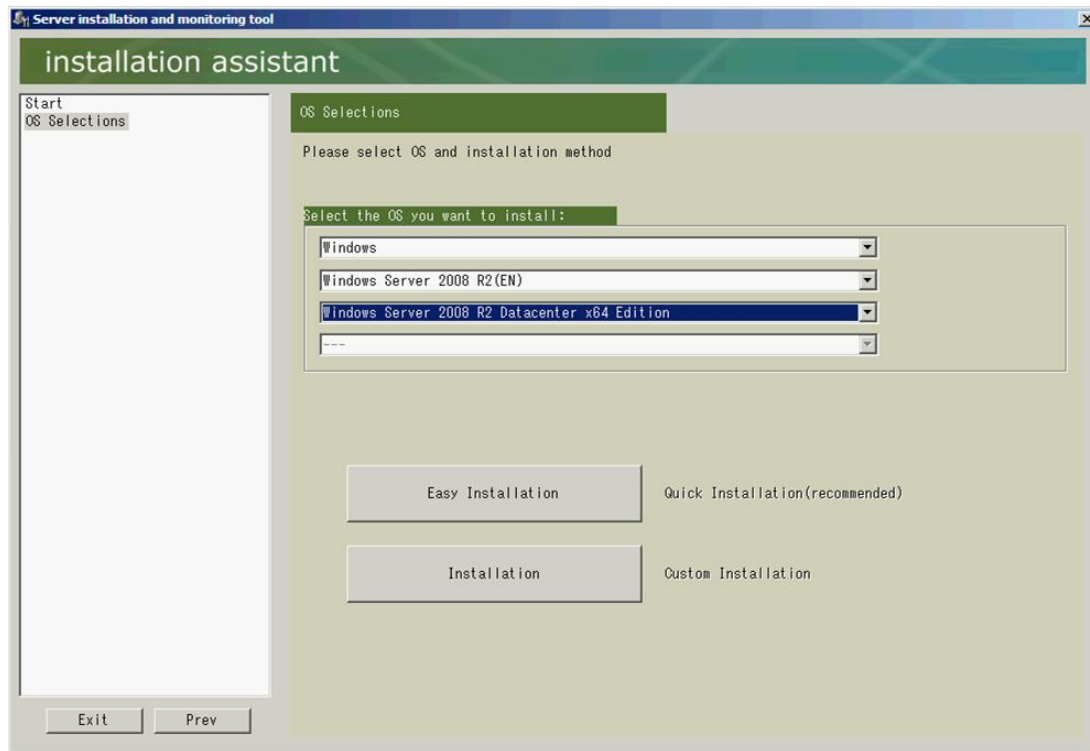
Select the type, version, edition, and media of OS to be installed.

Note	For Windows, when the edition, such as Datacenter or Standard, and the selected edition is not the same, a dialog box appears after installation has started and installation cannot proceed. Make sure that the selected OS edition is the same as the OS edition to use.

Tip	The selections and the required items are different depending on the selected OS type.

Select Easy Installation or Installation.

Note	When using Server installation and monitoring tool version 02-03-E or ealier and installing Windows using the media (Slipstream media) with Service Pack applied, select **Installation**, uncheck the checkbox for the target Service Pack on step 17, and then proceed with the installation..

Tip

If **Easy Installation** is selected, then the following values can be set automatically without windows shown in step 16 and step 17.

- – Windows selected on step 14
  User Name: Windows user
  Organization name: No value
  Computer name: Equivalent to check the checkbox for Automatically generate computer name.
  Admin-Password: Setup at the initial login after the installation has been completed.
  Time zone: (GMT-08:00) Pacific Time (US and Canada)
  Region: en-US
- – Red Hat Enterprise Linux selected on step 14
  Host Name: localhost
  Domain name: localdomain
  Time zone: (GMT-08:00) Pacific Time (US and Canada)
  Use UTC: Unchecked
  Root-Password: hitachi00
  Use Linux installation screen: Unchecked
  Add kernel parameter for installation: Unchecked

15. Select window for target disk or partition where installed OS is displayed.

– Windows selected on step 14
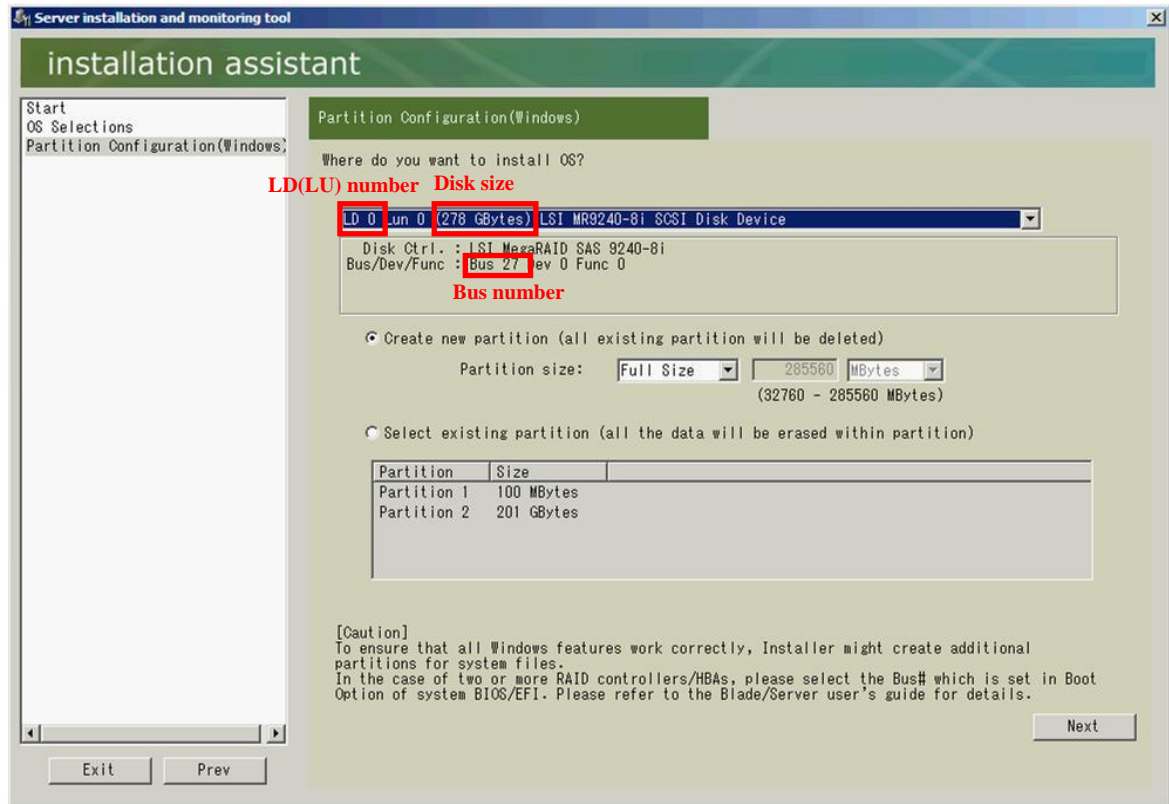
Select the target disk or partition where Windows Server is installed, and then click **Next**.

! Note	• When creating logical drives during OS installation, it is recommended to create logical drives only for OS to prevent operation errors, and then create logical drives other than OS after the installation.
	• When multiple disks are displayed, the order and their numbers of the displayed disks are always changeable and not fixed. The target disk for installation should be determined with its size, not with the order or its number of the disk.
	• When multiple disks have the same size, the target disk should be determined with the LD (LU) number.
	• The data of a disk or a partition without OS installed is not deleted.
	• Multiboot configuration cannot be created by installing multiple operating systems.

Tip

- For BIOS boot and UEFI boot, another partition may be respectively created except for the one for OS installation. These partitions are referred to as system partitions. See the following URL for more details:

  http://technet.microsoft.com/en-us/library/dd799232(WS.10).aspx

- The partitions must not be created with the size smaller than the minimum of each OS requirement. For more details, see the following URLs:

  WindowsServer2008

  http://technet.microsoft.com/en-us/windowsserver/bb414778.aspx

  WindowsServer2008 R2

  http://technet.microsoft.com/en-us/evalcenter/dd459137.aspx

  WindowsServer2012

  http://technet.microsoft.com/en-us/library/jj134246

  WindowsServer2012 R2

  http://technet.microsoft.com/en-us/library/dn303418.aspx

– Red Hat Enterprise Linux selected on step 14
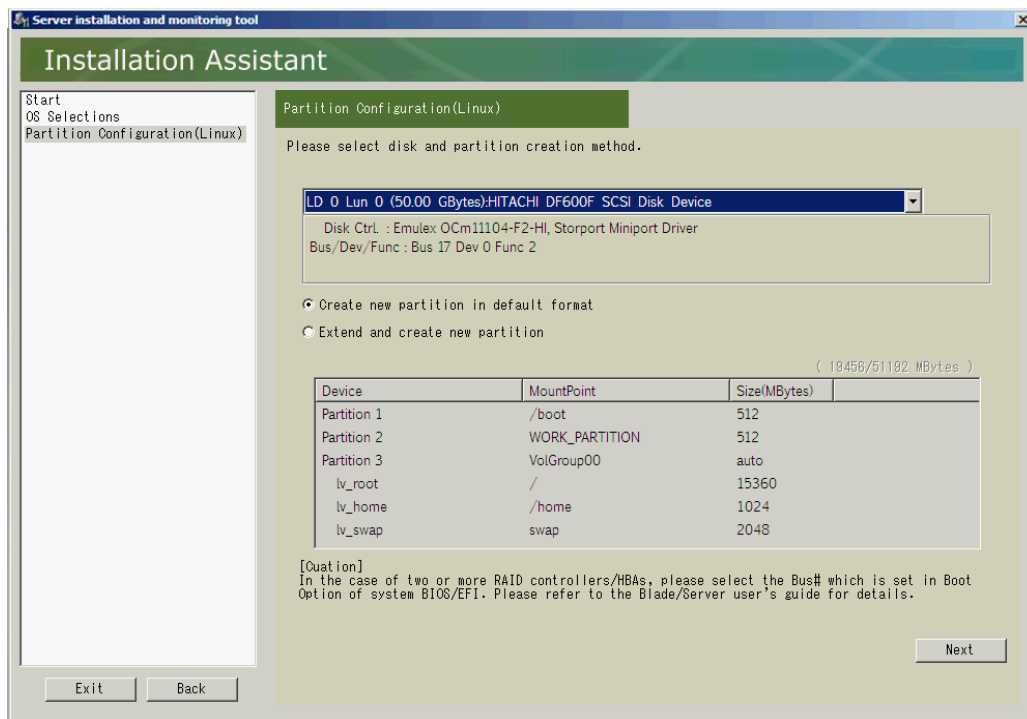
Select a disk for installing Red Hat Enterprise Linux Server, create a partition, and click **Next**.

When selecting **Extend and create new partition** on the window, you can change the size of a partition to create by double-clicking a number in the Size (MBytes) column. However, it is not available to add or remove MountPoint, to change LVM configuration, and the order of partitions.

	• When creating logical drives during OS installation, it is recommended to create logical drives only for OS to prevent operation errors, and then create logical drives other than OS after the installation.
Note	• When multiple disks are displayed, the order and their numbers of the displayed disks are always changeable and not fixed. The target disk for installation should be determined with its size, not with the order or its number of the disk.
	• When multiple disks have the same size, the target disk should be determined with the LD (LU) number.
	• When two or more RAID controllers/HBAs are installed, select a bus number specified in the System BIOS/EFI Boot Option. For more details, see the chapter "System BIOS/EFI" of *Hitachi Compute Blade/Hitachi Compute Rack (BIOS/EFI) User's Guide.*
	• If a wrong disk or partition is selected as a target, the existent partition with the existing data may be deleted.
	• The data of a disk or a partition without OS installed is not deleted.
	• Multiboot configuration cannot be created by installing multiple operating systems.

When "Create new partition in default format" is selected, each partition is created with the fixed size.

For RHEL 6.6
- BIOS boot
```
Partition1        512 MB
      /boot       512 MB
Partition2     18,432 MB
      /         15,360 MB
      /home      1,024 MB
       swap      2,048 MB
```
- UEFI boot
```
Partition1        256 MB
      /boot/efi   256 MB
Partition2        512 MB
      /work       512 MB
Partition3     18,432 MB
      /         15,360 MB
      /home      1,024 MB
       swap      2,048 MB
```

Partitions may not be assigned in the order shown above. The partition order is fixed automatically by RHEL 6.6 installer.

For RHEL 6.4/6.5
- BIOS boot
```
Partition1        512 MB
      /boot       512 MB
Partition2        512 MB
       work       512 MB
Partition3     18,432 MB
      /         15,360 MB
      /home      1,024 MB
       swap      2,048 MB
```
- UEFI boot
```
Partition1        256 MB
      /boot/efi   256 MB
Partition2        512 MB
       work       512 MB
Partition3        512 MB
      /boot       512 MB
Partition4     18,432 MB
      /         15,360 MB
      /home      1,024 MB
       swap      2,048 MB
```

(*continued*)

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> **Tip** "Extend and create new partition" is available with Server installation and monitoring tool 02-11-E or later. When selecting "Extend and create new partition", you can specify a multiple of four for the partition size. If a vlaue other than multiples of four is specified, the specified value will be rounded up to the multiple of four.

16. Server setting window is displayed. When selecting **Easy Installation** on step 8, this window is not displayed.

– Windows selected on step 14

Set each value and then click **Next**.

- It is recommended that you use only Internet-standard characters in the computer name. The standard characters are the numbers from 0 through 9, uppercase and lowercase letters from A through Z, and the hyphen (-) character. Computer names cannot consist entirely of numbers. If suppression characters are used in the computer name, the installation fails.

  For more details, see the following URL:

  http://technet.microsoft.com/en-us/library/cc757496(v=ws.10).aspx

- You can create passwords that contain characters from one-byte alphabets, numerals, and symbols. If 2-byte characters are used in the password, the installation has been completed, while the login is disabled.

  For more details, see the following URL:

  http://technet.microsoft.com/en-us/library/cc756109(v=ws.10).aspx

    – Red Hat Enterprise Linux selected on step 14

Set each value and then click **Next**.

Note

- For a host name, the numbers from 0 through 9, uppercase and lowercase letters from A through Z, and the hyphen (-) character are available. Computer names cannot consist entirely of numbers. If suppression characters are used in the computer name, the installation fails.
- For a domain name, the numbers from 0 through 9, uppercase and lowercase letters from A through Z, and the hyphen (-) character are available. Domain names cannot consist entirely of numbers. If suppression characters are used in the domain name, the installation fails.
- The characters that can be used for a password are one-byte alphabets, numerals and symbols.
  However, if the symbols such as a space or 2-byte characters are used, a setup may not be completed or you cannot log in even if the setup was complete.
  The default value of the password is "hitachi00".
  We recommend you to execute the setup by the default value and change the password after completing the setup.
- When "Use the Linux installation window." is checked, you can select different software as options with the following restrictions.
  – On the window describing "What type of devices will your installation involve?", do not change any settings on the window.
  – On the window describing "Which type of installation would you like?", make sure not to check "Encrypt system". For RHEL 6.4 or RHEL 6.5, select **Use All Space** instead of the default: Replace Existing Linux System (s), and do not change any other settings including partition configuration after installation. If you do, the OS will not be installed correctly.
  – On the window describing "The default installation of Red Hat Enterprise Linux is a basic server install. You can optionally select a different set of software now.", do not clear any boxes checked by default while you can select packages to install.
  – Do not check "FCoE Storage Client" in "Base System". If you continue to install the OS with "FCoE Storage Client" checked, the installation may not be completed.

Note

Unless otherwise specified, do not check "Add kernel parameter at installation".

17. Utility selection window is displayed. If **Easy Installation** is selected on step 8, then this window is not displayed.
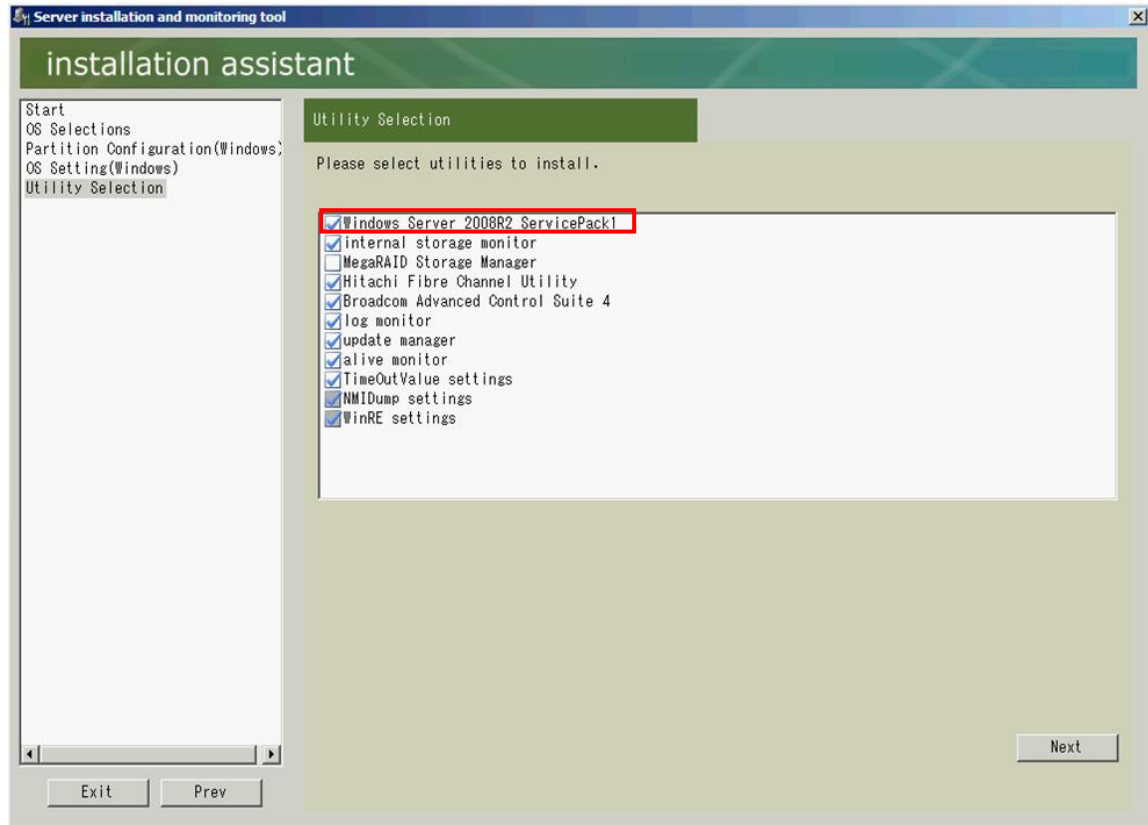
Check the checkbox for the utility to be installed, and then click **Next**.

| Note | • When selecting Windows on step 14 and using the media (Slipstream media) with Service Pack applied, uncheck the checkbox for the target Service Pack, and then proceed with the installation. See the window above. |
| | • With Server installation and monitoring tool version 02-10-E or later, essential utilities cannot be unchecked. |

| Tip | • For details about each utility and more information about utilities that can be automatically installed when selecting **Easy Installation** on step 10, see page 2-58 "How to use associated software". |
| | • When each utility is installed separately, see the corresponding manual stored on manual CDs or other media. |

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Note

When you select Windows on step 14 and use "LSI Software RAID", the utility must be installed with checking **SWRSET.** See the window below:

Unless the utility is installed, RAID setting of "LSI Software RAID" cannot be created correctly and may not operate properly.
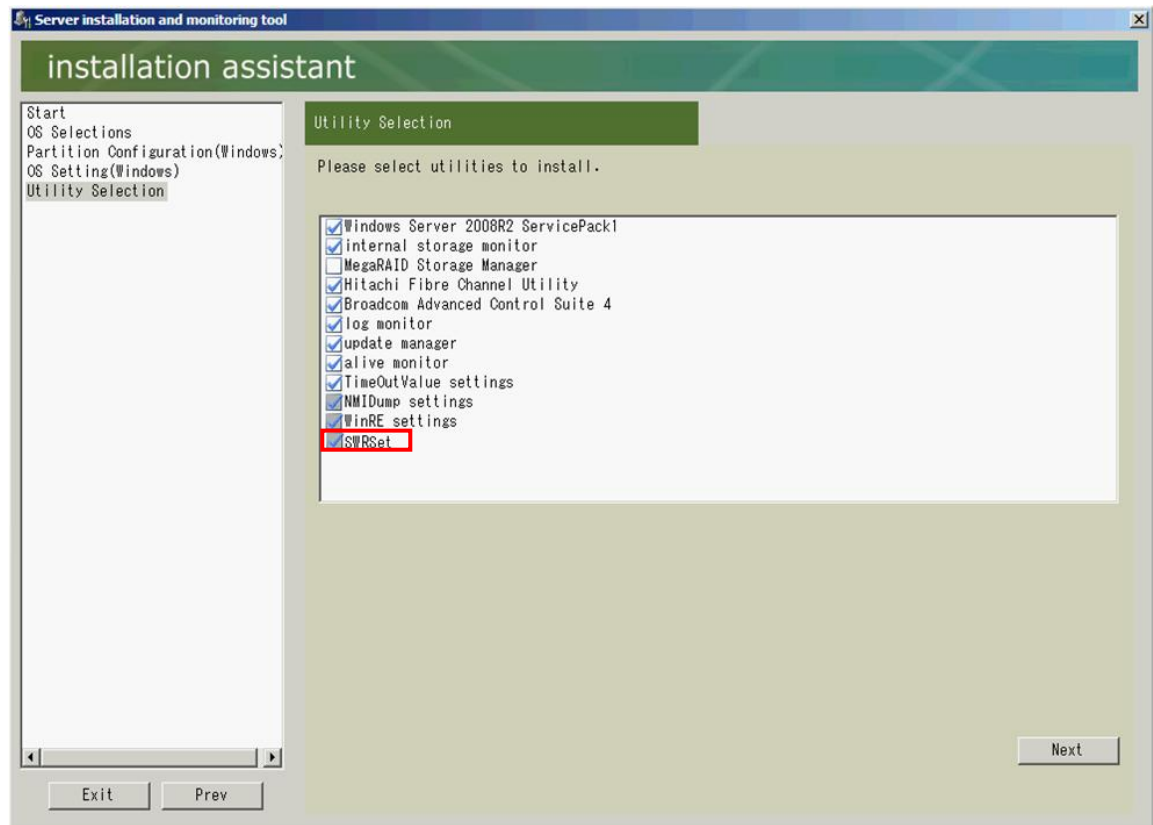
18. Confirmation window is displayed.
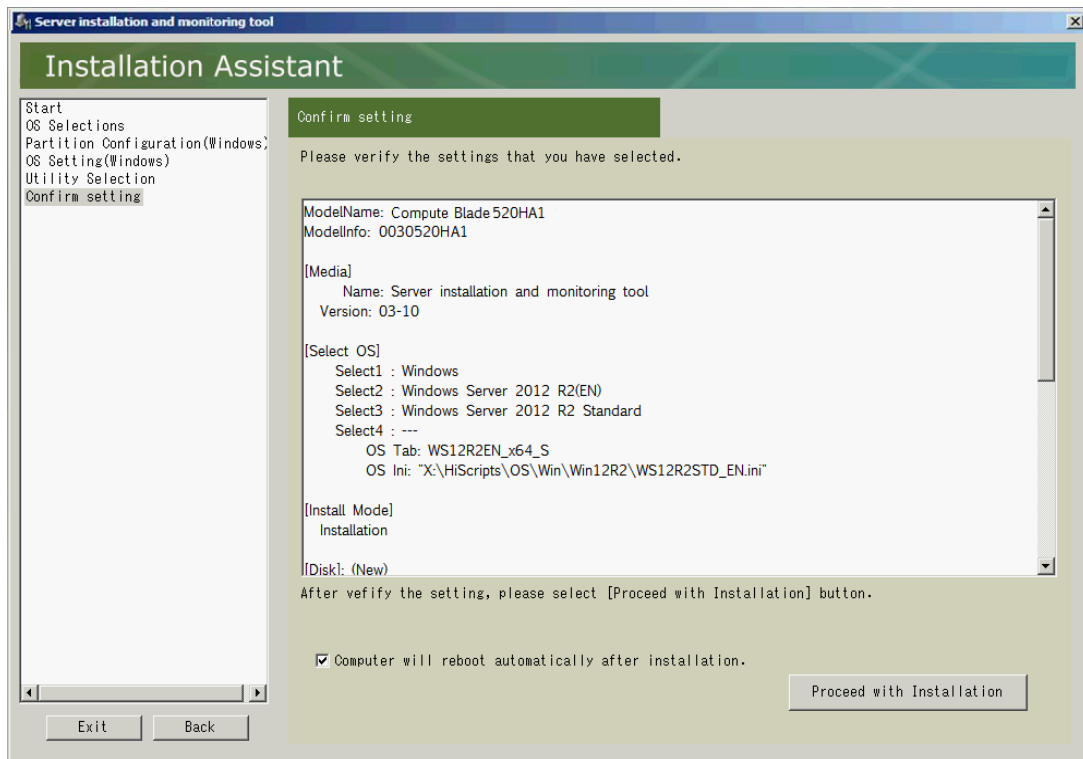
Confirm the contents, and click **Proceed with Installation**.

Tip

When selecting **Computer will reboot automatically after installation**, the reboot can be performed automatically as requested.

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19. Final Confirmation window is displayed.
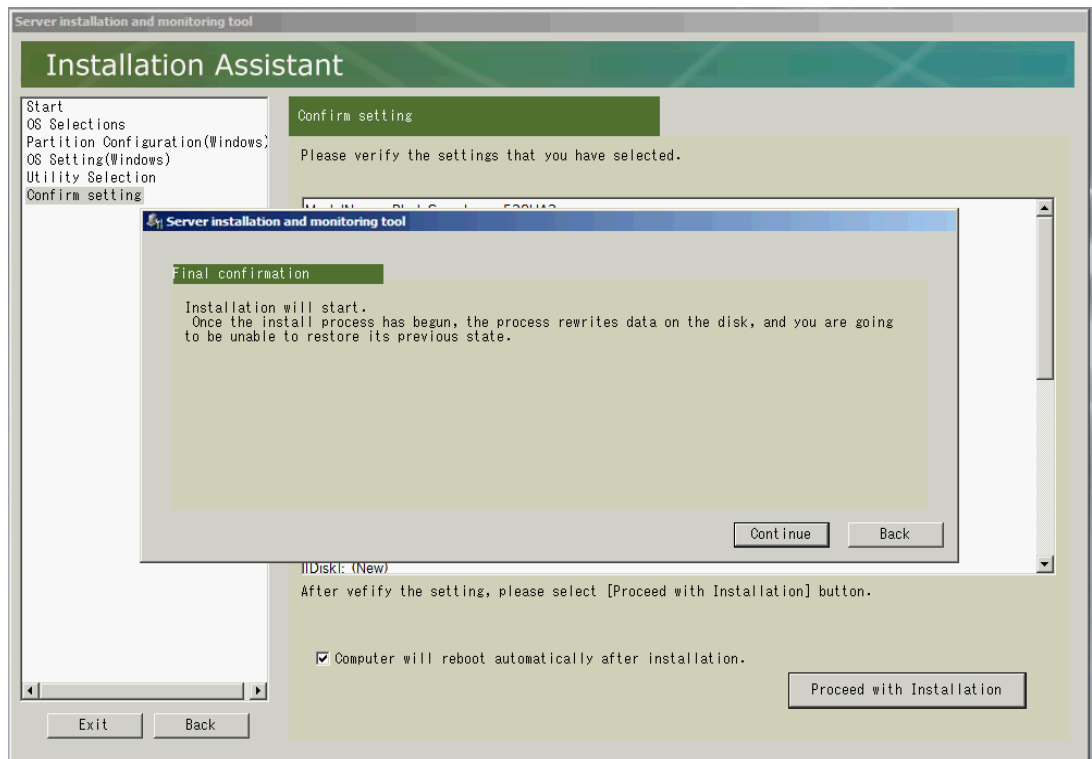
Confirm the contents, and then click **Continue**.

20. Replace Media window is displayed.

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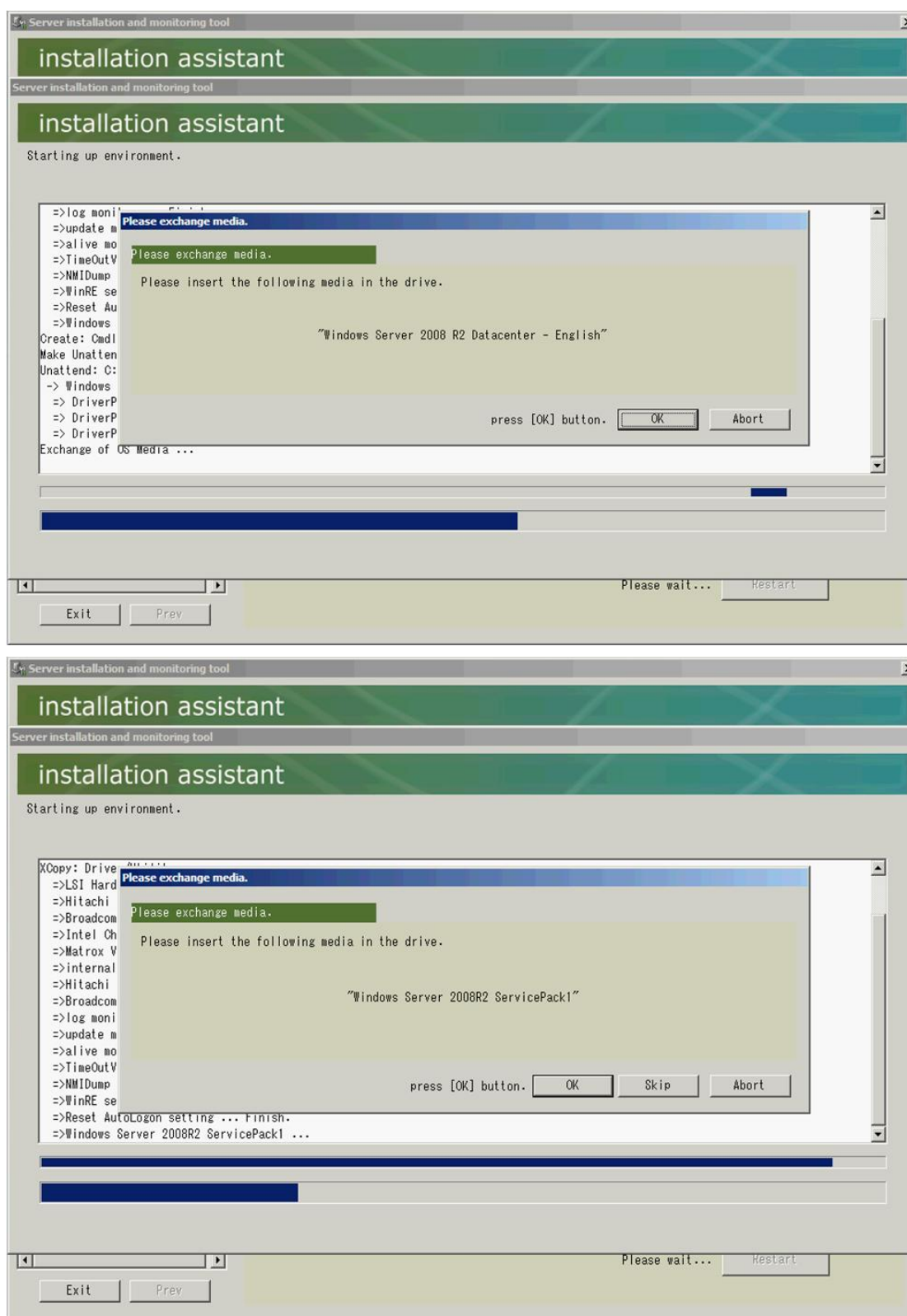
Replace with the media requested in the window to eject "Hitachi Compute Blade Series/Hitachi Compute Rack Series Server installation and monitoring tool" DVD media from DVD drive window, and then click **OK**.

Replace Media window may be displayed several times. Replace the media as requested.

When using slipstream media, to which Service Pack has been applied, with Server installation and monitoring tool version 02-10-E or later, click **Skip** on the window describing "Please exchange media."

21. Software License Agreement is displayed.
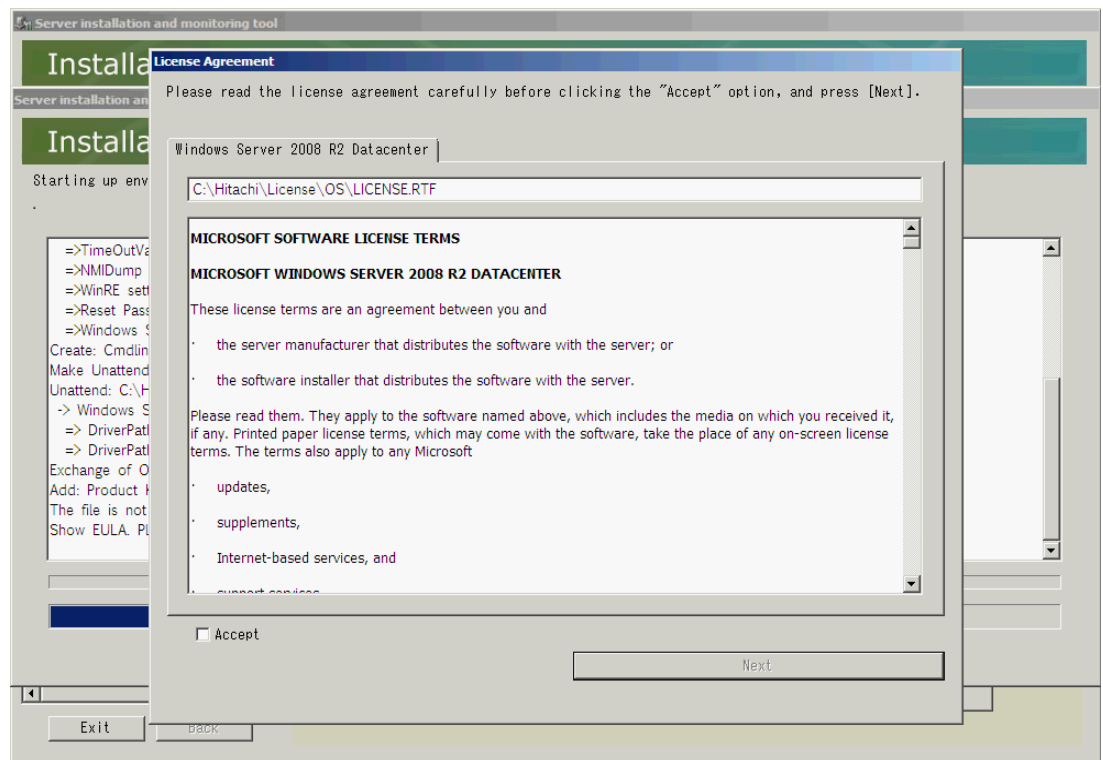
Confirm the contents. If no problem has been found, check the check box for **Accept**, and then click **Next**.

This window does not appear if not necessary.

22.OS installation starts.

OS, drivers, and utilities are automatically installed, and then OS setup is completed.

| Note | Do not take out the OS media during installation. If you do, installation fails. |
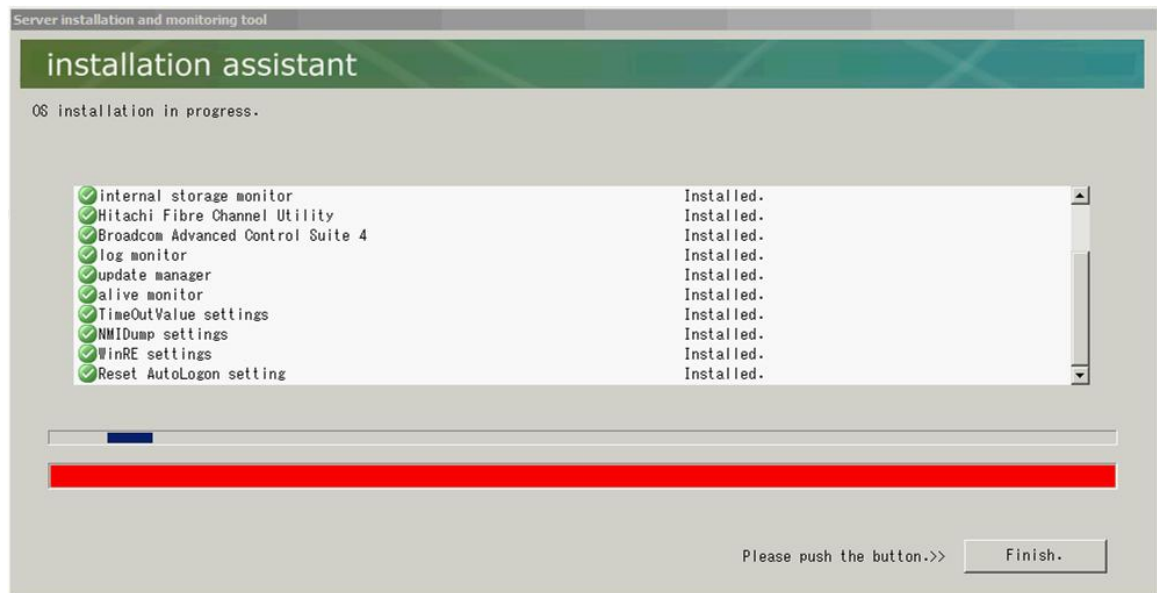
Check the contents shown on the window, and then click **Finish**.

	You can remove the media after the OS is completely installed.
Tip	If the OS media is not removed when you click **Finish**, the following message appears. Remove the media and click **OK**. When still using the media, you can click **OK** with the media in the drive.
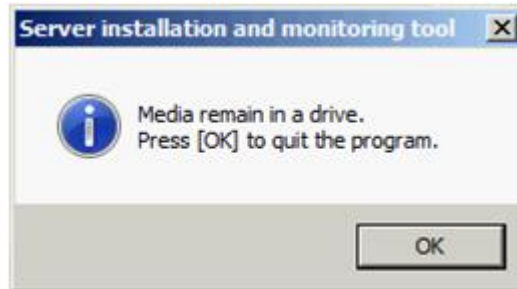
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Media remain in a drive.
Press [OK] to quit the program.

OK

	• When selecting **Computer will reboot automatically after installation** on the <u>step 18</u>, the window as below is displayed and the reboot can be started automatically after the countdown timer times out.
Tip	• When clicking **Restart** during the countdown time flame, the reboot can be started immediately.
	• If you do not want to reboot automatically, uncheck the check box for **Computer will reboot automatically after installation** during the countdown time flame. Thereafter if you want to reboot, then click **Restart** to start the reboot.

Tip

After starting the reboot, the window below has been disappeared automatically, and then the OS installation has been completed after a period of time

Note
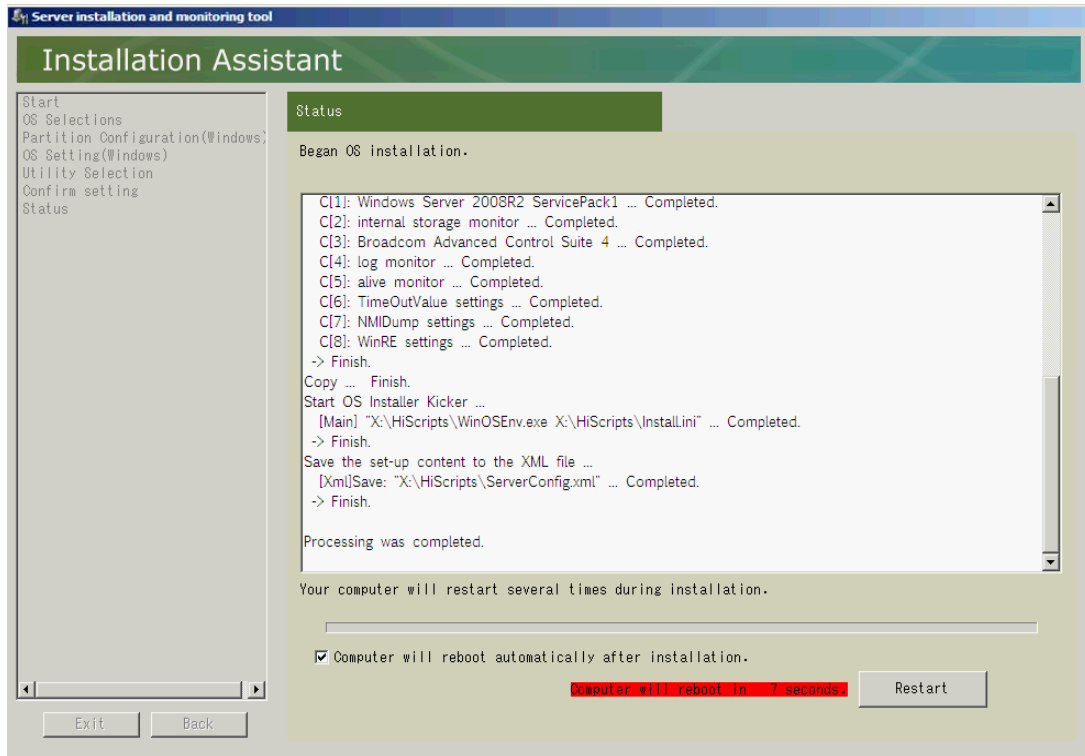
When Windows is selected on step 14, **Computer must be restarted for these changes to take effect.** may be displayed in the pop-up window during Service Pack installation. The installation is proceeding properly and completed successfully without clicking the button in the pop-up window.
When the message is displayed, **Reboot now** button in the pop-up window must not be clicked. If **Reboot now** button is clicked, the re-installation is required from the beginning.

When not selecting **Computer will reboot automatically after installation** on the step 18, the window as below is displayed. When clicking **Restart**, the reboot can be started immediately. After starting the reboot, the window below has been disappeared automatically, and then the OS installation has been completed after a period of time.

Server installation and monitoring tool OS Setup Guide
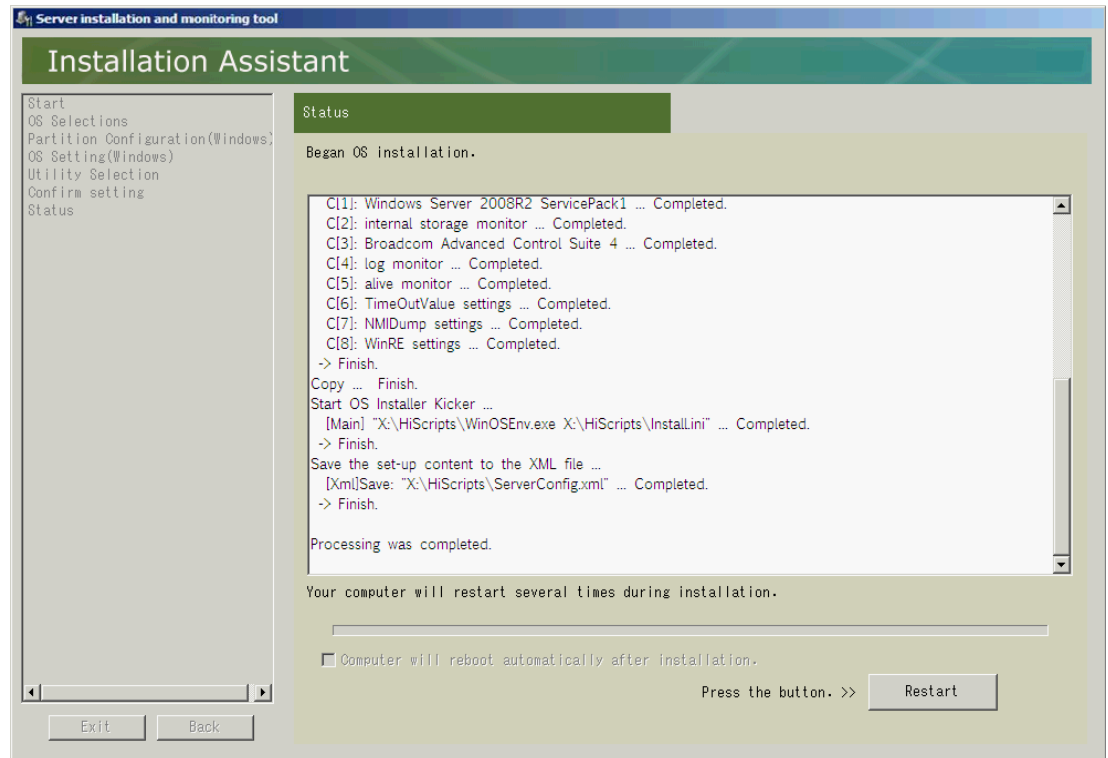
	When setting up in LP mode with CB 500, is added to Server installation and monitoring tool and Error is shown on the following window displayed after reboot. This shows that installing utilities not running in LP mode has been automatically prevented. You can keep on setting up with ignoring this message. In a while, the OS is completely set up.
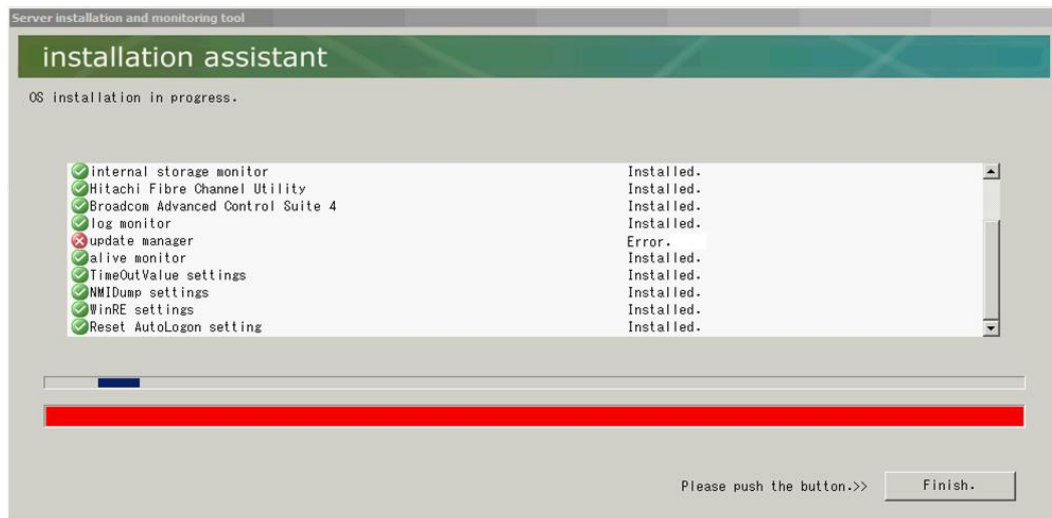
23. Only when Windows is selected on step 14, make sure to apply required OS update modules. See [Notes and Restrictions on using each OS](#) for details.

	When installing the OS in the LP mode, the additional setting is required after the OS installation. See also "Notes and Restrictions only for LPAR manager", which provides the notes and restrictions on the installed OS and the model, in Chapter 3 "Notes and Restrictions on using each OS".

	■ Information on what you have selected from step 14 through step 17 is contained in the following file after the setup. Windows c:\Hitachi\ServerConfig.xml RHEL /root/Hitachi/ServerConfig.xml ■ To confirm the installation result of the utility after completing the setup of RHEL, see the following file. /root/hitachi_utilities_[yyyymmddhhmmss].log

OS installation procedures in LP mode

When using the server blade in the LP mode, the following preparations are required.

Note
The required preparation flows and the procedures for setting boot order are different depending on the model of server blade or the firmware version of management module. See the procedures for your model or the firmware version of the management module.

- **Compute Blade 2500**
  - Setting LPAR manager

  Select LPAR manager firmware, configure LPAR manager initial settings, and boot the LPAR manager. For details, see *Getting Started Guide.*

  - Creating LPARs

  Create LPARs. For details, see Logical partitioning manager User Guide.

Tip
When you install or use the OS, the recommended LPAR configurations are shown in the table below. Assign resources to LPARs according to the usage and environment.

Settings	Recommended values
Processor	2 or more[1]
Memory	2.0 GB or more[2]
Disk	80 GB or more for Windows Server 2012/R2[3] 40 GB or more for Windows Server 2008 R2[3] 40 GB or more for Red Hat Enterprise Linux 6[3]
Network	At least one Virtual NIC or more
1. The minimum number is 1.	
2. The minimum memory is 1.0 GB for each processor.	
3. The minimum memory is 32 GB for Windows Server 2008 R2/Windows Server 2012/Windows Server 2012 R2, and 23 GB for Red Hat Enterprise Linux 6.	

  - Saving configuration information

  Save configuration information. For details, see *Logical partitioning manager User Guide.*

– Booting LPARs

Boot LPARs. For details, see Logical partitioning manager User Guide.

– Setting boot order

Perform boot setting, boot option creation, boot order change on LPARs. For details, see *Logical partitioning manager User Guide*.

··· **Tip**	When using a shared fibre channel for boot device, the boot may not be successfully completed depending on the number of LPARs assigned to the shared fibre channel. If this is the case, this symptom can be avoided by the extension of LOGIN DELAY TIME that is an operation parameter for fibre channel switch module. For more details, see *HITACHI Gigabit Fibre Channel Adapter User's Guide (for BIOS/EFI)*.

Then, go on to to proceed with setup.

- **Compute Blade 500**
    - – Setting LPAR manager

    Set up LPAR manager firmware selection, LPAR manager initial setting, and LPAR manager booting. For more details, see *Server Blade Setup Guide.*

    - – Creating LPARs

    Create LPARs. For more details, see *Server Blade Setup Guide.*

Settings	**Recommended values**
Processor	2 or more[1]
Memory	2.0 GB or more[2]
Disk	80 GB or more for Windows Server 2012/R2[3] 40 GB or more for Windows Server 2008/R2[3] 40 GB or more for Red Hat Enterprise Linux 6[3]
Network	At least one Virtual NIC or more
1. The minimum number is 1.	
2. The minimum memory is 1.0 GB for each processor.	
3. The minimum memory is 40 GB for Windows Server 2008, 32 GB for Windows Server 2008 R2/ Windows Server 2012/Windows Server 2012 R2, and 23 GB for Red Hat Enterprise Linux 6.	

When installing and using OS, the recommended LPAR configurations are shown in the table below: The resources to be assigned to LPARs must be adjusted according to the usage and environment.

- – Storing configuration information

Store configuration information. For more details, see *Server Blade Setup Guide.*

- – Booting LPARs

Boot LPARs. For more details, see *Server Blade Setup Guide.*

- – Setting boot order

Perform boot setting, boot option creation, boot order change on LPARs.

- • For Management module firmware version A0124 or earlier, see *Logical partitioning manager User's Guide* for details.
- • For Management module firmware version A0125 or later, see *Server Blade Setup Guide* for details.

When using a shared fibre channel for boot device, the boot may be successfully completed depending on the number of LPARs to be assigned to the shared fibre channel. If this is the case, this symptom can be avoided by the extension of LOGIN DELAY TIME that is an operation parameter for fibre channel switch module. For more details, see *HITACHI Gigabit Fibre Channel Adapter User's Guide (for BIOS/EFI)*.

For the subsequent steps, see page step 5 or later.

- **Compute Blade 2000**

    – Setting LPAR manager

    Set up LPAR manager firmware selection, LPAR manager initial setting, and LPAR manager booting. For more details, see *User's Guide*.

    – Creating LPARs

    Create LPARs. For more details, see *User's Guide*.

When using exclusive assignment with Broadcom NIC on Windows Server 2008 R2/2012/2012 R2 using X55R3/X55S3/X55R4 model, set the assigned number of processors to four or more. For Server installation and monitoring tool version 03-10-E or later, assigning less than four processors is not a problem.

When installing and using OS, the recommended LPAR configurations are shown in the table below: The resources to be assigned to LPARs must be adjusted according to the usage and environment.

Settings	Recommended values
Processor	2 or more[1]
Memory	2.0 GB or more[2]
Disk	80 GB or more for Windows Server 2012/R2[3]
	40 GB or more for Windows Server 2008/R2[3]
	40 GB or more for Red Hat Enterprise Linux 6[3]
Network	At least one Virtual NIC or more
1. The minimum number is 1.	
2. The minimum memory is 1.0 GB for each processor.	
3. The minimum memory is 40 GB for Windows Server 2008, 32 GB for Windows Server 2008 R2/ Windows Server 2012/ Windows Server 2012 R2, and 23 GB for Red Hat Enterprise Linux 6.	

– Storing configuration information

Store configuration information. For more details, see *User's Guide.*

– Booting LPARs

Boot LPARs. For more details, see *User's Guide*.

– Setting boot order

Perform boot setting, boot option creation, boot order change on LPARs.
For more details, see *User's Guide*.

When using a shared fibre channel for boot device, the boot may be successfully completed depending on the number of LPARs to be assigned to the shared fibre channel.

If this is the case, this symptom can be avoided by the extension of LOGIN DELAY TIME that is an operation parameter for fibre channel switch module. For more details, see *HITACHI Gigabit Fibre Channel Adapter User's Guide (for BIOS/EFI).*

For the subsequent steps, see step 5 or later.

How to use associated software

For more information about the list of associated software that is installed during OS setup using "Hitachi Compute Blade Series/Hitachi Compute Rack Series Server installation and monitoring tool" DVD media, see **Support_EN.html** stored on "Hitachi Compute Blade Series/Hitachi Compute Rack Series Server installation and monitoring tool" DVD media.

For more details about how to use each of software, see each manual on the manual CDs.

3

Notes and Restrictions on using each OS

This chapter explains the notes and restrictions on using each OS.

☐ Notes and Restrictions on using Windows Server 2012 R2

☐ Notes and Restrictions on using Windows Server 2012

☐ Notes and Restrictions on using Windows Server 2008 R2

☐ Notes and Restrictions on using Windows Server 2008

☐ Notes and Restrictions on using Red Hat Enterprise Linux Server 6.4/6.5/6.6

Notes and Restrictions on using Windows Server 2012 R2

This section describes the restrictions when you use Windows Server 2012 R2.

- **Windows Server 2012 R2 update modules**

  If not with the following OS update modules installed, make sure to apply OS update modules required for your system.

Update	URL for update module
Update module required for Windows Server 2012 R2 : April 2014 before KB2919355	http://support.microsoft.com/kb/2919442
Fixes problems such as unrecognized storage device. Apply the module before applying Windows Server 2012 R2 Update : April 2014 (KB2919355).	http://support.microsoft.com/kb/2966870
Windows Server 2012 R2 Update : April 2014 Apply KB2919442 and KB2966870 before applying KB2919355.	http://support.microsoft.com/kb/2919355
Windows Server 2012 R2 November 2014. Applying KB2919355 in advance is required before applying this update module.	http://support.microsoft.com/kb/3000850
Corrects the problem that a dump may not be acquired. Applying KB2919355 in advance is required before applying this update module.	http://support.microsoft.com/kb/3027113

- **Common notes and restrictions for system units**

  – **The number of processors to be recognized by Windows Server 2012 R2**

  The number of processors that OS can recognize has the following restrictions.

Edition	Maximum number of sockets	Maximum number of logical processors
Windows Server 2012 R2 Standard	64	640
Windows Server 2012 R2 Datacenter	64	640

The table above shows the restrictions for Windows Server 2012 R2 and the supported numbers are different depending on the system unit.

Notes and Restrictions on using each OS

Server installation and monitoring tool OS Setup Guide

– **Physical memory capacity**

The memory capacity that OS can recognize has the following restrictions:

Edition	Memory capacity
Windows Server 2012 R2 Standard	4 TB
Windows Server 2012 R2 Datacenter	4 TB

The table above shows the restrictions for Windows Server 2012 R2 and the supported memory capacities are different depending on the system unit.

– **Server Core**

When using Server Core, complete the OS installation or setup of each of associated software on the fully installed GUI server, and then convert to Server Core. For more details about how to convert, see the following URL:

http://technet.microsoft.com/en-us/library/hh831786.aspx

Some applications and middleware provide the notes when you use Server Core. Please contact the supplier of each application for more details.

– **Update Rollup**

Installing Windows Server 2012 R2 with some of the OS installation media provided by Microsoft includes the update rollup, KB2883200, KB2894029, KB2894179, in the installation. Visit the following URL for details about Update Rollup.

http://support.microsoft.com/kb/2883200

Make sure to install the rollup package if setting up Windows Server 2012 R2 with media not including the update rollup.

– **Windows Server 2012 R2 Update : April 2014**

Make sure to apply Windows Server 2012 R2 Update : April 2014 (KB2919355). If not, OS update modules following it cannot be applied. You also need to apply KB2919442 and KB2966870 before applying KB2919355. See the following URL for details.

http://support.microsoft.com/kb/2919442

http://support.microsoft.com/kb/2966870

http://support.microsoft.com/kb/2919355

– **Shutting down Windows Server**

When shutting down Windows before the services that are registered to start automatically at Windows startup are not successfully activated, the shutdown may not be completed properly.

You must shut down or reboot Windows more than five minutes after starting Windows.

– **Repair your computer**

Windows Recovery Environment (hereinafter referred to as Windows RE) cannot be started on some OS installation media by clicking **Repair your computer** displayed in the window during processing. See the following URL for details:

http://support.microsoft.com/kb/951495

– **Creating backup files**

Windows Server Backup does not support backing up to tape media. When backing up data to tape media, the backup software must be purchased separately.

The backing up to DVD media with Windows Server Backup is also not supported.

– **Displaying Window**

After switching the window display for changing tasks, the previous display may remain depending on the timing. In such a case, redraw the point in question to display properly. Depending on the status of use, the message box may be hidden behind other windows.

A window may remain displayed after stopping the movie on some movie applications. When the phenomenon occurs, change windows such as by maximizing another window.

– **Functioning power saving**

The power supply options of "Sleep", "Hybrid Sleep", and "Hibernate" are not supported. These settings must not be created.

Power Option is set as **Balanced** by default. When you need high performance, **High Performance** is recommendable.

– **Setting recovery operation after Bug Checks (Blue Screens) errors**

When you get Bug Checks (Blue Screens) due to system errors, the setting to disable the automatic system restart is available.

The setting must be changed according to your environment.

1. Click **Start** > **Control Panel** to open Control Panel.
2. Click System and Security > System > Advanced system settings, and open System Properties.
3. Click Settings in Startup and Recovery on Advanced tab, and then open Startup and Recovery.
4. Uncheck the checkbox for **Automatically restart**, and click **OK**.

– **Setting "virtual memory" size**

When you use "virtual memory" to get the complete memory dump, set the "virtual memory" file size to a size greater than the physical memory size. If you try to set the file size of the "virtual memory" smaller than the physical memory, a warning message, "**If the paging file is disabled or the virtual memory's initial page size is smaller than *xxx* MB, system error can occur and useful information to identify the problem cannot be saved. Do you like to continue?"** is displayed. Set the file size to greater than *xxx* MB.

When you use "virtual memory" to get the kernel memory dump, the kernel memory dump may not be properly collected if the virtual memory size is not enough.

– **Write-caching policy**

When using a model with embedded RAID, do not change the checkbox state for **Enable write caching on the device**, Write-caching policy, Policies tab on Properties window of the disk drive connected to the RAID. If you change the checkbox state on the OS, hardware settings for the RAID may be changed and the RAID may not work properly. You can open Properties window of each disk drive from Device Manager or Disk Management.

For Write-caching policy, enable it on RAID hardware configuration.

– **Checking Event viewer logs**

The following error events may be logged in the event log. .

Event type	Event ID	Event source	Description	Effects	Remarks
Warning	6004	Winlogon	The Winlogon notification subscriber <TrustedInstaller> failed a critical notification event.	You can safely ignore this event.	It may be logged in the event when a role/feature is being added or an update module is being applied.
Error	10010	Microsoft-Windows-Distributed COM	The server {XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXX} did not register with DCOM within required timeout period. (A numeral enclosed in braces ({ }) represents a specific GUID for DCOM server component.)	You can safely ignore this event.	The following errors may be recorded in the event log during a startup of OS or a shutdown. See the following URL for details. http://support.microsoft.com/kb/956479
Error	10149	Microsoft-Windows-WinRM	WinRM service does not listen to WS-Management requirements. If the service is not stopped intentionally, make sure of WinRM configuration using the following command: winrm enumerate winrm/config/listener	You can safely ignore this event.	It may be logged in the event log during OS shutdown.
Warning	1530	User Profile Service	Registry file is used for the other applications or services. The file can be unloaded immediately. The applications or services that retain the Registry files may not operate properly subsequently.	You can safely ignore this event.	It may be logged in the event log during OS shutdown.
Error	46	volmgr	The crash dump could not be initialized.	You can safely ignore this event.	It may be logged only once in the event log during the OS installation.
Error	7023	Service Control Manager	IP Helper Service has finished with the following error.	You can safely ignore this event.	It may be logged only once in the event log during the OS installation.
Error	49	volmgr	Configuring the Page file for crash dump failed. Make sure there is a page file on the boot partition and that is large enough to contain all physical memory.	Recommended Page file size by Windows varies depending on the physical memory. When the c: drive capacity or space cannot satisfy the recommended size, this event is recorded. Though there is no problem with the usual OS operation, complete memory dump cannot be obtained. When large physical memory is required, set the c: drive to a larger size in advance.	It may be logged in the event log during OS startup.

Event type	Event ID	Event source	Description	Effects	Remarks
Error	4202	Microsoft-Windows-Iphlpsvc	The IP address on Isatap interface isatap.{8E208284-65BF-43D8-92DD-89FFAAF47DF0} could not be updated. Update type: 0. Error code: 0x57. (A numeral (GUID) enclosed in braces ({ }) may be different depending on your environment.)	You can safely ignore this event.	It may be logged in the event log when network adapter settings are changed or the adapter links down.
Warning or Error	XXXX (XXXX represents any numeral)	Microsoft-Windows-WHEA-Logger	XXXX (XXXX represents any description.)		Microsoft-Windows-WHEA-Logger events are logs related to the hardware error. If the event level is "warning", the event log is negligible since it can be modified automatically. If the event level is "error", contact the supplier.
Warning	1058	Microsoft-Windows-Security-SPP	Installation of the Proof of Purchase from ACPI table failed. Error code: 0xC004F057	You can safely ignore this event.	

    − **NIC teaming and VLAN**

When creating NIC teaming and VLAN on Windows Server 2012 R2, OS standard NIC teaming function must be used. OS standard NIC teaming function has the following notes and restrictions:

- Create a team only among the adapters with the same vendor and the same speed. If the team is created among adapters with different vendors and different speeds, it may not operate properly. Whether the adapters have the same vendor can be determined by **Description** indicated according to the following steps: Open **NIC teaming** window > select **Adapter and interface** > Right-click the target adapter > select **Properties** > **Description** is displayed in the window.

- When link-down occurs on the LAN device, the operation is switched to another LAN device. It requires some time to switch the team. When connection errors occur without link-down associated, the team is not switched.

- When you create teams or VLANs, and change the settings, the communication may be interrupted through all network adapters and some errors may be logged in OS event logs before the settings take effect.

– **Restrictions on changing network adapter parameters**

When the network adapter settings have been changed, the communication may be interrupted through all network adapters and some errors may be logged in OS event logs before the settings take effect. After changing the settings, make sure that the communication is performed properly before using the adapter.

After the setting of a network adapter has been changed, the communication may not be performed properly through that network adapter. Find the network adapter whose setting has been changed on the Device Manager. If "!" mark is displayed, right-click the target adapter to disable it, and then enable it again. When rebooting the OS, you can use the adapter.

– **Network name**

The name defined for each system unit is displayed as a network name in **Network connection** window on the system unit supporting **Consistent Device Naming (CDN)**.

CDN is supported by the following models or later:

Compute Rack: CR 220S

Tip

CDN has been supported only by onboard LAN device on the Compute Rack. The onboard LAN device is indicated as [LAN "X"], "X" of which represents the number indicated on the physical port in the onboard LAN device.

Compute Blade 2000:

X55R3/X55S3 model (EFI firmware 09-51/10-51 or later)

X57A2 model (EFI firmware 07-49/08-49 or later)

Note

When using LPAR manager, also make sure that the following conditions are met:
  LPAR manager firmware 59-20 or later (X55R3/X55S3 model)
  LPAR manager firmware 59-51 or later (X55R4 model)
  LPAR manager firmware 79-20 or later (X57A2 model)

	All LAN devices on the Compute Blade 2000 have supported CDN and they are indicated as the following:

Tip

All LAN devices on the Compute Blade 2000 have supported CDN and they are indicated as the following:

- Onboard LAN:

  Onboard LAN "A"-0 Func "B"

- Server Blade built-in mezzanine card:

  Mezzanine card "A"-"C"-"D" Func "B" "E" port "F"

- PCIe expansion board (when installed in I/O board module slot on the rear of the system unit):

  I_O board module Slot "A"-"G" Func "B" "E" port "F"

- PCIe expansion board (when installed in I/O expansion slot):

  PCIe expander "A"-"H" Slot "I" Func "B" "E" port "F"

- Shared NIC and virtual NIC (for LPAR manager):

  Virtual NIC "J"

"A" indicates the blade number. It indicates zero (0) when SMP connection is Not created between server blades, whereas when SMP is created between server blades, it indicates zero (0) on primary server blade and 1 to 3 on non-primary server blades.

"B" indicates the function number when a card other than 4-port 1G LAN expansion card is installed, whereas it indicates zero (0) when 4-port 1Gb LAN expansion card is installed.

"C" indicates the expansion card slot number.

"D" indicates 1 when 1Gb LAN mezzanine card is installed, and the corresponding root port number (0/1) when 10 Gb LAN mezzanine card is installed.

"E" indicates the index number (no indication/2).

"F" indicates the port number (1/2) only when 4-port 1Gb LAN mezzanine card is installed. If not, nothing is displayed.

"G" indicates the corresponding I/O board module slot number (0/1) on the system unit.

"H" indicates the corresponding I/O board module slot number (0/1) on the system unit to which the connection board for the I/O slot expansion unit is installed.

"I" indicates the corresponding I/O board module slot number (0 to 7) on I/O slot expansion unit by the I/O module.

"J" indicates the Virtual NIC Number (0 to 15).

"Ethernet X" (X represents a numeral) is displayed as a network name on a system unit or a device that has not supported **CDN**. The number following "Ethernet" and the LAN device number displayed in the "device name" are independent of each other and not equal. In addition, the relationship between the number following "**Ethernet**" and the LAN port installed in the default configuration on the system unit is also independent of each other. For example, "**Ethernet**" (not followed by a number) is not consistent with LAN1 on the system unit.

Confirm the LAN device support before the first setting of the network. It is recommended to assign a name recognizable in your environment after confirming since the name is changeable.

– **Displaying event log of network adapter**

\DEVICE\ {354C76B6-E426-4CEB-8015-BF991BA8D75F} may be displayed instead of a network adapter name such as "Intel(R) 82576 Gigabit Dual Port Network Connection" or "Broadcom NetXtreme Gigabit Ethernet" in the event log description column for the network adapter. This symptom occurs due to the specification and does not affect the operation. The network adapter name and the numerals (GUID) enclosed in braces ({ }) may be different based on your environment.

– **Event log of network adapter during startup**

The error event may occur on a network adapter during system startup. The link-down may occur on the network adapter. The linkup event may be logged during system startup, whatever the actual link status of the network adapter may be. If the communication can be performed properly through the network adapter, these events should be negligible.

– **Using USB flash drive**

Operation of USB flash drives other than optional ones, FK802G, FK804G, and FK808G is not guaranteed. With a USB flash drive connected, the system unit must not be powered on or restarted. Connect the USB flash drive after the OS startup, and then make sure that drive letters for the other drives are not changed.

Do not connect a USB flash drive to the system unit at setup unless otherwise specified in this manual.

- **Restrictions for 10/100 Mbps half-duplex communications on network adapter**

When you set the communication speed to 10 Mbps half-duplex or 100 Mbps half-duplex on the network adapter with the name starting with "Intel" in Device Manager, the setting of **Large send offload (LSO) (IPv4)**, **Large send offload (LSO) (IPv6)**, and **Header Data Partition** must be disabled.

When opening Properties window of the target network adapter in Device Manager, select **Setting details** tab. Then **Large send offload (LSO) (IPv4)**, **Large send offload (LSO) (IPv6)**, and **Header Data Partition** must be set to **OFF**.

- **Using BitLocker Drive Encryption**

BitLocker Drive Encryption can be supported only with TPM (Trusted Platform Module). For more information about whether TPM has been installed on your system and how to enable it, see the manual for each system unit.

BitLocker Drive Encryption allows you to encrypt the drive, and therefore some applications and some middleware may not support this function or have restrictions on operation. Contact your reseller for details before use.

You must set BitLocker Drive Encryption disabled before the operations of the hardware maintenance or expansion.

Careful consideration should be given to managing "Recovery password". If you lose the "Recovery password", the OS startup or the data access may be disabled. Furthermore, the operations of the hardware maintenance or expansion may not be executed.

When the BitLocker Drive Encryption is enabled, overhead occurs due to the encryption or the decoding process. When you use the BitLocker Drive Encryption in the database that high performance is required, or in the Hyper-V 3.0 environment, the BitLocker Drive Encryption may not provide the expected performance. It is recommended to perform the system verification in advance and check to make sure it works properly.

- **Notes and restrictions only on using Compute Rack**
  - **Standard SATA AHCI controller**

The standard SATA AHCI controller may indicate "!" in Device Manager of the following model, which causes no problem in operation.

CR 220S

- **Notes and restrictions only on using Compute Blade 500**

None.

- **Notes and restrictions only on using LPAR manager for Compute Blade 2500/500**
  - **Disabled functions**

    The following functions are disabled on the guest OSs in the LP mode.
    - Hyper-V/VMware/Xen
    - Hot Add Memory
    - Hot Add Processors
    - Hot Replace Memory
    - Hot Replace Processors
    - Power supply option

  - **CB 520X**

    For CB 520X, the screen setting is fixed in the recommended value and not changeable: the resolution of 1024 by 768 pixels with 32-bit color.

  - **Link aggregation**

    Link aggregation Control Protocol (LACP) for NIC teaming function is not supported. When using Teaming, select a mode between Switch independent and Static teaming.

  - **Maximum MTU size**

    The following table describes the supported MTU size and the supportability in the LP mode when Jumbo Frames are used in the shared NIC or the virtual NIC mode.

Guest OS	MTU size	Supportability in LP mode
Windows	Off (1500 bytes)	✓
	9014 bytes	✓
	16128 bytes	-

    ✓: supported   -: Unsupported

  - **Network**
    - When creating teaming, a shared NIC, a virtual NIC, and a dedicated NIC cannot participate in the same team.
    - When creating teaming, the team cannot be configured with different types of drivers. The teaming should be created with the same type of drivers.
    - A shared NIC, a virtual NIC, and a dedicated NIC can be identified on Windows by the network adapter name as below:
      - Shared NIC and virtual NIC: Network adapter name starting with "Intel(R) 82576 Gigabit"

- Dedicated NIC: Network adapter name starting with other than mentioned above.

- **Network adapter**
  - Link Speed changes and Diagnostics are not available on the **Link Speed** tab. The link speed cannot be changed from 1 Gbps even if it is changed. For Diagnostics, performing Diagnostics causes Error.
  - On **Power Management** tab, use default values for all setting items. Even if each setting is changed on **Power Management** tab, these changes cannot take effect on the behaviors of shared NICs and virtual NICs.

- **Setting TCP/IP Checksum Offload function**

The onboard CNA and the LAN expansion card have a function that performs the checksum calculation for TCP/IP protocol through the LAN controller. However, use the TCP/IP checksum calculation function supported as a standard feature of the OS without using this function.

When the checksum calculation is set to perform through the OS, you can configure more reliable system by confirming the consistency of the packet data received from network in the final stage of OS protocol treatment. The network adapter setting must be changed.

If using Emulex 10 Gbps LAN expansion card, Emulex onboard CNA, or Emulex CNA board as Dedicated NIC or VF NIC; or if using Intel 10 Gbps LAN board, however, set default values to checksum offload items. If you set the calculation performed on the OS, transmission speed may be less than expected due to heavy load on CPU.

Configure offload settings on both NIC before teaming and the teaming interface.

The following steps show how to change the checksum calculation of the LAN controller through the OS.

1. Open the Control panel window, and click Hardware and Sound > Device Manager.
2. Right-click any network adapter, and then click **Properties (R)**.
3. Click **Advanced** tab to change the setting of each item as shown in the table below:

Setting Items	Shared NIC and virtual NIC	Dedicated NIC (1 Gbps)
IPSec Offload	Disabled	Disabled
IPv4 Checksum Offload	Disabled	Disabled
TCP Checksum Offload (IPv4)	Disabled	Disabled
TCP Checksum Offload (IPv6)	Disabled	Disabled
UDP Checksum Offload (IPv4)	Disabled	Disabled
UDP Checksum Offload (IPv6)	Disabled	Disabled

Setting Items	Shared NIC and virtual NIC	Dedicated NIC (1 Gbps)
Receive Side Scaling	Disabled	Disabled
Large send offload V2 (IPv4)	Disabled	Disabled
Large send offload V2 (IPv6)	Disabled	Disabled

Tip Some items may not be displayed depending on the types of network adapters. Create the settings only for the displayed items on your network adapter.

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4. Reboot the OS after setting up.

– **Disabling RSS**

After setup, perform the following command in the command prompt to disable Receive Side Scaling (RSS). Then reboot the OS.

```
netsh int tcp set global rss=disabled
```

– **Using remote console application**

When using remote console application, such as NETM and Remote Control, with an OS on LPAR to which USB is not assigned, perform the following to change the mouse pointer.

Click Start > Control Panel > Ease of Access Center > Make the mouse easier to use > Set up Mouse Keys. On the Set up Mouse Keys window, check Turn on Mouse Keys.

Then, perform the following.

- When the remote desktop is connected, NumLock is not available. On the Set up Mouse Keys window, uncheck the option button to **Use Mouse Keys when NUM LOCK is:**.
- When un-assigning the USB, turn on the mouse keys again.

– **Setting teaming**

For setting teaming, see Hitachi Compute Blade LAN Advanced Function Manual (for ***).

– **Shared NIC and virtual NIC**

At the first OS boot after the OS installation, a shared NIC or a virtual NIC may not be recognized as network devices. They can be recognized correctly by rebooting the OS.

– **Assigning shared NIC/virtual NIC after OS installation**

When assigning a shared NIC or virtual NIC on LPARs after installing the OS, execute the following file.

e1iemsg.bat

For a registry including the file, see Registry settings in each utility list, Support.html, "Hitachi Compute Blade Series/Hitachi Compute Rack Series Server installation and monitoring tool" DVD media.

– **Changing LPAR configuration**

- When you boot the computer after changing from uni-processor configuration to multi-processor configuration, a message that requires the reboot of the computer may appear. If this is the case, then reboot the computer according to the message, which allows executing operation in the multi-processor configuration.

- When the hardware configuration is changed, Windows product activation may be required for managing Windows license. In this case, execute the Windows product activation again. For Windows product activation, see OS help or documents related to OS.

– **Setting Serial Console**

When using virtual COM console, you need to configure serial console. Execute the following commands at the command prompt on the booted Windows and reboot the OS.

bcdedit /ems ON

bcdedit /emssettings EMSPORT:2 EMSBAUDRATE:115200

* Serial console can be used on the guest screen for LPAR manager screen. The moving from the LPAR manager screen to the guest screen is allowed only on the enabled LPARs. For the LPAR manager screen operation, see *Logical partitioning manager User's Guide*.

– **Changing Boot order**

The boot order must be changed after the installation. For more details about how to change the boot order, see "Changing Boot order"- "Guest OS Boot" in *Logical partitioning manager User's Guide*.

- **Notes and restrictions only on using Compute Blade 2500**

None.

- **Notes and restrictions only on using Compute Blade 2000**
  - **MCA recovery**

  To release the memory region isolated by MCA recovery feature, replace the target memory with the service part, and then execute the following command at the command prompt:

  bcdedit -deletevalue {badmemory} badmemorylist

  - **Intel 82567LF-2 Gigabit Network Connection**

  The LAN device "Intel®82567LF-2 Gigabit Network Connection" has been disabled after the installation is completed on X57A2 model. Make sure to set this device to "Disabled" since it cannot be used on the OS.

- **Notes and restrictions only on using LPAR manager for Compute Blade 2000**
  - **Disabled functions**

  The following functions are disabled on the guest OSs in the LP mode.
    - Hyper-V/VMware/Xen
    - Hot Add Memory
    - Hot Add Processors
    - Hot Replace Memory
    - Hot Replace Processors
    - Power supply option

  - **Link aggregation**

  Link aggregation Control Protocol (LACP) for NIC teaming function is not supported. When using Teaming, select a mode between Switch independent and Static teaming.

  - **Maximum MTU size**

  The following table describes the supported MTU size and the supportability in the LP mode when Jumbo Frames are used in the shared NIC or the virtual NIC mode.

Guest OS	MTU size	Supportability in LP mode
Windows	Off (1500 bytes)	✓
	9014 bytes	✓
	16128 bytes	-

✓: Supported   -: Unsupported

– **Network**

- When using a shared NIC or a virtual NIC, set VNIC Device Type to NIC2 (Intel 82576). NIC1 (PRO/1000) has not been supported.
- When creating teaming, a shared NIC, a virtual NIC, and a dedicated NIC cannot participate in the same team.
- When creating teaming, the team cannot be configured with different types of drivers. The teaming should be created with the same type of drivers.
- A shared NIC, a virtual NIC, and a dedicated NIC can be distinguished on Windows by using the following methods:

Using the PCI bus number of the device:

1. Select **Control Panel** > **System**, and click **Device Manager** shown on the left of the window.
2. Click the **+** button in the **Network Adapter**. LAN devices are displayed.
3. Right click a LAN device, and click **Properties** from the menu.
4. Select the **General** tab on the displayed **Properties,** and then check the **Location**.

   An adapter with the "PCI bus" of 127 is a shared NIC or a virtual NIC. Subtracting one (1) from the "device" value produces the number of a shared NIC or a virtual NIC on LPAR.

   An adapter with any "PCI bus" other than 127 is a dedicated NIC.

   Note that on X55R3/X55S3/X55R4 model, an adapter with the "PCI bus" of 125 is a shared NIC or a virtual NIC.

Using the MAC address:

1. View the MAC address used for a shared NIC or a virtual NIC in the "VNIC Assignment" flame on LPAR manager.

   Write down the MAC address of the target shared NIC or virtual NIC.
2. Boot Windows, and then enter the following command at the command prompt:

   ipconfig /all

When information on all LAN adapters is displayed, search the target shared NIC or virtual NIC using the MAC address as a keyword.

– **Network adapter**

- Link Speed changes and Diagnostics are not available on the **Link Speed** tab. The link speed cannot be changed from 1 Gbps even if it is changed. For Diagnostics, performing Diagnostics causes Error.
- On **Power Management** tab, use default values for all setting items. Even if each setting is changed on **Power Management** tab, these changes cannot take effect on the behaviors of shared NICs and virtual NICs.

– **Setting TCP/IP Checksum Offload function**

The onboard CNA and the LAN expansion card have a function that performs the checksum calculation for TCP/IP protocol through the LAN controller. However, use the TCP/IP checksum calculation function supported as a standard feature of the OS instead of using this function.

When the checksum calculation is set to perform through the OS, you can configure more reliable system by confirming the consistency of the packet data received from network in the final stage of OS protocol treatment. The network adapter setting must be changed.

If using Emulex 10 Gbps LAN mezzanine card as Dedicated NIC or if using Intel 10 Gbps LAN board, however, set default values to checksum offload items. If you set the calculation performed on the OS, transmission speed may be less than expected due to heavy load on CPU.

Configure offload settings on both NIC before teaming and the teaming interface.

The following steps show how to change checksum offload settings.

1. Open the Control panel window, and then click Hardware and Sound > Device Manager.
2. Right click any network adapter, and then click **Properties (R)**.
3. Click **Advanced** tab to change the setting of each item as shown in the table below:

Setting Items	Shared NIC and virtual NIC	Dedicated NIC (1 Gbps)
IPSec Offload	Disabled	Disabled
IPv4 Checksum Offload	Disabled	Disabled
TCP Checksum Offload (IPv4)	Disabled	Disabled
TCP Checksum Offload (IPv6)	Disabled	Disabled
UDP Checksum Offload (IPv4)	Disabled	Disabled
UDP Checksum Offload (IPv6)	Disabled	Disabled
Receive Side Scaling	Disabled	Disabled
Large send offload V2 (IPv4)	Disabled	Disabled
Large send offload V2 (IPv6)	Disabled	Disabled

4. Reboot the OS after the installation.

Tip Some items cannot be displayed depending on the types of network adapters. Create the settings only for the displayed items on your network adapter.

– **Disabling RSS**

After setup, perform the following command in the command prompt to disable Receive Side Scaling (RSS). Then reboot the OS.

```
netsh int tcp set global rss=disabled
```

– **Using remote console application**

When using remote console application, such as NETM and Remote Control, with an OS on LPAR without USB assigned, perform the following to change the mouse pointer.

Click Start > Control Panel > Ease of Access Center > Make the mouse easier to use > Set up Mouse Keys. On the Set up Mouse Keys window, check Turn on Mouse Keys.

Then, perform the following.

- When the remote desktop is connected, NumLock is not available. On the Set up Mouse Keys window, uncheck the option button to **Use Mouse Keys when NUM LOCK is:**.
- When un-assigning the USB, turn on the mouse keys again.

– **Setting teaming**

For setting teaming, see Hitachi Compute Blade LAN Advanced Function Manual (for ***).

– **Shared NIC and virtual NIC**

At the first OS boot after the OS installation, a shared NIC or a virtual NIC may not be recognized as network devices. They can be recognized correctly by rebooting the OS.

– **Assigning shared NIC/virtual NIC after OS installation**

When assigning a shared NIC or virtual NIC on LPARs after installing the OS, execute the following file.

e1iemsg.bat

For a registry including the file, see Registry settings in each utility list, Support.html, "Hitachi Compute Blade Series/Hitachi Compute Rack Series Server installation and monitoring tool" DVD media.

– **Changing LPAR configuration**

- When booting the computer after changing from uni-processor configuration to multi-processor configuration, a message that requires the reboot of the computer may appear. If this is the case, then reboot the computer according to the message, which allows executing operation in the multi-processor configuration.

- When the hardware configuration is changed, Windows product activation may be required for managing Windows license. In this case, execute the Windows product activation again. For Windows product activation, see OS help or documents related to OS.

– **Setting Serial Console**

When using virtual COM console, you need to configure serial console. Execute the following commands at the command prompt on the booted Windows and reboot the OS:

> bcdedit /ems ON

> bcdedit /emssettings EMSPORT:1 EMSBAUDRATE:115200

Note that serial console is enabled on the guest screen for LPAR manager screen. The moving from the LPAR manager screen to the guest screen is allowed only in the enabled LPARs. For the LPAR manager screen operation, see *User's Guide*.

– **Changing Boot order**

The boot order must be changed after the installation. For more details about how to change the boot order, see "Logical partitioning manager"- "Guest OS Boot" - "Changing Boot orders" in *User's Guide*.

Notes and Restrictions on using Windows Server 2012 R2 Hyper-V

This section describes the restrictions on using Windows Server 2012 R2 Hyper-V.

Tip	Terms used in this guide are defined as below: • Physical hardware: Physical hardware • Virtual machine: Virtual hardware that runs virtually on a physical hardware • Management OS: Operating systems installed on a physical hardware for managing Windows Server 2012 R2 Hyper-V • Guest OS: Operating systems installed on a virtual machine

- **Common notes and restrictions**
  - **Recommended physical hardware configuration**

    It is recommended that the system unit use the physical hardware that meets or exceeds the configuration requirements as below:

    - In addition to the total number of CPUs to be assigned to each guest OS running at the same time, at least one CPU for the management OS is required.
    - In addition to the total capacity of the memory, which is recommended by Microsoft, for each guest OS running at the same time, at least another 2 GB for the management OS is required.
    - Separate partitions are required for the management OS and the virtual hard disk file on a virtual machine.

Note	The recommendations above are just general standards and do not guarantee that the system can work well under any conditions. They may be insufficient depending on the application running on the guest OS. It is recommended to perform the system verification in advance and check to make sure it works properly.

Tip	The recommendations above are just general standards. When you use the system for a specific purpose such as a test environment, it may not necessarily satisfy the recommended requirements. You should consider carefully the configuration depending on the purpose.

– **Recommended virtual machine configuration**

It is recommended that the virtual machine be configured to meet or exceed the system requirements recommended by Microsoft based on the guest OS.

Note

- This recommendation is just general standards and do not guarantee that the system can work well under any conditions. They may be insufficient depending on the application running on the guest OS. It is recommended to perform the system verification in advance and check to make sure it works properly.

- The virtual hard disk file (.vhd) has three forms such as "fixed-size", "variable-size", and "differentiating vhds". In the "variable-size" or "differentiating vhds", the file size of the virtual hard disk file on the physical disk expands dynamically according to the using capacity of the virtual machine. If the size cannot be expanded due to the capacity shortage of the physical disk, the virtual machine is halted. Make sure that the capacity of the physical disk is sufficient in the production environment. Otherwise, the virtual machine may stop unexpectedly. Therefore, it is recommended that the virtual hard disk be configured with the fixed-size in the production environment.

- Two types of virtual network adapters, the "network adapter" and "legacy network dapter" are selectable for the first generation virtual machine. Select the "network adapter". If "legacy network adapter" is used, various communication problems may be caused.

– **Supported guest OS**

Hitachi has confirmed that the following guest OSs ran properly.
- Windows Server 2003, Standard Edition with Service Pack 2
- Windows Server 2003, Enterprise Edition with Service Pack 2
- Windows Server 2003, Standard x64 Edition with Service Pack 2
- Windows Server 2003, Enterprise x64 Edition with Service Pack 2
- Windows Server 2003 R2, Standard Edition with Service Pack 2
- Windows Server 2003 R2, Enterprise Edition with Service Pack 2
- Windows Server 2003 R2, Standard x64 Edition with Service Pack 2
- Windows Server 2003 R2, Enterprise x64 Edition with Service Pack 2
- Windows Server 2008 Standard 32-bit with Service Pack 2
- Windows Server 2008 Enterprise 32-bit with Service Pack 2
- Windows Server 2008 Datacenter 32-bit with Service Pack 2
- Windows Server 2008 Standard 64-bit with Service Pack 2
- Windows Server 2008 Enterprise 64-bit with Service Pack 2
- Windows Server 2008 Datacenter 64-bit with Service Pack 2
- Windows Server 2008 R2 Standard with Service Pack 1

- Windows Server 2008 R2 Enterprise with Service Pack 1
- Windows Server 2008 R2 Datacenter with Service Pack 1
- Windows Server 2012 Standard
- Windows Server 2012 Datacenter
- Windows Server 2012 R2 Standard
- Windows Server 2012 R2 Datacenter
- Windows Vista Business 32-bit with Service Pack 2
- Windows Vista Enterprise 32-bit with Service Pack 2
- Windows Vista Ultimate 32-bit with Service Pack 2
- Windows 7 professional 32-bit with no SP / Service Pack 1
- Windows 7 Enterprise 32-bit with no SP / Service Pack 1
- Windows 7 Ultimate 32-bit with no SP / Service Pack 1
- Windows 7 professional 64-bit with no SP / Service Pack 1
- Windows 7 Enterprise 64-bit with no SP / Service Pack 1
- Windows 7 Ultimate 64-bit with no SP / Service Pack 1
- Windows 8 Enterprise 32-bit
- Windows 8 Pro 32-bit
- Windows 8 Enterprise 64-bit
- Windows 8 Pro 64-bit
- Windows 8.1 Enterprise 32-bit
- Windows 8.1 Pro 32-bit
- Windows 8.1 Enterprise 64-bit
- Windows 8.1 Pro 64-bit

Although the guest OSs supported by Microsoft can also be installed other than those listed above, the installation and the operation are not supported. It may not operate properly.

Note
Support periods of supporting Windows guest OS depend on the product support lifecycle provided by Microsoft. See the following URL for Microsoft Support Lifecycle.
http://support.microsoft.com/?pr=lifecycle&ln

Tip
The second generation virtual machine is supported only by Windows Server 2012/ Windows 8 or later.

– **Maintenance**

When you proceed with the integration using the virtual environment, multiple tasks and environments can run on a single machine. Therefore, it is important to create the operational designs in advance to schedule the maintenance work, such as the system maintenance. You should manage the operations as planned to schedule the preventive maintenance work for the system including the guest OS so that monthly security patches, application and driver updates, and Service Packs can be applied properly.

– **The number of processors on Windows Server 2012 R2 Hyper-V**

The number of processors that can be used on the physical hardware for Windows Server 2012 R2 Hyper-V has the following restrictions:

Edition	Maximum number of sockets	Maximum number of logical processors
Windows Server 2012 R2 Standard	64	320
Windows Server 2012 R2 Datacenter	64	320

Up to 64 processors can be assigned to each virtual machine unit.

Tip

- If the number of processors is not more than 64, the number of processors to be assigned cannot exceed that of logical processors being installed on the physical machine.
- The maximum number of processors to be supported is different depending on the type of the guest OS. See the following URL for details.

    http://technet.microsoft.com/en-us/library/hh831531

These restrictions can be applied for Windows Server 2012 R2 and the maximum number of supported processors is different depending on the system unit.

– **Physical memory capacity on Windows Server 2012 R2 Hyper-V**

The memory capacity that can be used on the physical hardware for Windows Server 2012 R2 Hyper-V has the following restrictions:

Edition	Memory capacity
Windows Server 2012 R2 Standard	4 TB
Windows Server 2012 R2 Datacenter	4 TB

Up to 1 TB memory can be assigned to each virtual machine unit.

| Tip | • Even if the memory capacity is not greater than 1 TB, you cannot assign more memory than that installed on physical machine to the virtual machine. |
| | • The maximum memory capacity to be supported is different depending on the type of the guest OS. |

| Note | When you use Windows Server 2008 or earlier, or Windows Server 2008 R2 without SP as a guest OS, 1000 GB or less of the memory capacity can be assigned. If the memory capacity is greater than 1000 GB, a hang may occur at OS startup. |

These restrictions can be applied for Windows Server 2012 R2 and the supported maximum memory capacity is different depending on the system unit.

– **Using Application programs**

Some applications and middleware may provide the notes on using Windows Server 2012 R2 Hyper-V. Contact your reseller of each application for details.

– **VHDX**

The virtual disk format in VHDX is available only when the guest OS is Windows Server 2012/Windows 8 or later.

– **Virtual fibre channel adapter**

When using a virtual fibre channel adapter, you need to have a fibre channel switch that is NPIV-capable. NPIV is N-port ID virtualization.

– **Configuring cluster**

Cluster configuration between a guest OS and a physical machine is not supported.

– **Live Migration**

When a series of live migrations is done in a short period, it may fail. Perform a series of live migration at the intervals of a few minutes.

– **Monitoring events related to physical hardware**

The events related to the physical hardware must be monitored on the management OS, not on the guest OS.

– **Restarting and shutting down management OS**

It is recommended to shut down all guest OSs explicitly before restarting and shutting down the management OS. Especially when multiple guest OSs are running, shutting down the management OS at the same time can cause high CPU load. The problems, such as taking too much time or an improper shutdown, may occur.

– **RemoteFX 3D video adapter**

RemoteFX 3D video adapter is not supported.

– **SR-IOV**

When using SR-IOV, make sure to apply the same driver version of a device using SR-IOV to the mamagement OS and guest Oss. See manuals for the SR-IOV-capable NIC device.

For NIC teaming with SR-IOV, create NIC teaming on the guest OS.

– **NIC teaming and VLAN**

When Windows Server 2012/Windows Server 2012 R2 is installed as a guest OS, NIC teaming and VLAN must be created only on a management OS except that the NIC teaming uses SR-IOV. Although NIC teaming and VLAN can also be created on the guest OS, the communication may not be performed properly if you do.

– **Load Balancing Mode on NIC teaming**

When creating NIC teaming, do not select **Hyper-V Port** in **Load Balancing Mode** to allow the following network adapter to belong to the team.

1. Open **NIC teaming** window, right-click **Adapter** that is allowed to belong to the team of **Adapter and Interface**, and then select **Properties**

2. When "Emulex OneConnect xxxxxx" or "Broadcom BCM57810 NetXtreme II 10 GigE XXXXXX" (xxxxxx represents a line containing any alphabets, numerals, and symbols)" is displayed in **Explanation** field in **Network Adapter Properties** window, it shows the target adapter.

When you select **Hyper-V Port** on the target adapter, the following event may be logged and it may cause improper operation.

- Event ID: 106
- Sauce: Microsoft-Windows-Hyper-V-VmSwitch
- Event level: Error
- Explanation: Available processor sets of the underlying physical NICs belonging to the LBFO team NIC /DEVICE/{0D2D362E-32D4-43B2-B58D-30491A8E72E7} (Friendly Name: Microsoft Network Adapter Multiplexor Driver) on switch (Friendly Name:) are not configured correctly. Reason: The processor sets overlap when LBFO is configured with sum-queue mode.

    – **Virtual Machine Queues**

When assigning the physical network adapter which is displayed as "Broadcom NetXtreme Gigabit Ethernet #x" ("#x" is either not displayed or any figures) to the virtual network of Hyper-V, or when assigning the virtual network adapter of the team that the physical network adapter displayed as "Broadcom NetXtreme Gigabit Ethernet #x" is belonging to, set the followings to disable Virtual Machine Queues. If it is enabled, it may cause the communication delay.

1. Right-click the target "Broadcom NetXtreme Gigabit Ethernet #x" on the device manager, and then select **Properties** in the property window.
2. Select **Setting details** tab to change Virtual Machine Queues to Disable.

    – **Other restrictions**

For other restrictions, search Microsoft Help and Support at the following URL using "Hyper-V" as a keyword:

http://support.microsoft.com/?ln=en

- **Notes and restrictions only for management OS**
  - **Software on management OS**

It is recommended not to install task application (middleware), such as a database or an application server, on the management OS with Hyper-V enabled.

    – **Enabling roles**

It is recommended not to enable any roles except Hyper-V for Windows Server 2012 R2 on the management OS with Hyper-V enabled.

- **Notes and restrictions only for guest OS**

  – **Installing guest OS and integrated services**

  Install a guest OS using only OS media, not using Server installation and monitoring tool. The integrated services must be installed after OS installation.

  – **Server Core installation**

  Windows 2008 R2/Windows 2008 Server Core installation is not supported.

  – **Saving VM status**

  When clicking **Action** > **Save** in the management window on the virtual machine, you can save the virtual machine status and halt the virtual machine.
  To restart the virtual machine from the halting point, click **Action** > **Start**.
  However, this operation is different from the shutdown and reboot of the guest OS. Applications communicating with the outside may record an error.

  – **Notes for Active Directory on guest OS**

  Microsoft Help and Support provides "Things to consider when you host Active Directory domain controller in virtual hosting environments" at the following URL. Access the following URL and read it in advance:

  http://support.microsoft.com/kb/888794

  – **OS installation media**

  When using Windows Vista as a guest OS, use the OS installation media where SP1 or SP2 has been applied. If using the media with no SP applied, the installation may not be successfully completed.

  – **Using snapshot**

  It is recommended not to use the snapshot in the production environment. If the snapshot is used, the performance overhead or the inconsistency may occur on the system where multiple servers are combined.

  It is also recommended not to use the snapshot on the guest OS where Active Directory is configured. If the snapshot is used, the inconsistency may occur in database.

  – **Using virtual hard disk file**

  When multiple virtual hard disk files are deployed on a physical hard disk, IO bottleneck may occur depending on processes on the guest OSs. This may affect the entire guest OS processes.

  When using multiple guest OSs in the production environment, execute careful verification in advance. It is recommended to deploy virtual hard disk files on separate physical disks if necessary.

– **Installing virtual SCSI controller**

For the first generation virtual machine, a guest OS cannot be installed on a virtual hard disk connected to a virtual SCSI controller.

– **Playing sound with a guest OS**

When playing a sound with a guest OS, you cannot play a sound on the Hyper-V manager. If you need to play a sound, connect to the guest OS using an application such as a remote desktop client through a PC with a sound device to play a sound.

Note	If you use a remote connection application which needs a physical sound device in a certain connection point, remote connection to the guest OS cannot play the sound. See your application manual for details.

Notes and Restrictions on using Windows Server 2012

This section describes the restrictions when using Windows Server 2012.

- **Windows Server 2012 update modules**

  If not with the following OS update modules installed, make sure to apply OS update modules required for your system.

Update	URL for update module
Update rollup Includes performance and reliability improvements.	http://support.microsoft.com/kb/2770917
Fixes problems such as STOP-error in multi-path I/O environment. Apply Windows8-RT-KB2792009-x64.msu only when Desktop Experience is enabled.	http://support.microsoft.com/kb/2785094
Fixes a problem where dump files are not created in multi-path I/O environment. Apply Windows8-RT-KB2792009-x64.msu only when Desktop Experience is enabled.	http://support.microsoft.com/kb/2811660
Fixes a problem where dump files are not created in multi-path I/O environment. Apply KB2811660 along with this module. KB3027133 includes correction of KB2853466.	http://support.microsoft.com/kb/3027113
Fixes a problem where USB 3.0 cannot work properly on the system with CPU that has 15 cores or more.	http://support.microsoft.com/kb/2865197

- **Common notes and restrictions for system units**
  - **The number of processors to be recognized by Windows Server 2012**

  The number of processors that OS can recognize has the following restrictions.

Edition	Maximum number of sockets	Maximum number of logical processors
Windows Server 2012 Standard	64	640
Windows Server 2012 Datacenter	64	640

  The table above shows the restrictions for Windows Server 2012 and the supported numbers are different depending on the system unit.

  - **Physical memory capacity**

  The memory capacity that OS can recognize has the following restrictions:

Edition	Memory capacity
Windows Server 2012 Standard	4 TB
Windows Server 2012 Datacenter	4 TB

  The table above shows the restrictions for Windows Server 2012 and the supported memory capacities are different depending on the system unit.

  - **Server Core**

  When using ServerCore, complete the OS installation or setup of each of associated software on the fully installed GUI server, and then convert to ServerCore. For more details about how to convert, see the following URL:

  http://technet.microsoft.com/en-us/library/hh831786.aspx

  Some applications and middleware provide the notes when using ServerCore. Please contact the supplier of each application for more details.

  - **Shutting down Windows Server**

  When shutting down Windows before the services that are registered to start automatically at Windows startup are not successfully activated, the shutdown may not be completed properly.

  You must shut down or reboot Windows more than five minutes after starting Windows.

– **Repair your computer**

Windows Recovery Environment (hereinafter referred to as Windows RE) cannot be started on some OS installation media by clicking **Repair your computer** displayed in the window during processing. See the following URL for details:

http://support.microsoft.com/kb/951495

– **Creating backup files**

Windows Server Backup does not support backing up to tape media. When backing up data to tape media, the backup software must be purchased separately.

The backing up to DVD media with Windows Server Backup is also not supported.

– **Displaying Window**

After switching the window display for changing tasks, the previous display may remain depending on the timing. In such a case, redraw the point in question to display properly. Depending on the status of use, the message box may be hidden behind other windows.

A window may remain displayed after stopping the movie on some movie applications. When phenomenon occurs, change the windows such as by maximizing another window.

– **Functioning power saving**

The power supply options of "Sleep", "Hybrid Sleep", and "Hibernate" are not supported. These settings must not be created.

Power Option is set as **Balanced** by default. When you need high performance, **High Performance** is recommendable.

– **Setting recovery operation after Bug Checks (Blue Screens) errors**

When you get Bug Checks (Blue Screens) due to system errors, the setting to disable the automatic system restart is available.

The setting must be changed according to your environment.

1. Click Start > Control Panel, and then open Control Panel.
2. Click System and Security > System > Setting System Details, and open System Properties.
3. Click Set in Start and Recovery on Setting Details tab, and then open Start and Recovery.
4. Uncheck the checkbox for **Automatically restart**, and click **OK**.

– **Setting "virtual memory" size**

When set "virtual memory" to get the complete memory dump, set the "virtual memory" file size to a size greater than the physical memory size. If you try to set the file size of the "virtual memory" smaller than the physical memory, a warning message, "**If the paging file is disabled or the virtual memory's initial page size is smaller than *xxx* MB, system error can occur and useful information to identify the problem cannot be saved. Do you like to continue?"** is displayed. If you select this *xxx* MB, the complete memory dump may not be obtained correctly. Set the file size to greater than *xxx* MB.

When set "virtual memory" to get the kernel memory dump, set enough size for the "virtual memory". Otherwise, the kernel memory dump may not be properly collected.

– **Write-caching policy**

When using a model with embedded RAID, do not change the checkbox state for **Enable write caching on the device**, Write-caching policy, Policies tab on Properties window of the disk drive connected to the RAID. If you change the checkbox state on the OS, hardware settings for the RAID may be changed and the RAID may not work properly. You can open Properties window of each disk drive from Device Manager or Disk Management.

For Write-caching policy, enable it on RAID hardware configuration.

– **Checking Event viewer logs**

The following error events may be logged in the event log. .

Event type	Event ID	Event source	Description	Effects	Remarks
Warning	6004	Winlogon	The Winlogon notification subscriber <TrustedInstaller> failed a critical notification event.	You can safely ignore this event.	It may be logged in the event log when adding roles /functions and applying modification module.
Error	10010	Microsoft-Windows-Distribute dCOM	The server {XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX} did not register with DCOM within required timeout period. (A numeral enclosed in braces ({ }) represents a specific GUID for DCOM server component.)	You can safely ignore this event.	The following errors may be recorded in the event log during a startup of OS or a shutdown.
Error	10149	Microsoft-Windows-WinRM	WinRM service does not listen to WS-Management requirements. If the service is not stopped intentionally, make sure of WinRM configuration using the following command: winrm enumerate winrm/config/listener	You can safely ignore this event.	It may be logged in the event log when shutting down OS.

Event type	Event ID	Event source	Description	Effects	Remarks
Warning	1530	User Profile Service	Registry file is used for the other applications or services. The file can be unloaded immediately. The applications or services that retain the Registry files may not operate properly subsequently.	You can safely ignore this event.	It may be logged in the event log when shutting down OS.
Error	46	volmgr	The crash dump could not be initialized.	You can safely ignore this event.	It may be logged only once in the event log during the OS installation.
Error	7023	Service Control Manager	IP Helper Service has finished with the following error.	You can safely ignore this event.	It may be logged only once in the event log during the OS installation.
Error	7023	Service Control Manager	Network List Service has finished with the following error	You can safely ignore this event.	It may be logged only once in the event log during the OS installation.
Error	49	volmgr	Configuring the Page file for crash dump failed. Make sure there is a page file on the boot partition and that is large enough to contain all physical memory.	Recommended Page file size by Windows varies depending on the physical memory. When the c: drive capacity or space cannot satisfy the recommended size, this event is recorded. Though there is no problem with the usual OS operation, complete memory dump cannot be obtained. When large physical memory is required, set the c: drive to a larger size in advance.	It may be logged in the event log during the OS installation.
Error	4202	Microsoft-Windows-Iphlpsvc	The IP address on Isatap interface isatap.{8E208284-65BF-43D8-92DD-89FFAAF47DF0} could not be updated. Update type: 0. Error code: 0x57. (A numeral (GUID) enclosed in braces ({ }) may be different depending on your environment.)	You can safely ignore this event.	It may be logged in the event log when changing the setting of network adapter or link down on it occurs.
Warning or Error	XXXX (XXXX represents any numeral)	Microsoft-Windows-WHEA-Logger	XXXX (XXXX represents any description.)		Microsoft-Windows-WHEA-Logger events are logs related to the hardware error. If the event level is "warning", the event log is negligible since it can be modified automatically. If the event level is "error", contact the supplier.

- **NIC teaming and VLAN**

When creating NIC teaming and VLAN on Windows Server 2012, OS standard NIC teaming function must be used. OS standard NIC teaming function has the following notes and restrictions:

- Configure the team only among the adapters with the same vendors and the same speeds. If the team is configured among the adapters with different vendors and different speeds, it may not operate properly. Whether the adapters have the same vendors can be determined by **Description** indicated according to the following steps: Open **NIC teaming** window. > select **Adapter and interface** > Right-click the target adapter > select **Properties** > **Description** is displayed in the window.
- Switching team

When link-down occurs on the LAN device, the operation is switched to other LAN device. It requires some time to switch the team.

When connection errors occur without link-down associated, the team is not switched.

- When creating teams or VLANs, and changing the settings, the communication may be interrupted through all network adapters and some errors may be logged in OS event logs before the settings take effect.

- **Restrictions on changing network adapter parameters**

When the network adapter settings have been changed, the communication may be interrupted through all network adapters and some errors may be logged in OS event logs before the settings take effect. After changing the settings, make sure to communicate properly.

After the network adapter setting has changed, the communication may not be performed properly through the network adapter whose setting has changed. Confirm the network adapter whose setting has changed on the Device Manager. If "!" mark is displayed, right-click the target adapter to disable it, and then enable it again. When rebooting OS, the adapter can communicate properly.

    – **Network name**

The name defined for each system unit is displayed as a network name in **Network connection** window on the system unit that has supported **Consistent Device Naming (CDN)**.

CDN is supported by the following models:

    Compute Rack: CR 220S

Tip — CDN has been supported only by onboard LAN device on the Compute Rack. The onboard LAN device is indicated as [LAN "X"], "X" of which represents the number indicated with the physical port on the onboard LAN device.

    Compute Blade 2000:

    X55R3 / X55S3 model (EFI firmware 09-51/10-51 or later)

    X57A2 model (EFI firmware 07-49/08-49 or later)

Note — When using LPAR manager, also make sure that the following conditions are met:

    LPAR manager firmware 59-20 or later (X55R3/X55S3 model)
    LPAR manager firmware 59-51 or later (X55R4 model)
    LPAR manager firmware 79-20 or later (X57A2 model)

| Tip | All LAN devices on the Compute Blade 2000 has supported CDN and they are indicated as the following: |

- Onboard LAN:

  Onboard LAN "A"-0 Func "B"
- Server Blade built-in expansion card:

  Mezzanine card "A"-"C"-"D" Func "B" "E" port "F"
- PCIe expansion board (when installed in I/O board module slot on the back plate of system unit):

  I_O board module Slot "A"-"G" Func "B" "E" port "F"
- PCIe expansion board (when installed in I/O expansion slot):

  PCIe expander "A"-"H" Slot "I" Func "B" "E" port "F"
- Shared NIC and virtual NIC (for LPAR manager):

  Virtual NIC "J"

"A" indicates the blade number. When NOT creating SMP connection between server blades, it indicates zero (0), whereas when creating SMP connection between server blades, it indicates zero (0) on primary server blade and 1 to 3 on non-primary server blade.

"B" indicates the Function number when installing other than 4-port 1GLAN expansion card and it indicates zero (0) when installing 4-port 1GLAN expansion card.

"C" indicates the expansion card slot number.

"D" indicates 1 when installing 1GLAN expansion card, and the corresponding root port number (0 / 1) when installing 10GLAN expansion card.

"E" indicates the index number (no indication/2).

"F" indicates the port number (1/2) only when installing 4-port 1GLAN expansion card, if this is not the case, nothing is displayed.

"G" indicates the corresponding I/O board module slot number (0 / 1) on the system unit.

"H" indicates the corresponding I/O board module slot number (0 / 1) on the system unit with I/O expansion slot connects board installed.

"I" indicates the corresponding I/O board module slot number (0 to 7) on I/O expansion slot for each I/O module.

"J" indicates the Virtual NIC Number (0 to 15).

"Ethernet X" (X represents a numeral) is displayed as a network name on a system unit or a device that has not supported **CDN**. The number following "Ethernet" and the LAN device number displayed in the "device name" are independent of each other and not equal. In addition, the relationship between the number following "**Ethernet**" and the LAN port installed in the default configuration on the system unit is also independent of each other. For example, "**Ethernet**" (not followed by a number) is not consistent with LAN1 on the system unit.

Confirm the LAN device support before the first setting of the network. It is recommended to assign a recognizable name in your environment after confirming since the name is changeable.

– **Displaying event log of network adapter**

\DEVICE\ {354C76B6-E426-4CEB-8015-BF991BA8D75F} may be displayed instead of a network adapter name such as "Intel(R) 82576 Gigabit Dual Port Network Connection" or "Broadcom NetXtreme Gigabit Ethernet" in the event log description column for the network adapter.

This symptom occurs due to the specification and does not affect the operation.

The network adapter name and the numerals (GUID) enclosed in braces ({ }) may be different based on your environment.

– **Event log of network adapter during startup**

The error event may occur on a network adapter during system startup. The link-down may occur on the network adapter. The linkup event may be logged during system startup, whatever the actual link status of the network adapter may be. If the communication can be performed properly through the network adapter, these events should be negligible.

– **Using USB flash drive**

Operation of USB flash drives other than optional ones, FK802G, FK804G, and FK808G is not guaranteed. With a USB flash drive connected, the system unit must not be powered on or restarted. Connect the USB flash drive after the OS startup, and then make sure that drive letters for the other drives are not changed.

Do not connect a USB flash drive to the system unit at setup unless otherwise specified in this manual.

– **Restrictions for 10/100Mbps half-duplex communications on network adapter**

When setting the communication speed to 10M half-duplex or 100M half-duplex on the network adapter with the name starting with "Intel" on the device manager, the setting of **Large send offload (LSO) (IPv4)** and **Large send offload (LSO) (IPv6)** must be disabled.

When opening Properties window of the target network adapter through Device Manager, select **Setting details** tab, and then **Large send offload (LSO) (IPv4)** and **Large send offload (LSO) (IPv6)** must be set to **OFF**.

  – **Using BitLocker Drive Encryption**

BitLocker Drive Encryption can be supported only when using TPM (Trusted Platform Module). For more information about whether TPM has been installed on your system and how to enable it, see the manual for each system unit.

BitLocker Drive Encryption allows you to encrypt the drive, and therefore some applications and some middleware may not support this function. The precautions for the operations should be followed as appropriate. Contact the supplier for more details.

You must set BitLocker Drive Encryption disabled before the operations of the hardware maintenance or extension.

Careful consideration should be given to managing "Recovery password". If you lose the "Recovery password", the OS startup or the data access may be disabled. Furthermore, the operations of the hardware maintenance or extension may not be executed.

When the BitLocker Drive Encryption is enabled, overhead occurs due to the encryption or the decoding process. When using the BitLocker Drive Encryption in the database that high performance is required, or in the Hyper-V 3.0 environment, the BitLocker Drive Encryption may not provide the expected performance. It is recommended to perform the system verification in advance and check to make sure it works properly.

- **Notes and restrictions only on using Compute Rack**
  – **Standard SATA AHCI controller**

The standard SATA AHCI controller may indicate "!" on the device manager of the following model, which causes no problem in operation.

    CR 220S

- **Notes and restrictions only on using Compute Blade 500**
  - **Remote desktop connection**

  After performing the remote desktop connection, the window may not be displayed properly on the screen or remote console. The OS must be operated with the remote desktop connection after performing the remote desktop connection.

  When this symptom occurs, reboot the system.

  - **Turn off the display**

  When a time period is specified in **Turn off the display**, the window may not be properly displayed after recovery. Make sure to change the Turn off the display option to **Never** by clicking Start > Control Panel > Hardware and Sound > Power Options > Choose when to turn off the display.

  - **CB 520X**

  USB3.0 cannot work correctly on a system with 15 or more core processors. Apply a hotfix, KB2865197 (http://support.microsoft.com/kb/2865197), to that system.

- **Notes and restrictions only on using LPAR manager for Compute Blade 2500/500**
  - **Disabled functions**

  The following functions are disabled on the guest OSs in the LP mode.
    - Hyper-V/VMware/Xen
    - Hot Add Memory
    - Hot Add Processors
    - Hot Replace Memory
    - Hot Replace Processors
    - Power supply option

  - **CB 520X**

  For CB 520X, the screen setting is fixed in the recommended value and not changeable: the resolution of 1024 by 768 pixels with 32-bit color.

  - **Link aggregation**

  Link aggregation Control Protocol (LACP) for NIC teaming function is not supported. When using Teaming, select a mode between Switch independent and Static teaming.

– **Maximum MTU size**

The following table describes the supported MTU size and the supportability in the LP mode while using Jumbo Frames in the shared NIC or the virtual NIC mode.

Guest OS	MTU size	Supportability in LP mode
Windows	Off (1500 bytes)	✓
	9014 bytes	✓
	16128 bytes	-

✓: supported   -: Unsupported

– **Network**

- When creating teaming, a shared NIC, a virtual NIC, and a dedicated NIC cannot participate in the same team.

- When creating teaming, the team cannot be configured with different types of drivers. The teaming should be created with the same type of drivers.

- A shared NIC, a virtual NIC, and a dedicated NIC can be identified on Windows by the network adapter name as below:

  – Shared NIC and virtual NIC: Network adapter name starting with "Intel(R) 82576 Gigabit"

  – Dedicated NIC: Network adapter name starting with other than mentioned above.

– **Network adapter**

- Link Speed changes and Diagnostics are not available on the **Link Speed** tab. The link speed cannot be changed from 1 Gbps even if changing it. For Diagnostics, performing Diagnostics causes Error.

- On **Power Management** tab, use default values for all setting items. Even if each setting is changed on **Power Management** tab, these changes cannot take effect on the behaviors of shared NICs and virtual NICs.

– **Setting TCP/IP Checksum Offload function**

The onboard CNA and the LAN expansion card have a function that performs the checksum calculation for TCP/IP protocol through the LAN controller. However, use the TCP/IP checksum calculation function supported as a standard feature of the OS without using this function.

When the checksum calculation is set to perform through the OS, you can configure more reliable system by confirming the consistency of the packet data received from network in the final stage of OS protocol treatment. The network adapter setting must be changed.

If using Emulex 10 Gbps LAN expansion card, Emulex onboard CNA, or Emulex CNA board as Dedicated NIC or VF NIC; or if using Intel 10 Gbps LAN board, however, set default values to checksum offload items. If you set the calculation performed on the OS, transmission speed may be less than expected due to heavy load on CPU.

Configure offload settings on both NIC before teaming and the teaming interface.

The following steps show how to change the checksum calculation of the LAN controller through the OS.

1. Open the Control panel window.
   Click **Hardware and Sound** > **Device Manager**.

2. Right-click any network adapter, and then click **Properties (R)**.

3. Click **Setting Details** tab to change the setting of each item as shown in the table below:

Setting Items	Shared NIC and virtual NIC	Dedicated NIC (1 Gbps)
IPSec Offload	Disabled	Disabled
IPv4 Checksum Offload	Disabled	Disabled
TCP Checksum Offload (IPv4)	Disabled	Disabled
TCP Checksum Offload (IPv6)	Disabled	Disabled
UDP Checksum Offload (IPv4)	Disabled	Disabled
UDP Checksum Offload (IPv6)	Disabled	Disabled
Receive Side Scaling	Disabled	Disabled
Large send offload V2 (IPv4)	Disabled	Disabled
Large send offload V2 (IPv6)	Disabled	Disabled

Tip　Some items may not be displayed depending on the types of network adapters. Create the settings only for the displayed items using your network adapter.

4. Reboot the OS after setting up.

- **Disabling RSS**

After setup, perform the following command in the command prompt to disable Receive Side Scaling (RSS). Then reboot the OS.

```
netsh int tcp set global rss=disabled
```

- **Using remote console application**

When using remote console application, such as NETM and Remote Control, with an OS on LPAR without USB assigned, perform the following to change the mouse pointer.

Click Start > Control Panel > Ease of Access Center > Make the mouse easier to use > Set up Mouse Keys. On the Set up Mouse Keys window, check Turn on Mouse Keys.

Then, perform the following.

- When the remote desktop is connected, NumLock is not available. On the Set up Mouse Keys window, uncheck the option button to **Use Mouse Keys when NUM LOCK is:**.
- When un-assigning the USB, turn on the mouse keys again.

- **Setting teaming**

For setting teaming, see Hitachi Compute Blade LAN Advanced Function Manual (for ***).

- **Shared NIC and virtual NIC**

At the first OS boot after the OS installation, a shared NIC or a virtual NIC may not be recognized as network devices. They can be recognized correctly by rebooting the OS.

- **Changing LPAR configuration**
  - When booting the computer after changing from uni-processor configuration to multi-processor configuration, a message that requires the reboot of the computer may appear. If this is the case, then reboot the computer according to the message, which allows executing operation in the multi-processor configuration.
  - When the hardware configuration is changed, Windows product activation may be required for managing Windows license. In this case, execute the Windows product activation again. For Windows product activation, see OS help or documents related to OS.

– **Setting Serial Console**

When using virtual COM console, you need to configure serial console. Execute the following commands through the command prompt on the booted Windows and reboot the OS to use SAC on the OS installed on LPAR.

bcdedit /ems ON

bcdedit /emssettings EMSPORT:2 EMSBAUDRATE:115200

* Serial console can be used on the guest screen for LPAR manager screen. The moving from the LPAR manager screen to the guest screen is allowed only on the enabled LPARs. For the LPAR manager screen operation, see *Logical partitioning manager User's Guide*.

– **Changing Boot order**

The boot order must be changed after the installation. For more details about how to change the boot order, see "Changing Boot order"- "Guest OS Boot" in *Logical partitioning manager User's Guide*.

- **Notes and restrictions only on using Compute Blade 2500**

None.

- **Notes and restrictions only on using Compute Blade 2000**

– **MCA recovery**

To release the memory region isolated by MCA recovery feature, replace the target memory with the service part, and then execute the following command at the command prompt:

bcdedit -deletevalue {badmemory} badmemorylist

Note
If the command above is executed without replacing the target memory with the service part, Bug Checks (blue screen) may occur. The target memory must be replaced before executing the command.

Tip
Executing the following command at the command prompt enables you to confirm the currently isolated memory region:

bcdedit /enum {badmemory}

– **Intel 82567LF-2 Gigabit Network Connection**

The LAN device "Intel®82567LF-2 Gigabit Network Connection" has been disabled after completing the installation on X57A2 model. Make sure to set this device to "Disabled" since it cannot be used on the OS.

- **Notes and restrictions only on using LPAR manager for Compute Blade 2000**
  – **Disabled functions**

  The following functions are disabled on the guest OSs in the LP mode.
  - Hyper-V/VMware/Xen
  - Hot Add Memory
  - Hot Add Processors
  - Hot Replace Memory
  - Hot Replace Processors
  - Power supply option

  – **Link aggregation**

  Link aggregation Control Protocol (LACP) for NIC teaming function is not supported. When using Teaming, select a mode between Switch independent and Static teaming.

  – **Maximum MTU size**

  The following table describes the supported MTU size and the supportability in the LP mode while using Jumbo Frames in the shared NIC or the virtual NIC mode.

Guest OS	MTU size	Supportability in LP mode
Windows	Off (1500 bytes)	✓
	9014 bytes	✓
	16128 bytes	-

✓: Supported   -: Unsupported

– **Network**

- When using a shared NIC or a virtual NIC, set VNIC Device Type to NIC2 (Intel 82576). NIC1 (PRO/1000) has not been supported.
- When creating teaming, a shared NIC, a virtual NIC, and a dedicated NIC cannot participate in the same team.
- When creating teaming, the team cannot be configured with different types of drivers. The teaming should be created with the same type of drivers.
- A shared NIC, a virtual NIC, and a dedicated NIC can be distinguished on Windows by using the following methods:

Using the PCI bus number of the device:

1. Select **Control Panel** > **System**, and click **Device Manager** shown on the left.
2. Click the **+** button in the **Network Adapter**. LAN devices are displayed.
3. Right click a LAN device, and click **Properties** from the menu.
4. Select the **General** tab on the displayed **Properties,** and then check the **Location**.

   An adapter with the "PCI bus" of 127 is a shared NIC or a virtual NIC. Subtracting one (1) from the "device" value produces the number of a shared NIC or a virtual NIC on LPAR.

   An adapter with any "PCI bus" other than 127 is a dedicated NIC.

   Note that on X55R3/X55S3/X55R4 model, an adapter with the "PCI bus" of 125 is a shared NIC or a virtual NIC.

Using the MAC address:

1. View the MAC address used for a shared NIC or a virtual NIC in the "VNIC Assignment" flame on LPAR manager.

   Write down the MAC address of the target shared NIC or virtual NIC.
2. Boot Windows, and then enter the following command at the command prompt:

   ipconfig /all

When information on all LAN adapters is displayed, search the target shared NIC or virtual NIC using the MAC address as a keyword.

– **Network adapter**

- Link Speed changes and Diagnostics are not available on the **Link Speed** tab. The link speed cannot be changed from 1 Gbps even if changing it. For Diagnostics, performing Diagnostics causes Error.
- On **Power Management** tab, use default values for all setting items. Even if each setting is changed on **Power Management** tab, these changes cannot take effect on the behaviors of shared NICs and virtual NICs.

– **Setting TCP/IP Checksum Offload function**

The onboard CNA and the LAN expansion card have a function that performs the checksum calculation for TCP/IP protocol through the LAN controller. However, use the TCP/IP checksum calculation function supported as a standard feature of the OS instead of using this function.

When the checksum calculation is set to perform through the OS, you can configure more reliable system by confirming the consistency of the packet data received from network in the final stage of OS protocol treatment. The network adapter setting must be changed.

If using Emulex 10 Gbps LAN expansion card as Dedicated NIC or if using Intel 10 Gb LAN board, however, set default values to checksum offload items. If you set the calculation performed on the OS, transmission speed may be less than expected due to heavy load on CPU.

Configure offload settings on both NIC before teaming and the teaming interface.

The following steps show how to change checksum offload settings.

1. Open the Control panel window, and then click Hardware and Sound > Device Manager.

2. Right click any network adapter, and then click **Properties (R)**.

3. Click **Setting Details** tab to change the setting of each item as shown in the table below:

Setting Items	Shared NIC and virtual NIC	Dedicated NIC (1Gbps)
IPSec Offload	Disabled	Disabled
IPv4 Checksum Offload	Disabled	Disabled
TCP Checksum Offload (IPv4)	Disabled	Disabled
TCP Checksum Offload (IPv6)	Disabled	Disabled
UDP Checksum Offload (IPv4)	Disabled	Disabled
UDP Checksum Offload (IPv6)	Disabled	Disabled
Receive Side Scaling	Disabled	Disabled
Large send offload V2 (IPv4)	Disabled	Disabled
Large send offload V2 (IPv6)	Disabled	Disabled

4. Reboot the OS after the installation.

Tip

Some items cannot be displayed depending on the types of network adapters. Create the settings only for the displayed items using your network adapter.

– **Disabling RSS**

After setup, perform the following command in the command prompt to disable Receive Side Scaling (RSS). Then reboot the OS.

```
netsh int tcp set global rss=disabled
```

– **Using remote console application**

When using remote console application, such as NETM and Remote Control, with an OS on LPAR without USB assigned, perform the following to change the mouse pointer.

Click Start > Control Panel > Ease of Access Center > Make the mouse easier to use > Set up Mouse Keys. On the Set up Mouse Keys window, check Turn on Mouse Keys.

Then, perform the following.

- When the remote desktop is connected, NumLock is not available. On the Set up Mouse Keys window, uncheck the option button to **Use Mouse Keys when NUM LOCK is:**.
- When un-assigning the USB, turn on the mouse keys again.

– **Setting teaming**

For setting teaming, see Hitachi Compute Blade LAN Advanced Function Manual (for ***).

– **Shared NIC and virtual NIC**

At the first OS boot after the OS installation, a shared NIC or a virtual NIC may not be recognized as network devices. They can be recognized correctly by rebooting the OS.

– **Changing LPAR configuration**
- When booting the computer after changing from uni-processor configuration to multi-processor configuration, a message that requires the reboot of the computer may appear. If this is the case, then reboot the computer according to the message, which allows executing operation in the multi-processor configuration.
- When the hardware configuration is changed, Windows product activation may be required for managing Windows license. In this case, execute the Windows product activation again. For Windows product activation, see OS help or documents related to OS.

- **Setting Serial Console**

When using virtual COM console, you need to configure serial console. Execute the following commands through the command prompt on the booted Windows and reboot the OS to use SAC on the OS installed on LPAR:

bcdedit /ems ON

bcdedit /emssettings EMSPORT:1 EMSBAUDRATE:115200

Note that serial console is enabled on the guest screen for LPAR manager screen. The moving from the LPAR manager screen to the guest screen is allowed only in the enabled LPARs. For the LPAR manager screen operation, see *User's Guide*.

- **Changing Boot order**

The boot order must be changed after the installation. For more details about how to change the boot order, see "LPAR manager"- "Guest OS Boot" - "Changing Boot orders" in *User's Guide*.

Notes and Restrictions on using Windows Server 2012 Hyper-V

This section describes the restrictions on using Windows Server 2012 Hyper-V.

Tip

Terms used in this guide are defined as below:
- Physical hardware: Physical hardware
- Virtual machine: Virtual hardware that runs virtually on a physical hardware
- Management OS: Operating systems installed on a physical hardware for managing Hyper-V
- Guest OS: Operating systems installed on a virtual machine

- **Common notes and restrictions**

  – **Recommended physical hardware configuration**

  It is recommended that the system unit use the physical hardware that meets or exceeds the configuration requirements as below:

  - In addition to the total number of CPUs to be assigned to each guest OS running at the same time, at least one CPU for the management OS is required.
  - In addition to the total capacity of the memory, which is recommended by Microsoft, for each guest OS running at the same time, at least another 2 GB for the management OS is required.
  - Separate partitions are required for the management OS and the virtual hard disk file on a virtual machine.

Note

The recommendations above are just general standards and do not guarantee that the system can work well under any conditions. They may be insufficient depending on an application running on the guest OS. It is recommended to perform the system verification in advance and check to make sure it works properly.

Tip

The recommendations above are just general standards. When using the system for a specific purpose such as a test environment, it may not necessarily satisfy the recommended requirements. You should consider carefully the configuration depending on your purpose.

– **Recommended virtual machine configuration**

It is recommended that the virtual machine be configured under the configurations that meet or exceed the system requirements recommended by Microsoft based on the guest OS.

	• This recommendation is just general standards and do not guarantee that the system can work well under any conditions. They may be insufficient depending on an application running on the guest OS. It is recommended to perform the system verification in advance and check to make sure it works properly.
Note	• The virtual hard disk file (.vhd) has three forms such as "fixed-size", "variable-size", and "differentiating vhds". In the "variable-size" or "differentiating vhds", the file size of the virtual hard disk file on the physical disk expands dynamically according to the using capacity of the virtual machine. If the size cannot be expanded due to the capacity shortage of the physical disk, the virtual machine is halted.

• This recommendation is just general standards and do not guarantee that the system can work well under any conditions. They may be insufficient depending on an application running on the guest OS. It is recommended to perform the system verification in advance and check to make sure it works properly.

• The virtual hard disk file (.vhd) has three forms such as "fixed-size", "variable-size", and "differentiating vhds". In the "variable-size" or "differentiating vhds", the file size of the virtual hard disk file on the physical disk expands dynamically according to the using capacity of the virtual machine. If the size cannot be expanded due to the capacity shortage of the physical disk, the virtual machine is halted.
Confirm that the capacity of the physical disk is sufficient in the production environment. Otherwise, the virtual machine may stop unexpectedly.
Therefore, it is recommended that the virtual hard disk be configured with the fixed-size in the production environment.

• The two types of virtual network adapters, the "network adapter" or "legacy network adapter", are selectable. Select the "network adapter".
If "legacy network adapter" is used, various communication problems may be caused.

– **Supported guest OS**

Hitachi has confirmed that the following guest OSs ran properly.

- Windows Server 2003, Standard Edition with Service Pack 2
- Windows Server 2003, Enterprise Edition with Service Pack 2
- Windows Server 2003, Standard x64 Edition with Service Pack 2
- Windows Server 2003, Enterprise x64 Edition with Service Pack 2
- Windows Server 2003 R2, Standard Edition with Service Pack 2
- Windows Server 2003 R2, Enterprise Edition with Service Pack 2
- Windows Server 2003 R2, Standard x64 Edition with Service Pack 2
- Windows Server 2003 R2, Enterprise x64 Edition with Service Pack 2
- Windows Server 2008 Standard 32-bit with Service Pack 2
- Windows Server 2008 Enterprise 32-bit with Service Pack 2
- Windows Server 2008 Datacenter 32-bit with Service Pack 2
- Windows Server 2008 Standard 64-bit with Service Pack 2
- Windows Server 2008 Enterprise 64-bit with Service Pack 2
- Windows Server 2008 Datacenter 64-bit with Service Pack 2
- Windows Server 2008 R2 Standard with no SP / Service Pack 1
- Windows Server 2008 R2 Enterprise with no SP / Service Pack 1
- Windows Server 2008 R2 Datacenter with no SP / Service Pack 1
- Windows Server 2012 Standard
- Windows Server 2012 Datacenter
- Windows Vista Business 32-bit with Service Pack 2
- Windows Vista Enterprise 32-bit with Service Pack 2
- Windows Vista Ultimate 32-bit with Service Pack 2
- Windows 7 professional 32-bit with no SP / Service Pack 1
- Windows 7 Enterprise 32-bit with no SP / Service Pack 1
- Windows 7 Ultimate 32-bit with no SP / Service Pack 1
- Windows 7 professional 64-bit with no SP / Service Pack 1
- Windows 7 Enterprise 64-bit with no SP / Service Pack 1
- Windows 7 Ultimate 64-bit with no SP / Service Pack 1
- Windows 8 Enterprise 32-bit
- Windows 8 Pro 32-bit
- Windows 8 Enterprise 64-bit
- Windows 8 Pro 64-bit

Although guest OSs supported by Microsoft can also be installed other than those listed above, the installation and the operation are not supported. It may not operate properly.

Note

Support lifecycle for Windows guest Oss is subject to Microsoft Support Lifecycle. Visit the following URL for details.

http://support.microsoft.com/?pr=lifecycle&ln

– **Maintenance**

When proceeding with the integration using the virtual environment, multiple tasks and environments can run on a single machine. Therefore, it is important to create the operational designs in advance to schedule the maintenance work, such as the system maintenance.

You should manage the operations as planned to schedule the preventive maintenance work for the system including the guest OS so that monthly security patches, application and driver updates, and Service Packs can be applied properly.

– **The number of processors on Windows Server 2012 Hyper-V**

The number of processors that can be used on the physical hardware for Windows Server 2012 Hyper-V has the following restrictions:

Edition	Maximum number of sockets	Maximum number of logical processors
Windows Server 2012 Standard	64	320
Windows Server 2012 Datacenter	64	320

Up to 64 processors can be assigned to each virtual machine unit.

Tip

- If the number of processors is not more than 64, the number of processors to be assigned cannot exceed that of logical processors being installed on the physical machine.
- The maximum number of processors to be supported is different depending on the type of the guest OS.

These restrictions can be applied for Windows Server 2012 and the maximum number of supported processors is different depending on the system unit.

– **Physical memory capacity on Windows Server 2012 Hyper-V**

The memory capacity that can be used on the physical hardware for Windows Server 2012 Hyper-V has the following restrictions:

Edition	Memory capacity
Windows Server 2012 Standard	4 TB
Windows Server 2012 Datacenter	4 TB

Up to 1 TB memory can be assigned to each virtual machine unit.

Tip	• If the memory capacity is not greater than 1 TB, the memory capacity to be assigned cannot exceed that being installed on physical machine. • The maximum memory capacity to be supported is different depending on the type of the guest OS.

Note	When using the OS for Windows Server 2008 or earlier, or Windows Server 2008 R2 with no SP as a guest OS, the memory capacity to be assigned cannot exceed 1000 GB. If the memory capacity is greater than 1000 GB, a hang may occur at OS startup.

These restrictions can be applied for Windows Server 2012 and the supported maximum memory capacity is different depending on the system unit.

– **Using Application programs**

Some applications and middleware provide the notes on using Hyper-V. Please contact the supplier of each application for details.

– **VHDX**

The virtual disk format in VHDX format is available only when setting a guest OS to Windows Server 2012 / Windows 8.

– **Virtual fibre channel adapter**

The Virtual fibre channel adapter is supported if the driver and utility for HITACHI Gigabit Fibre Channel adapter are the following versions.

Driver: 4.3.7.1080

Utility: 1.0.3.48

Update the fibre channel firmware to the one for the driver and utility above. For details of the appropriate firmware version, see *HITACHI Gigabit Fibre Channel Adapter User's Guide (Support Matrix Edition)*.

Port address settings for fibre channel adapters to be assigned to a virtual machine on Hypervisor have the following restrictions.

- The following value cannot be set to World Wide Node Name (WWNN).

"0000000000000000" (all zeros)

"FFFFFFFFFFFFFFFF" (all Fs)

- The following value cannot be set to World Wide Port Name (WWPN).

"0000000000000000" (all zeros)

"FFFFFFFFFFFFFFFF" (all Fs)

A value the same as the physical port name

A value already used for another fibre channel adapter in the same virtual machine or a fibler channel adapter in another virtual machine on the same host OS

For further details including notes, see "Windows Server$^®$ 2012 Hyper-V$^®$ Virtual Fibre Channel" in *HITACHI Gigabit Fibre Channel Adapter User's Guide (Windows Driver Edition)* Rev.125 or later.

When using a virtual fibre channel adapter, you need to have a fibre channel switch that is NPIV-capable. NPIV is N-port ID virtualization.

– **Configuring cluster**

Cluster configuration between a guest OS and a physical machine is not supported.

Cluster failover is executed when connection failure such as FC cable disconnection, occurs between the management OS and a shared disk. However, the failover may be unsuccessful when the shared quorum disk access fails, and then the cluster service itself may be disabled because of the overload with disk access to the shared disk by guest OSs.

– **Live Migration**

When a series of live migrations is done in a short period, it may fail. Perform a series of live migration at the intervals of a few minutes.

– **Monitoring events related to physical hardware**

The events related to the physical hardware must be monitored on the management OS, not on the guest OS.

– **Restarting and shutting down management OS**

It is recommended to shut down all guest OSs explicitly before restarting and shutting down the management OS. Especially when multiple guest OSs are running, shutting down the management OS at the same time can cause high CPU load. The problems, such as taking too much time or an improper shutdown, may occur.

– **RemoteFX 3D video adapter**

RemoteFX 3D video adapter function is not supported.

– **SR-IOV**

SR-IOV is not supported.

– **NIC teaming and VLAN**

When setting a guest OS to Windows Server 2012, NIC teaming and VLAN must be created only on a management OS. NIC teaming and VLAN can also be created on a guest OS, however, if this is the case, the communication may not be performed properly.

– **Load Balancing Mode on NIC teaming**

When creating NIC teaming, do not select **Hyper-V Port** in **Load Balancing Mode** to allow the following network adapter to belong to the team.

1. Open **NIC teaming** window, right-click **Adapter** that is allowed to belong to the team of **Adapter and Interface**, and then select **Properties**

2. When "Emulex OneConnect xxxxxx" or "Broadcom BCM57810 NetXtreme II 10 GigE XXXXXX" (xxxxxx represents a line containing any alphabets, numerals, and symbols)" is displayed in **Explanation** field in **Network Adapter Properties** window, it shows the target adapter.

When selecting **Hyper-V Port** on the target adapter, the following event may be logged and it may cause improper operation.

- Event ID: 106
- Sauce: Microsoft-Windows-Hyper-V-VmSwitch
- Event level: Error

- Explanation: Available processor sets of the underlying physical NICs belonging to the LBFO team NIC /DEVICE/{0D2D362E-32D4-43B2-B58D-30491A8E72E7} (Friendly Name: Microsoft Network Adapter Multiplexor Driver) on switch (Friendly Name:) are not configured correctly. Reason: The processor sets overlap when LBFO is configured with sum-queue mode.

– **Virtual Machine Queues**

When a physical network adapter indicated as "Broadcom NetXtreme Gigabit Ethernet #x (#x represents undisplayed or any numerals)" is assigned to Hyper-V virtual network, or when a virtual network adapter in the team, which a physical network adapter indicated as "Broadcom NetXtreme Gigabit Ethernet #x" belongs to, is assigned to it, complete the following steps and disable Virtual Machine Queues.

When enabling the Virtual Machine Queues, the communication delay may be caused.

1. **Right-click** the target "Broadcom NetXtreme Gigabit Ethernet #x" on device manager, and select **Properties** to open the property window.
2. Select Setting details tab, and then change the setting of Virtual Machine Queues to Disable.

– **Other restrictions**

For other restrictions, search Microsoft Help and Support at the following URL using "Hyper-V" as a keyword:

http://support.microsoft.com/?ln=en

- **Notes and restrictions only for management OS**
  – **Software on management OS**

  It is not recommended to install task application (middleware), such as a database or an application server, on the management OS with Hyper-V enabled.

  – **Enabling roles**

  It is not recommended to enable any roles except Hyper-V for Windows Server 2012 on the management OS with Hyper-V enabled.

- **Notes and restrictions only for guest OS**
  – **Installing guest OS and integrated services**

  Install a guest OS using only OS media, not using Server installation and monitoring tool. The integrated services must be installed after OS installation.

– **Server Core installation**

Windows 2008/Windows 2008 R2 Server Core installation is not supported.

– **Saving VM status**

When click **Action** > **Save** in the management window on the virtual machine, the virtual machine status can be saved and the virtual machine can halt.
To restart the virtual machine from the halting point, click **Action** > **Start**. However, this operation is different from the shutdown and reboot of the guest OS. Applications communicating with the outside may record an error.

– **Notes for Active Directory on guest OS**

Microsoft Help and Support provides "Things to consider when you host Active Directory domain controller in virtual hosting environments" at the following URL. Access the following URL and read it in advance:

http://support.microsoft.com/kb/888794

– **OS installation media**

When using Windows Server 2003 SP2 (32-bit/64-bit) / Windows Server 2003 R2 SP2 (32-bit/64-bit) as a guest OS, use the OS installation media where SP2 has been applied. If using the media with no SP or with SP1 applied, the guest OS may display the **STOP** error and halt during installation.

When using Windows Vista as a guest OS, use the OS installation media where SP1 or SP2 has been applied. If using the media with no SP applied, the installation may not be successfully completed.

– **Using snapshot**

It is not recommended to use the snapshot in the production environment. If using the snapshot, the performance overhead or the inconsistency may occur on the system where multiple servers are combined.

It is also not recommended to use the snapshot on the guest OS where Active Directory is configured. If using the snapshot, the inconsistency in database may occur.

– **Using virtual hard disk file**

When multiple virtual hard disk files are deployed on a physical hard disk, IO bottleneck may occur depending on processes on the guest OSs. This may affect the entire guest OS processes.

When using multiple guest OSs in the production environment, execute careful verification in advance. It is recommended to deploy virtual hard disk files on separate physical disks if necessary.

– **Installing virtual SCSI controller**

A guest OS cannot be installed on a virtual hard disk connected to a virtual SCSI controller.

– **Playing sound with a guest OS**

When playing a sound with a guest OS, you cannot play a sound on the Hyper-V manager. If you need to play a sound, connect to the guest OS using an application such as a remote desktop client through a PC with a sound device to play a sound.

Tip	When using a remote connecting application where playing sound is not available if some connecting destinations have no physical sound device, you cannot play a sound even though creating the remote connection with a guest OS. See your application manual for details.

Notes and Restrictions on using Windows Server 2008 R2

This section describes the restrictions when using Windows Server 2008 R2.

- **Windows Server 2008 R2 update modules**

  If not with the following OS update modules installed, make sure to apply OS update modules required on your system.

Service pack[1]	Update	URL for update module
Without SP	Fixes a problem where a virtual machine hangs up at the startup.[2]	http://support.microsoft.com/kb/974672
	Fixes a problem where OS cannot start up after enabling Hyper-V.	http://support.microsoft.com/kb/2133637
	Fixes a problem where STOP 0xD1 occurs due to iSCSI initiator.	http://support.microsoft.com/kb/982674
	Fixes a problem where Active Directory cannot be added at iSCSI boot.[3]	http://support.microsoft.com/kb/977184
	Fixes a problem where I/O performance degrades on a computer with more than eight logical CPU.	http://support.microsoft.com/kb/982383
	Fixes a problem where STOP error occurs when VLAN is deleted.	http://support.microsoft.com/kb/2479442
	Fixes a problem where STOP error occurs in x2APIC mode.[4]	http://support.microsoft.com/kb/2398906
	Fixes a problem where a memory leak occurs when some devices are repeatedly disabled and enabled.	http://support.microsoft.com/kb/2528357
	Fixes a problem that occurs in 32-bit application when SP is applied.	http://support.microsoft.com/kb/2487426
	Fixes a problem where STOP error occurs at PCI isolation.[5]	http://support.microsoft.com/kb/2511500
	Fixes a problem where the computer may fail to boot due to STOP 0x7B when the boot is executed from the secondary iSCSI network adapter in multi-path configuration.[3]	http://support.microsoft.com/kb/976042
	Fixes a problem where a virtual machine cannot bevstarted.[2]	http://support.microsoft.com/kb/2517374
	Fixes a problem where communication is not available after 497 days from the startup.	http://support.microsoft.com/kb/2553549
	Fixes a problem where Windows cannot start up on a computer with more than 1 TB.[6]	http://support.microsoft.com/kb/980598
SP1	Fixes a problem where a memory leak occurs when some devices are repeatedly disabled and enabled.	http://support.microsoft.com/kb/2528357

Service pack[1]	Update	URL for update module
SP1	Fixes a problem where STOP error occurs when SP is applied.	http://support.microsoft.com/kb/2487426
	Fixes a problem where STOP error occurs at PCI isolation.	http://support.microsoft.com/kb/2511500
	Fixes a problem where the computer may fail to boot due to STOP 0x7B when the boot is executed from the secondary iSCSI network adapter in multi-path configuration.[3]	http://support.microsoft.com/kb/976042
	Fixes a problem of incorrect memory dump files.	http://support.microsoft.com/kb/2528507
	Fixes a problem where communication is not available after 497 days from the startup.	http://support.microsoft.com/kb/2553549
	Fixes a problem where settings for a replaced device such as the IP address are lost if the device is replaced when PCI Express Native Control is enabled on the system firmware.	http://support.microsoft.com/kb/2550978
	Fixes a problem where OS cannot reboot if a specific procedure is executed with multipath I/O.	http://support.microsoft.com/kb/2591462

1. Apply only modules corresponding to the service pack you use.

2. Only when Hyper-V is enabled.

3. Only for Microsoft iSCSI Software Initiator

4. Only for SMP configuration consisting of four CB 2000 high-performance server blades, X57xx

5. Only for CB 2000 model

6. Only for more than 1 TB memory installed.

- **Common notes and restrictions for system units**
  - **The number of processors**

    The number of processors that OS can recognize has the following restrictions:

Edition	Maximum number of sockets	Maximum number of logical processors
Windows Server 2008 R2 Standard with no SP/with SP1	4	256
Windows Server 2008 R2 Enterprise with no SP/with SP1	8	256
Windows Server 2008 R2 Datacenter with no SP/with SP1	64	256

    The table above shows the restrictions for Windows Server 2008 R2 and the supported maximum numbers are different depending on the system unit.

– **Physical memory capacity**

The memory capacity that OS can recognize has the following restrictions:

Edition	Memory capacity
Windows Server 2008 R2 Standard with no SP/with SP1	32 GB
Windows Server 2008 R2 Enterprise with no SP/with SP1	2 TB
Windows Server 2008 R2 Datacenter with no SP/with SP1	2 TB

The table above shows the restrictions for Windows Server 2008 R2 and the supported memory capacities are different depending on the system unit.

Note	In the environment where neither SP1 nor KB980589 is applied on Windows Server 2008 R2 Enterprise/Datacenter, only up to 1 TB can be supported for the total amount of the physical memory capacity and the area (memory hole) reserved with Memory Mapped I/O. If the total amount of the physical memory capacity and the MMIO capacity exceeds 1 TB, the hang may occur at OS startup. The capacity of area reserved with Memory Mapped I/O is different depending on the system unit.

Microsoft recommends that Windows Server 2008 R2 should have 2 GB memory. If the memory is not enough, the processing may not be completed within the expected time period or may be interrupted due to the resource shortage during high load.

– **Server Core**

Server Core installation is not supported.

– **Shutting down Windows**

When shutting down Windows before the successful activation of the services that are registered to start automatically at Windows startup, the shutdown may not be completed successfully.

You must shut down or reboot Windows more than five minutes after starting Windows.

– **Repair your computer**

Windows Recovery Environment (hereinafter referred to as Windows RE) cannot be started on some OS installation media by clicking **Repair your computer** displayed in the window during processing. See the following URL for details:

http://support.microsoft.com/kb/951495

– **Error Recovery**

On Windows Server 2008 R2, when the system unit restarts due to a failure during the OS startup, the Windows Error Recovery window is displayed. If no operation is performed, Windows RE (Recovery Environment) starts 30 seconds later instead of Windows Server 2008 R2.

When Windows RE starts up, you must start Windows Server 2008 R2 manually. If you manage the system with a setting that the system can be restarted automatically to start Windows Server 2008 R2 after a failure is detected during the OS startup, the startup of Windows RE can be troublesome.

It is recommended to disable the Windows RE during normal operation since the features provided by Windows RE are available by booting up from the OS installation media on Windows Server 2008 R2.

Server installation and monitoring tool" is set automatically to disable the Windows RE.

To enable Windows RE, perform the following steps:

1. Turn on the system unit to start Windows, and log in as **Administrator**.
2. Click **Start** > **Command prompt**, and enter the following command at the command prompt.

   C:\>reagentc.exe \enable

– **Creating backup file**

Windows Server Backup does not support backing up to tape media. When backing up data to tape media, the backup software must be purchased separately.

The backing up to DVD media with Windows Server Backup is also not supported.

– **Displaying Window**

After switching the window display for changing tasks, the previous display may remain depending on the timing. In such a case, redraw the point in question to display properly.

Depending on the status of use, the message box may be hidden behind other windows.

To change the display color, terminate the application. Otherwise, it can cause strange display of the application. In such a case, redraw by switching the window for proper display.

The window may not be displayed properly with the refresh rates depending on the display. When changing the refresh rates, confirm that your monitor can display a window properly.

A window may remain displayed after stopping the movie on some movie applications. When this phenomenon occurs, change the windows such as by maximizing another window.

– **Functioning power saving**

The power supply options of "Sleep", "Hybrid Sleep", and "Hibernate" are not supported. These settings must not be created.

Power Option is set as **Balanced** by default. When you need high performance, **High Performance** is recommendable.

– **Setting recovery operation after Bug Checks (Blue Screens) errors**

When you get Bug Checks (Blue Screens) due to system errors, the setting to disable the automatic system restart is available.

The setting must be changed based on your environment.

1. Click Start > Management Tool > Server Manager, and then open Server Manager.
2. Click Change System Properties, and open System Properties.
3. Click **Advanced** tab, find Startup and Recovery, and click **Settings** to open **_Startup and Recovery**.
4. Clear **Automatically restart** under System failure, and click **OK**.

– **Getting complete memory dump of physical memory exceeding 2 GB**

When Windows is set on a system unit installed with greater than 2 GB memory, **Complete Memory Dump** cannot be selected through **Write Debug Information** in **Start and Recovery**. Perform the following steps when getting **Complete Memory Dump** in an environment where greater than 2 GB physical memory is installed. **Complete Memory Dump** is not displayed in the **Write Debug Information** list.

1. Insert the "Hitachi Compute Blade Series/Hitachi Compute Rack Series Server installation and monitoring tool" DVD media into the DVD drive.
2. Select **Run** in the **Start** menu, enter the following for the file name, and then click **OK**.

03-02:
d:\WinCommon\Utility¥PMDE\PMDE.BAT

Other than 03-02:
d:\WinSrv2008¥Utility\PMDE\PMDE.BAT

(d: represents DVD drive name.)

3. Press any key when the following messages appear.
Change the setting to get Complete Memory Dump.
Press any key to continue the operation.
Press the **Ctrl** + **C** keys to cancel the setting.

4. Set virtual memory size. For more details, see page 3-65 **Setting virtual memory size.**

— **Setting "virtual memory" size**

When set "virtual memory" to get the complete memory dump, set the "virtual memory" file size to greater than the physical memory size. If the file size of the "virtual memory" is set to smaller than the physical memory, a warning message **"If the paging file is disabled or the virtual memory's initial page size is smaller than *xxx* MB, system error can occur and useful information to identify the problem cannot be saved. Do you like to continue?"** is displayed. If this "*xxx* MB" is selected, the complete memory dump may not be properly obtained. Set the file size to greater than "*xxx* +400 MB".

When setting "virtual memory" to get the kernel memory dump, the "virtual memory" size must be large enough. Otherwise, the kernel memory dump may not be properly collected.

— **Write-caching policy**

When using a model with embedded RAID, do not change the checkbox state for **Enable write caching on the device**, Write-caching policy, Policies tab on Properties window of the disk drive connected to the RAID. If you change the checkbox state on the OS, hardware settings for the RAID may be changed and the RAID may not work properly. You can open Properties window of each disk drive from Device Manager or Disk Management.

For Write-caching policy, enable it on RAID hardware configuration.

— **Checking Event viewer logs**

The following error events may be logged in the event log.

Event type	Event ID	Event source	Description	Effects	Remarks
Error	4202	Microsoft-Windows-Iphlpsvc	The IP address on Isatap interface isatap.{8E208284-65BF-43D8-92DD-89FFAAF47DF0} could not be updated. Update type: 0. Error code: 0x57. (A numeral (GUID) enclosed in braces ({ }) may be different based on your environment.)	You can safely ignore this event.	It may be logged in the event log when changing the setting of network adapter or link-down on it occurs.

Event type	Event ID	Event source	Description	Effects	Remarks
Error	49	volmgr	Configuring the Page file for crash dump failed. Make sure there is a page file on the boot partition and that is large enough to contain all physical memory.	Recommended Page file size by Windows varies depending on the physical memory. When the c: drive capacity or space cannot satisfy the recommended size, this event is logged. Though there is no problem with the usual OS operation, complete memory dump cannot be obtained. When large physical memory is required, set the c: drive to a larger size in advance.	It may be logged in the event log during the OS installation.
Warning or Error	XXXX (XXXX represents any numeral)	Microsoft-Windows-WHEA-Logger	XXXX (XXXX represents any descriptions)		Microsoft-Windows-WHEA-Logger events are logs related to the hardware error. If the event level is "warning", the event log is negligible since it can be modified automatically. If the event level is "error", contact the supplier.
Warning	6004	Winlogon	The Winlogon notification subscriber <TrustedInstaller> failed a critical notification event.	You can safely ignore this event.	It may be logged in the event log when adding roles /functions and applying modification modules.
Error	1	VDS Basic Provider	An unexpected error occurred. Error code: 32@01000004	There is no problem if the log is output when connecting USB device.	It may be logged in the event log when connecting USB device.
Error	10128	Microsoft-Windows-WinRM	The WinRM service is not listening to HTTP requests because a failure occurred during the binding to the URL (http://+:47001/wsman/) in HTTP.SYS. User action: Use "netsh http" to check to make sure ACL for URL (http://+:47001/wsman/) is set to Network Service.	You can safely ignore this event.	It may be logged in the event log when operating SP1.

Event type	Event ID	Event source	Description	Effects	Remarks
Error	10	Microsoft-Windows-WM 1	Event filter with query "SELECT * FROM __InstanceModificationEvent WITHIN 60 WHERE TargetInstance ISA "Win32_Processor" AND TargetInstance.LoadPercentage > 99" could not be reactivated in the namespace "//./root/CIMV2" because of error 0x80041003. Events cannot be delivered through this filter until the problem is corrected.	It may be logged in the event log for each OS startup when installing OS on the media operated with SP1.	See the following Microsoft website for more details. http://support.microsoft.com/kb/950375

— **Restrictions on changing network adapter parameters**

When the network adapter settings have been changed, the communication may be interrupted through all network adapters and some errors may be logged in OS event logs before the settings take effect. After changing the settings, make sure to communicate properly.

After the network adapter setting has changed, the communication may not be performed properly through the network adapter whose setting has changed. Confirm the network adapter whose setting has changed using the Device Manager. If "!" mark is displayed, right-click the target adapter to disable it, and then enable it again. When rebooting OS, the adapter can communicate properly.

— **Local Area Connection**

The network connection is displayed under the name of **"Local Area Connection X"** (X represents a numeral) according to the following steps: Click **Start** > **Administrative Tools** > **Server Manager**, and when **Server Manager** window is displayed, click **Network Connection Display**.

The number following "**Local Area Connection**" and the LAN device number displayed in the "device name" are independent of each other and not equal. In addition, the relationship between the number following "**Local Area Connection**" and the LAN port installed in the default configuration on the system unit is also independent of each other. For example, "**Local Area Connection**" (not followed by a number) is not consistent with1 LAN1 on the system unit.

Confirm the relationship between "**Local Area Connection**" and LAN device before the initial setting of the network. It is recommended to assign a recognizable name in your environment after confirming since the name of "**Local Area Connection**" is changeable.

– **Displaying event log of network adapter**

\DEVICE\ {354C76B6-E426-4CEB-8015-BF991BA8D75F} may be displayed instead of a network adapter name such as "Intel(R) 82576 Gigabit Dual Port Network Connection" or "Broadcom NetXtreme Gigabit Ethernet" in the event log description column for the network adapter.

This occurs due to the specification and does not affect the operation.

The network adapter name and the numerals (GUID) enclosed in braces ({ }) may be different based on your environment.

– **Event log of network adapter during startup**

The error event may occur on a network adapter during system startup. The link-down may occur on the network adapter. The linkup event may be logged during system startup, whatever the actual link status of the network adapter may be. Confirm the connection status of the target network adapter in **Network Connection**.

– **Using USB flash drive**

Operation of USB flash drives other than optional ones, FK802G, FK804G, and FK808G is not guaranteed. With a USB flash drive connected, the system unit must not be powered on or restarted. Connect the USB flash drive after the OS startup, and then make sure that drive letters for the other drives are not changed.

Do not connect a USB flash drive to the system unit at setup unless otherwise specified in this manual.

– **Restrictions for 10/100Mbps half-duplex communications on network adapter**

When setting the communication speed to 10M half-duplex or 100M half-duplex on the network adapter with the name starting with "Intel" on the device manager, the **Large send offload (LSO) (IPv4)**, **Large send offload (LSO) (IPv6)**, and **Header Data Partition** must be set to disable.

When displaying **Properties** window of the target network adapter through the Device Manager, select **Setting details** tab, and then **Large send offload (LSO) (IPv4)**, **Large send offload (LSO) (IPv6)**, and **Header Data Partition** must be set to **OFF**.

– **Screen resolution**

When setting the screen resolution on Windows Server 2008 R2, the maximum number of colors being supported by hardware can be set automatically based on the screen resolution. The number of colors can be retained and the number of bits cannot be reduced automatically.

Therefore, if the screen resolution is changed to high-resolution again after changing from high-resolution to low-resolution, high-resolution may not be selected due to the restrictions on hardware.

If the high-resolution cannot be selected, set the screen resolution corresponding to the number of colors by clicking **Screen resolution** > **Setting details** > **Mode list** button on **Adapter** tab**.**

– **Using BitLocker Drive Encryption**

BitLocker Drive Encryption can be supported only when using TPM (Trusted Platform Module). For more information about whether TPM has been installed on your system and how to enable it, refer to the manual for each system unit.

The following patch program must be installed after enabling BitLocker Drive Encryption in the environment without SP1 applied. When Service Pack 1 is not applied, the installation of patch program is required.
http://support.microsoft.com/kb/975496

BitLocker Drive Encryption allows you to encrypt the drive, and therefore some applications and some middleware may not support this function. The precautions for the operations should be followed as appropriate. Contact the supplier for more details.

You must set BitLocker Drive Encryption disabled before the operations of the hardware maintenance or extension.

Careful consideration should be given to managing "Recovery password". If you lose the "Recovery password", the OS startup or the data access may be disabled. Furthermore, the operations of the hardware maintenance or extension may not be executed.

When the BitLocker Drive Encryption is enabled, overhead occurs due to the encryption or the decoding process. When using the BitLocker Drive Encryption in the database that high performance is required, or in the Hyper-V 2.0 environment, the BitLocker Drive Encryption may not provide the expected performance. It is recommended to perform the system verification in advance and check to make sure it works properly.

– **PCI Express Native Control**

If a faulty device such as NIC is replaced or if an active server blade is switched to the standby server blade with N+M cold standby of Compute Blade when PCI Express Native Control is enabled on the server system firmware, the device is recognized as a new device on the OS. This may remove settings, such as the IP address, of the device that is recognized as a new one. Make sure to apply the following module to avoid this problem.

http://support.microsoft.com/kb/2550978

– **Before applying Service Pack 1**

When you manually install Service Pack 1 instead of using Installation Assistant, modification module KB2487426 must be applied before installing Service Pack 1. Otherwise, an application error occurs on 32-bit application. For more details, see the following Microsoft website:

http://support.microsoft.com/kb/2487426

When you apply Service Pack 1 using Installation Assistant, an application error occurs on 32-bit application during setup. But there is no problem. Follow step 23 in Chapter 2 to apply OS update emodules using Installation Assistant after the setup.

- **Notes and restrictions only on using Compute Rack**

  None

- **Notes and restrictions only on using Compute Blade 500**

  None

- **Notes and restrictions only on using LPAR manager for Compute Blade 2500/500**

  – **Disabled functions**

  The following functions are disabled on the guest OSs in the LP mode.
  - Hyper-V2.0/VMware/Xen
  - Hot Add Memory
  - Hot Add Processors
  - Hot Replace Memory
  - Hot Replace Processors
  - Power supply option

– **Maximum MTU size**

The following table describes the supported MTU size and the supportability in the LP mode while using Jumbo Frames in the shared NIC or the virtual NIC mode.

Guest OS	MTU size	Supportability in LP mode
Windows	Off (1500 bytes)	✓
	9014 bytes	✓
	16128 bytes	-

✓: Supported   -: Unsupported

– **Network**
  - For CB 500, IPv6 is not supported.
  - When using ALB, it is recommended to configure the team in a dedicated NIC mode.
  - When creating teaming, a shared NIC, a virtual NIC, and a dedicated NIC cannot participate in the same team.
  - When creating teaming, the team cannot be configured with different types of drivers. The teaming should be created with the same type of drivers.
  - A shared NIC, a virtual NIC, and a dedicated NIC can be identified on Windows by the network adapter name as below:
    – Shared NIC and virtual NIC: Network adapter name starting with "Intel(R) 82576 Gigabit"
    – Dedicated NIC: Network adapter name starting with other than mentioned above.

– **Network adapter**
  - Link Speed changes and Diagnostics are not available on the **Link Speed** tab. The link speed cannot be changed from 1 Gbps even if changing it. For Diagnostics, performing Diagnostics causes **Error**.
  - On **Power Management** tab, use default values for all setting items. Even if each setting is changed on **Power Management** tab, these changes cannot take effect on the behaviors of shared NICs and virtual NICs.

– **Setting TCP/IP Checksum Offload function**

The onboard CNA and the LAN expansion card have a function that performs the checksum calculation for TCP/IP protocol through the LAN controller. However, use the TCP/IP checksum calculation function supported as a standard feature of the OS without using this function.

When the checksum calculation is set to perform through the OS, you can configure more reliable system by confirming the consistency of the packet data received from network in the final stage of OS protocol treatment. The network adapter setting must be changed.

If using Emulex 10 Gbps LAN expansion card, Emulex onboard CNA, or Emulex CNA board as Dedicated NIC; or if using Intel10 Gbps LAN board, however, set default values to checksum offload items. If you set the calculation performed on the OS, transmission speed may be less than expected due to heavy load on CPU.

Configure offload settings on both NIC before teaming and the teaming interface.

The following steps show how to change the checksum calculation of the LAN controller through the OS.

1. Open the Control panel window. Click **Hardware and Sound** > **Device Manager**.
2. Right-click any network adapter, and then click **Properties (R)**.
3. Click **Setting Details** tab to change the setting of each item as shown in the table below:

Setting Items	Shared NIC and virtual NIC	Dedicated NIC (1 Gbps)
IPv4 Checksum Offload	Disabled	Disabled
IPSec Offload	Disabled	Disabled
TCP Checksum Offload (IPv4)	Disabled	Disabled
TCP Checksum Offload (IPv6)	Disabled	Disabled
UDP Checksum Offload (IPv4)	Disabled	Disabled
UDP Checksum Offload (IPv6)	Disabled	Disabled
Receive Side Scaling	Disabled	Disabled
Large send offload (LSO)(IPv4)	Disabled	Disabled
Large send offload (LSO)(IPv6)	Disabled	Disabled

Tip Some items cannot be displayed depending on the types of network adapters. Create the settings only for the displayed items using your network adapter.

4. Reboot the OS after setting up.

– **Setting teaming**

When creating the teams with AFT, SFT, ALB, or something in the virtual NIC mode or the shared NIC mode, it is recommended to Disable the Probing of adapter created by the team if a lot of team switching events are recorded in the event viewer. The team switching is triggered only by link-down.
For procedures to disable the Probing, see *Hitachi Compute Blade LAN Advanced Function Manual (for ***).*
For Intel® 82576 functions such as AFT, SFT, or ALB and the use conditions, see also *Hitachi Compute Blade LAN Advanced Function Manual (for ***).*

– **Shared NIC and virtual NIC**

At the first OS boot after the OS installation, a shared NIC or a virtual NIC may not be recognized as network devices. They can be recognized correctly by rebooting the OS.

– **Changing LPAR configuration**

- When booting the computer after changing from uni-processor configuration to multi-processor configuration, a message that requires the reboot of the computer may appear. If this is the case, then reboot the computer according to the message, which allows executing operation in the multi-processor configuration.

- When the hardware configuration is changed, Windows product activation may be required for managing Windows license. In this case, execute the Windows product activation again. For Windows product activation, see OS help or documents related to OS.

– **Setting Serial Console**

When using virtual COM console, you need to configure serial console. Execute the following commands through the command prompt on the booted Windows and reboot the OS to use SAC on the OS installed on LPAR.

> bcdedit /ems ON

> bcdedit /emssettings EMSPORT:2 EMSBAUDRATE:115200

* Serial console can be used on the guest screen for LPAR manager screen. The moving from the LPAR manager screen to the guest screen is allowed only in the enabled LPARs. For the LPAR manager screen operation, see *Logical partitioning manager User's Guide*.

– **Changing Boot order**

The boot order must be changed after the installation. For more details about how to change the boot order, see "Changing Boot order"- "Guest OS Boot" in *Logical partitioning manager User's Guide.*

- **Notes and restrictions only on using Compute Blade 2500**

  None.

- **Notes and restrictions only on using Compute Blade 2000**
  - **Intel 82567LF-2 Gigabit Network Connection**

  The LAN device "Intel®82567LF-2 Gigabit Network Connection" has been disabled after completing the installation on X57A2 model. Make sure to set this device to "Disabled" since it cannot be used on the OS.

- **Notes and restrictions only on using LPAR manager for Compute Blade 2000**
  - **Disabled functions**

  The following functions are disabled on the guest OSs in the LP mode.
    - Hyper-V2.0/VMware/Xen
    - Hot Add Memory
    - Hot Add Processors
    - Hot Replace Memory
    - Hot Replace Processors
    - Power supply option

  - **Maximum MTU size**

  The following table describes the supported MTU size and the supportability in the LP mode while using Jumbo Frames in the shared NIC or the virtual NIC mode.

Guest OS	MTU size	Supportability in LP mode
Windows	Off (1500 bytes)	✓
	9014 bytes	✓
	16128 bytes	-

  ✓: Supported   -: Unsupported

– **Network**

- When using ALB, it is recommended to configure the team in a dedicated NIC mode.
- When creating teaming, a shared NIC, a virtual NIC, and a dedicated NIC cannot participate in the same team.
- When creating teaming, the team cannot be configured with different types of drivers. The teaming should be created with the same type of drivers.
- A shared NIC, a virtual NIC, and a dedicated NIC can be distinguished on Windows by using the following methods:

Using the PCI bus number of the device:

1. Select **Control Panel** > **System**, and click **Device Manager** shown on the left.
2. Click the **+** button in the **Network Adapter**. LAN devices are displayed.
3. Right-click a LAN device, and click **Properties** from the menu.
4. Select the **General** tab on the displayed **Properties,** and then check the **Location**.

   An adapter with the "PCI bus" of 127 is a shared NIC or a virtual NIC. Subtracting one (1) from the "device" value produces the number of a shared NIC or a virtual NIC on LPAR.

   An adapter with any "PCI bus" other than 127 is a dedicated NIC.

   Note that on X55R3/X55S3/X55R4 model, an adapter with the "PCI bus" of 125 is a shared NIC or a virtual NIC.

Using the MAC address:

1. View the MAC address used for a shared NIC or a virtual NIC in the "VNIC Assignment" flame in LPAR manager.

   Write down the MAC address of the target shared NIC or virtual NIC.
2. Boot Windows, and then enter the following command at the command prompt.

   ipconfig /all

When information on all LAN adapters is displayed, search the target shared NIC or virtual NIC using the MAC address as a keyword.

– **Driver for Shared NIC and Virtual NIC**

With LPAR manager firmware version 59-20/79-20 or earlier and NIC2 is used, proper communication may not be available due to frequent linkup and linkdown in shared NIC and virtual NIC. If so, you need to downgrade versions of the driver for shared NIC and virtual NIC and of Intel PROSet.

The driver and Intel PROSet are stored in the following directories. Use them in the downgrade steps shown below. Where D: is the drive name.

- Driver for shared NIC and virtual NIC

D:\WinSrv2008R2\Drivers\NIC\IntelNIC_02\x64

- Intel PROSet

D:\WinSrv2008\Utility\PROSet\PROSet_01\APPS\PROSETDX\Win64\DxSetup .exe

Downgrade the driver of shared NIC and virtual NIC and the version of Intel PROSet.

1. Uninstall the currently installed Intel PROSet.
2. Uninstall the currently installed the driver for shared NIC and virtual NIC.
3. Install the driver of shared NIC and virtual NIC in the directory shown above.
4. Install the version of Intel PROSet in the directory shown above.

– **Network adapter**

- When setting VNIC Device Type to NIC2 (Intel 82576), Link Speed changes and Diagnostics are not available on the **Link Speed** tab. The link speed cannot be changed from 1 Gbps even if changing it. For Diagnostics, performing Diagnostics causes "**Error**".

- When setting VNIC Device Type to NIC2 (Intel 82576), use default values for all setting items on **Power Management** tab. Even if each setting is changed on **Power Management** tab, these changes cannot take effect on the behaviors of shared NICs and virtual NICs.

– **Setting TCP/IP Checksum Offload function**

The onboard CNA and the LAN expansion card have a function that performs the checksum calculation for TCP/IP protocol through the LAN controller. However, use the TCP/IP checksum calculation function supported as a standard feature of the OS instead of using this function.

When the checksum calculation is set to perform through the OS, you can configure more reliable system by confirming the consistency of the packet data received from network in the final stage of OS protocol treatment. The network adapter setting must be changed.

If using Emulex 10 Gb LAN expansion card as Dedicated NIC or if using Intel 10 Gb LAN board, however, set default values to checksum offload items. If you set the calculation performed on the OS, transmission speed may be less than expected due to heavy load on CPU.

Configure offload settings on both NIC before teaming and the teaming interface.

The following steps show how to change checksum offload settings.

1. Open the Control panel window, and then click Hardware and Sound > Device Manager.
2. Right-click any network adapter, and then click **Properties (R)**.
3. Click **Setting Details** tab to change the setting of each item as shown in the table below:

Setting Items	Shared NIC and virtual NIC		Dedicated NIC 1 Gbps
	NIC 1	NIC 2	
IPv4 Checksum Offload	Disabled	Disabled	Disabled
IPSec Offload		Disabled	Disabled
TCP Checksum Offload (IPv4)	Disabled	Disabled	Disabled
TCP Checksum Offload (IPv6)		Disabled	Disabled
UDP Checksum Offload (IPv4)	Disabled	Disabled	Disabled
UDP Checksum Offload (IPv6)		Disabled	Disabled
Receive Side Scaling		Disabled	Disabled
Large send offload (LSO) (IPv4)	Disabled	Disabled	Disabled
Large send offload (LSO) (IPv6)		Disabled	Disabled

4. Reboot the OS after the installation.

Tip

Some items cannot be displayed depending on the types of network adapters. Create the settings only for the displayed items using your network adapter.

– **Setting to disable the SNP (Scalable Networking Pack)**

Disable the SNP (Scalable Networking Pack) function after installation.

1. Click **Start** > **Run**.

2. Enter **regedit** in the name (O) field and click **OK** button to start the Registry Editor.

3. Open the following folder:

   "HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters"

4. Right click the following registry. If there is no registry, create an entry as follows:

   File name: EnableTCPA
   Type: Reg_DWORD

5. Click Modify (M).

6. Set O (zero) in the **Value data (V):** field, click **OK**, and then close the Registry Editor.

7. Start the command prompt.

8. Execute the following commands at the command prompt:

   netsh int tcp set global chimney =disabled
    netsh int tcp set global rss =disabled

9. Reboot the OS after the setting.

– **Setting teaming**

When creating the teams with AFT, SFT, ALB, or something in the virtual NIC mode or the shared NIC mode, it is recommended to Disable the Probing of adapter created by the team if a lot of team switching events are recorded in the event viewer. The team switching is triggered only by link-down.
For procedures to disable the Probing, see *Hitachi Compute Blade LAN Advanced Function Manual (for ***).*
For Intel® 82576 functions such as AFT, SFT, or ALB and the use conditions, see also *Hitachi Compute Blade LAN Advanced Function Manual (for ***).*

– **Shared NIC and virtual NIC**

At the first OS boot after the OS installation, a shared NIC or a virtual NIC may not be recognized as network devices. They can be recognized correctly by rebooting the OS.

– **Changing LPAR configuration**

- When booting the computer after changing from uni-processor configuration to multi-processor configuration, a message that requires the reboot of the computer may appear. If this is the case, then reboot the computer according to the message, which allows executing operation in the multi-processor configuration.

- When the hardware configuration is changed, Windows product activation may be required for managing Windows license. In this case, execute the Windows product activation again. For Windows product activation, see OS help or documents related to OS.

– **Setting Serial Console**

When using virtual COM console, you need to configure serial console. Execute the following commands through the command prompt on the booted Windows and reboot the OS to use SAC on the OS installed on LPAR:

    bcdedit /ems ON

    bcdedit /emssettings EMSPORT:1 EMSBAUDRATE:115200

Note that serial console is enabled on the guest screen for LPAR manager screen. The moving from the LPAR manager screen to the guest screen is allowed only in the enabled LPARs. For the LPAR manager screen operation, see *User's Guide*.

– **Changing Boot order**

The boot order must be changed after the installation. For more details about how to change the boot order, see "LPAR manager"- "Guest OS Boot" - "Changing Boot orders" in *User's Guide*.

Notes and Restrictions on using Windows Server 2008 R2 Hyper-V2.0

This section describes the restrictions on using Windows Server 2008 R2 Hyper-V2.0.

Tip

Terms used in this guide are defined as below:

- Physical hardware: Physical hardware
- Virtual machine: Virtual hardware that runs virtually on a physical hardware
- Management OS: Operating systems installed on a physical hardware for managing Hyper-V2.0
- Guest OS: Operating systems installed on a virtual machine

- **Common notes and restrictions**
  - **Recommended physical hardware configuration**

    It is recommended that the system unit use the physical hardware that meets or exceeds the configuration requirements as below:

    - In addition to the total number of CPUs to be assigned to each guest OS running at the same time, at least one CPU for the management OS is required.
    - In addition to the total capacity of the memory, which is recommended by Microsoft, for each guest OS running at the same time, at least another 2 GB for the management OS is required.
    - Separate partitions are required for the management OS and the virtual hard disk file of a virtual machine.

Note

The recommendations above are just general standards and do not guarantee that the system can work well under any conditions. They may be insufficient depending on an application running on the guest OS. It is recommended to perform the system verification and check to make sure it works properly in advance.

Tip

The recommendations above are just general standards. When using the system for a specific purpose such as a test environment, it may not necessarily satisfy the recommended configuration requirements. You should consider carefully the configuration depending on your purpose.

– **Recommended virtual machine configuration**

It is recommended that the virtual machine be configured under the configurations that meet or exceed the system requirements recommended by Microsoft according to the guest OS.

Note

- The recommendations above are just general standards and do not guarantee that the system can work well under any conditions. They may be insufficient depending on an application running on the guest OS. It is recommended to perform the system verification in advane and check to make sure it works properly.
- The virtual hard disk file (.vhd) has three forms such as "fixed-size", "variable-size", and "differentiating vhds". In the "variable-size" or "differentiating vhds", the file size of the virtual hard disk file on the physical disk expands dynamically according to the using capacity of the virtual machine. If the size cannot be expanded due to the capacity shortage of the physical disk, the virtual machine is halted.
Confirm that the capacity of the physical disk is sufficient in the production environment. Otherwise, the virtual machine may stop unexpectedly. Therefore, it is recommended that the virtual hard disk be configured with the "fixed-size" in the production environment.
- The two types of virtual network adapters, the "network adapter" or "legacy network adapter", are selectable. Select the "network adapter" except for the case shown on page 3-87 "Modification Program when using Windows 2000" If "legacy network adapter" is used, various communication problems may be caused.

Tip

The maximum number of processors that can be assigned varies depending on a guest OS as shown below:

- Windows 2000 server: Up to 1
- Windows Server 2003 R2/Windows Server 2003/Windows Vista/ Windows XP: Up to 2
- Windows Server 2008 R2/Windows Server 2008/Windows7: Up to 4

Notes and Restrictions on using each OS **3-81**

– **Supported guest OS**

Hitachi has confirmed that the following guest OSs ran properly.

- Windows Server 2003, Standard Edition with Service Pack 2
- Windows Server 2003, Enterprise Edition with Service Pack 2
- Windows Server 2003, Standard x64 Edition with Service Pack 2
- Windows Server 2003, Enterprise x64 Edition with Service Pack 2
- Windows Server 2003 R2, Standard Edition with Service Pack 2
- Windows Server 2003 R2, Enterprise Edition with Service Pack 2
- Windows Server 2003 R2, Standard x64 Edition with Service Pack 2
- Windows Server 2003 R2, Enterprise x64 Edition with Service Pack 2
- Windows Server 2008 Standard 32-bit with no SP and with Service Pack 2
- Windows Server 2008 Enterprise 32-bit with no SP and with Service Pack 2
- Windows Server 2008 Datacenter 32-bit with no SP and with Service Pack 2
- Windows Server 2008 Standard 64-bit with no SP and with Service Pack 2
- Windows Server 2008 Enterprise 64-bit with no SP and with Service Pack 2
- Windows Server 2008 Datacenter 64-bit with no SP and with Service Pack 2
- Windows Server 2008 R2 Standard with no SP and with Service Pack 1
- Windows Server 2008 R2 Enterprise with no SP and with Service Pack 1
- Windows Server 2008 R2 Datacenter with no SP and with Service Pack 1
- Windows Vista Business 32-bit with Service Pack 2
- Windows Vista Enterprise 32-bit with Service Pack 2
- Windows Vista Ultimate 32-bit with Service Pack 2
- Windows 7 Enterprise 32-bit with no SP and with Service Pack 1
- Windows 7 Ultimate 32-bit with no SP and with Service Pack 1
- Windows 7 Enterprise 64-bit with no SP and with Service Pack 1
- Windows 7 Ultimate 64-bit with no SP and with Service Pack 1

| Note | Support lifecycle for Windows guest Oss is subject to Microsoft Support Lifecycle. Visit the following URL for details. http://support.microsoft.com/?pr=lifecycle&ln |

The guest OSs supported by Microsoft can also be installed other than those listed above, however the installation and the operation are not supported.

– **Maintenance**

When proceeding with the integration using the virtual environment, multiple tasks and environments can run on a single machine. Therefore, it is important to create the operational designs in advance to schedule the maintenance work, such as the system maintenance.

You should manage the operations as planned to schedule the preventive maintenance work for the system including the guest OS so that monthly security patches, application and driver updates, and Service Packs can be applied properly.

– **The number of processors to be used on Hyper-V 2.0**

The number of processors that can be used on the physical hardware for Windows Server 2008 R2 Hyper-V 2.0 has the following restrictions.

Edition	Maximum number of sockets	Maximum number of logical processors
Windows Server 2008 R2 Standard with no SP/with SP1	4	64
Windows Server 2008 R2 Enterprise with no SP/with SP1	8	64
Windows Server 2008 R2 Datacenter with no SP/with SP1	64	64

Up to 4 processors can be assigned to each virtual machine unit.

Tip

- If the number of processors is not more than 4, the number of processors to be assigned cannot exceed that of logical processors being installed on the physical machine.
- The maximum number of processors to be supported is different depending on the type of the guest OS.

These restrictions can be applied for Windows Server 2008 R2 and the maximum number of supported processors is different depending on the system unit.

– **Physical memory capacity to be used on Hyper-V 2.0**

The memory capacity that can be used on the physical hardware for Windows Server 2008 R2 Hyper-V 2.0 has the following restrictions.

Edition	Memory capacity
Windows Server 2008 R2 Standard with no SP/with SP1	32 GB
Windows Server 2008 R2 Enterprise with no SP/with SP1	1 TB
Windows Server 2008 R2 Datacenter with no SP/with SP1	1 TB

Note

In the environment where neither SP1 nor KB980589 is applied on the management OS for Enterprise and Datacenter, only up to 1 TB can be supported for the total amount of the physical memory capacity and the area (memory hole) reserved with Memory Mapped I/O. If the total amount of the physical memory capacity and the MMIO capacity exceeds 1 TB, the hang may occur at OS startup. The capacity of area reserved with Memory Mapped I/O is different depending on the system unit.

Up to 64 GB memory can be assigned to each virtual machine unit.

Tip

- If the memory capacity is not greater than 64 GB, the memory capacity to be assigned cannot exceed that being installed on the physical machine.
- The maximum memory capacity to be supported is different depending on the type of the guest OS.

These restrictions can be applied for Windows Server 2008 R2 and the supported maximum memory capacity is different depending on the system unit.

– **Using Application programs**

Some applications and middleware provide the notes on using Hyper-V 2.0. Please contact the supplier of each application for details.

– **Configuring cluster**

When configuring a cluster using Hyper-V 2.0, it is recommended to configure the Windows Failover Cluster (WSFC) between the management OSs. For more information about how to configure the cluster between management OSs, see the management OS Help.

Cluster configuration between a guest OS and a physical machine is not supported.

Cluster failover is executed when connection failure, such as FC cable disconnection, occurs between the management OS and a shared disk, however the failover may be unsuccessful when the shared quorum disk access fails, and then the cluster service itself may be disabled because of the overload with disk access to the shared disk by guest OSs.

– **Live migration**

When a series of live migrations is done in a short period, it may fail. Perform a series of live migration at the intervals of a few minutes.

– **Monitoring events related to physical hardware**

The events related to the physical hardware must be monitored on the management OS, not on the guest OS.

– **Shutting down and restarting management OS**

It is recommended to shut down all guest OSs explicitly before restarting and shutting down the management OS. Especially when multiple guest OSs are running, shutting down the management OS at the same time can cause high CPU load. The problems, such as taking too much time or an improper shutdown, may be caused.

– **RemoteFX**

RemoteFX function is not supported.

– **Other restrictions**

For other restrictions, search Microsoft Help and Support at the following URL using "Hyper-V" as a keyword:

http://support.microsoft.com/?ln=en

- **Notes and restrictions only for management OS**
  - **Software on management OS**

  It is not recommended to install task application (middleware), such as a database or an application server, on the management OS with Hyper-V enabled.

  - **Enabling roles**

  It is not recommended to enable any roles except Hyper-V for Windows Server 2008 R2 on the management OS with Hyper-V enabled.

- **Notes and restrictions only for guest OS**
  - **Installing guest OS and integrated services**

  Install a guest OS using only OS media, not using Server installation and monitoring tool. The integrated services must be installed after OS installation.

Note
For Windows 2000, the required modification programs must be applied before setting integrated services if necessary. See page 3-87 "Modification Program when using Windows 2000" for details.

  - **Server Core**

  Windows 2008/Windows 2008 R2 Server Core installation is not supported.

  - **Saving VM status**

  When click **Action** > **Save** in the management window on the virtual machine, the virtual machine status can be saved on the disk and the virtual machine can halt.

  To restart the virtual machine from the halting point, click **Action** > **Start**. However, this operation is different from the shutdown and reboot of the guest OS. Applications communicating with the outside may record an error.

  - **Notes for Active Directory on guest OS**

  Microsoft Help and Support provides "Things to consider when you host Active Directory domain controller in virtual hosting environments" at the following URL. Access the following URL and read it in advance:

  http://support.microsoft.com/kb/888794

– **Installing 32-bit OS installation media**

When using Windows Server 2003 32-bit with SP2 as a guest OS, use the OS installation media where SP1 or SP2 has been applied. Otherwise, the guest OS may display the **STOP** error and halt during installation.

– **Using snapshot**

It is not recommended to use the snapshot in the production environment. If using the snapshot, the performance overhead or the inconsistency may occur on the system where multiple servers are combined.

It is also not recommended to use the snapshot on the guest OS where Active Directory is configured. If using the snapshot, the inconsistency in database may occur.

– **Using virtual hard disk file**

When multiple virtual hard disk files are deployed on a physical hard disk, IO bottleneck may occur depending on processes on the guest OSs. This may affect the entire guest OS processes.

When using multiple guest OSs in the production environment, execute careful verification in advance. It is recommended to deploy virtual hard disk files on separate physical disks if necessary.

– **Installing virtual SCSI controller**

A guest OS cannot be installed on a virtual hard disk connected to a virtual SCSI controller.

When setting a guest OS to Windows 2000 Server, the virtual SCSI controller connected to a virtual machine is not available. Connect all virtual hard disks to the virtual IDE controller when setting a guest OS to Windows 2000 Server.

– **Modification Program when using Windows 2000**

When using Windows 2000 Service Pack 4 as a guest OS, if the following modification programs are applied to the guest OS where the integration service has been installed, STOP 0xCE may be displayed and it causes the guest OS to stop the functioning.

- KB891861

http://support.microsoft.com/kb/891861/

- KB905590

http://support.microsoft.com/kb/905590/

- KB922582

http://support.microsoft.com/kb/922582/

The modification programs above should be applied before installing the integration service as appropriate. In addition, when applying Windows Update, KB891861 / KB922582 must be run before installing the integration service since they are included in the high-priority update programs.

When KB891861 / KB922582 have already been run, applying Windows Update after installing the integration service does not cause any problems. Before installing the integration service, use "Legacy network adapter" for a virtual network adapter on a virtual machine. After installing the integration service, delete "Legacy network adapter" from a virtual machine, and then use "Network adapter".

If this phenomenon occurs, reinstallation of the guest OS may be required.

– **Playing sound on a guest OS**

When playing a sound with a guest OS, you cannot play a sound on the Hyper-V manager. If you need to play a sound, connect to the guest OS using an application such as a remote desktop client through a PC with a sound device to play the sound.

Tip When using a remote connecting application where playing sound is not available if some connecting destinations have no physical sound device, you cannot play sound even though using remote connection with a guest OS. See your application manual for details.

Notes and Restrictions on using Windows Server 2008

This section describes the restrictions when using Windows Server 2008.

- **Windows Server 2008 update modules**

  If not with the following OS update modules installed, make sure to apply OS update modules required on your system.

Service pack[1]	Update	URL for update module
SP2	Fixes a problem where STOP 0x7E occurs due to iSCSI boot.[2]	http://support.microsoft.com/kb/967999
	Fixes a problem where STOP 0x0A occurs with iSCSI initiator. [2]	http://support.microsoft.com/kb/2028982
	Fixes a problem where STOP error occurs when VLAN is deleted.	http://support.microsoft.com/kb/2479442
	Fixes a problem where a memory leak occurs in a session pool.	http://support.microsoft.com/kb/2523126
	Fixes a problem where communication is not available after 497 days from the startup.	http://support.microsoft.com/kb/2553549
	Fixes a problem where STOP 0x1A occurs after enabling Hyper-V.[3]	http://support.microsoft.com/kb/981791
1. Apply only modules corresponding to the service pack you use.		
2. Only for Micorsoft Software iSCSI Initiator		
3. Only when Hyper-V is enalbled		

- **Common notes and restrictions for system units**
  - **The number of processors to be recognized by Windows Server 2008**

  The number of processors that OS can recognize has the following restrictions:

Edition	Maximum number of sockets	Maximum number of logical processors
Windows Server 2008 Standard 32-bit version with SP2	4	32
Windows Server 2008 Standard 64-bit version with SP2	4	64
Windows Server 2008 Enterprise 32-bit version with SP2	8	32
Windows Server 2008 Enterprise 64-bit version with SP2	8	64
Windows Server 2008 Datacenter 32-bit version with SP2	32	32
Windows Server 2008 Datacenter 64-bit version with SP2	32	64

The table above shows the restrictions for Windows Server 2008 and the supported maximum numbers are different depending on the system unit.

– **Physical memory capacity**

The memory capacity that OS can recognize has the following restrictions:

Edition	Memory capacity
Windows Server 2008 Standard 32-bit version with SP2	4 GB
Windows Server 2008 Standard 64-bit version with SP2	32 GB
Windows Server 2008 Enterprise 32-bit version with SP2	64 GB
Windows Server 2008 Enterprise 64-bit version with SP2	1 TB
Windows Server 2008 Datacenter 32-bit version with SP2	64 GB
Windows Server 2008 Datacenter 64-bit version with SP2	1 TB

The table above shows the restrictions for Windows Server 2008 and the supported memory capacities are different depending on the system unit.

Note

On Windows Server 2008 Enterprise 64-bit version with SP2 / Datacenter 64-bit version with SP2, only up to 1 TB can be supported for the total amount of the physical memory capacity and the area (memory hole) reserved with Memory Mapped I/O. If the total amount of the physical memory capacity and the MMIO capacity exceeds 1 TB, the hang may occur at OS startup. The capacity of area reserved with Memory Mapped I/O varies depending on the system unit.

Microsoft recommends that Windows Server 2008 have 2 GB memory. If the memory is not enough, the processing may not be completed within the expected time period or may be interrupted due to the resource shortage during high load.

– **Server Core**

Server Core installation is not supported.

– **Shutting down Windows Server**

When shutting down Windows before the services that are registered to start automatically at Windows startup are not successfully activated, the shutdown may not be completed properly.

You must shut down or reboot Windows more than five minutes after starting Windows.

– **Repair your computer**

Windows Recovery Environment (hereinafter referred to as Windows RE) cannot be started on some OS installation media by clicking **Repair your computer** displayed in the window during processing. See the following URL for details:

http://support.microsoft.com/kb/951495

– **Creating backup file**

Windows Server Backup does not support backing up to tape media. When backing up data to tape media, the backup software must be purchased separately.

The backing up to DVD media with Windows Server Backup is also not supported.

– **Displaying Window**

After switching the window display for changing tasks, the previous display may remain depending on the timing. In such a case, redraw the point in question to display properly.

Depending on the status of use, the message box may be hidden behind other windows.

To change the display color, terminate the application. Otherwise, it can cause strange display of the application. In such a case, redraw by switching the window for proper display.

The window may not be displayed properly with the refresh rates depending on the display. When changing the refresh rates, confirm that your monitor can display a window properly.

A window may remain displayed after stopping the movie on some movie applications. When this phenomenon occurs, change the windows such as by maximizing another window.

– **Functioning power saving**

The power supply options of "Sleep", "Hybrid Sleep", and "Hibernate" are not supported. These settings must not be created.

Among power supply options, you can only change the timeout period with **Shutdown display**.

– **Setting recovery operation after Bug Checks (Blue Screens) errors**

When you get Bug Checks (Blue Screens) due to system errors, the setting to disable the automatic system restart is available.

The setting must be changed based on your environment.

1. Click Start > Management Tool > Server Manager, and then open Server Manager.
2. Click Change System Properties, and open System Properties.
3. Click Setting Details tab > Set in Start and Recovery. Start and Recovery window is displayed.
4. Uncheck the checkbox for **Automatically restart**, and click **OK**.

– **Getting complete memory dump of physical memory exceeding 2 GB**

When Windows is set on a system unit installed with greater than 2 GB memory, **Complete Memory Dump** cannot be selected through **Write Debug Information** in **Start and Recovery**. Perform the following steps when getting **Complete Memory Dump** in an environment where greater than 2 GB physical memory is installed. **Complete Memory Dump** is not displayed in the **Write Debug Information** list.

1. Insert the "Hitachi Compute Blade Series/Hitachi Compute Rack Series Server installation and monitoring tool" DVD media into the DVD drive.
2. Click **Run** in the **Start** menu, enter "d*:\Win2008\Utility\PMDE.BAT (*d represents DVD drive name.)" for the file name, and then click **OK**.
3. Press any key when the following messages appear.
   Change the setting to get Complete Memory Dump.
   Press any key to continue the operation.
   Press the Ctrl + C keys to cancel the setting.
4. Set virtual memory size.
   For more details about virtual memory size, see page 3-92 <u>Setting virtual memory size</u>.

– **Setting "virtual memory" size**

When set "virtual memory" to get the complete memory dump, set the "virtual memory" file size to greater than the physical memory size. If the file size of the "virtual memory" is set to smaller than the physical memory, a warning message "**If the paging file is disabled or the virtual memory's initial page size is smaller than *xxx* MB, system error can occur and useful information to identify the problem cannot be saved. Do you like to continue?"** is displayed. If this *xxx* MB is selected, the complete memory dump may not be properly obtained. Set the file size to greater than *xxx* +400 MB.

When you set "virtual memory" to get the kernel memory dump, the "virtual memory" size must be large enough. Otherwise, the kernel memory dump may not be properly collected.

– **Write-caching policy**

When using a model with embedded RAID, do not change the checkbox state for **Enable write caching on the device**, Write-caching policy, Policies tab on Properties window of the disk drive connected to the RAID. If you change the checkbox state on the OS, hardware settings for the RAID may be changed and the RAID may not work properly. You can open Properties window of each disk drive from Device Manager or Disk Management.

For Write-caching policy, enable it on RAID hardware configuration.

– **Checking Event viewer logs**

The following error events may be logged in the event log.

Event type	Event ID	Event source	Description	Effects	Remarks
Warning	63	Microsoft-Windows-WM1	A provider WmiPerfClass has been registered in the Windows Management Instrumentation namespace, root¥cimv2, to use the LocalSystem account. This account is privileged and the provider may cause a security violation if it does not correctly impersonate user requests.	There is no problem if It is logged only one time during the OS installation.	It may be logged in the event log during the OS installation.
Warning	263	PlagPlayManager	The service 'ShellHWDetection' may not have unregistered for device event notifications before it was stopped.	There is no problem if It is logged only one time during the OS installation.	It may be logged in the event log during the OS installation.
Error	10009	DistributedCOM	DCOM was unable to communicate with the computer-ilc using any of the configured protocols.	You can safely ignore this event.	It may be logged in the system event log after the OS installation.
Error	49	volmgr	Configuring the Page file for crash dump failed. Make sure there is a page file on the boot partition and that is large enough to contain all physical memory.	Recommended Page file size by Windows varies depending on the physical memory. When the c: drive capacity or space cannot satisfy the recommended size, this event is recorded. Though there is no problem with the usual OS operation, complete memory dump cannot be obtained. When large physical memory is required, set the c: drive to a larger size in advance.	It may be logged in the event log during the OS boot.
Error	15016	Microsoft-Windows-HttpEvent	Unable to initialize the security package Kerberos for server side authentication. The data field contains the error number.	You can safely ignore this event.	It may be logged in the event log.

Event type	Event ID	Event source	Description	Effects	Remarks
Warning	5	Storflt	The Virtual Storage Filter Driver is disabled through the registry. It is inactive for all disk drives.	You can safely ignore this event on a system where Hyper-V is not running.	See the following URL for details: http://support.microsoft.com/kb/951007
Error	7000	Service Control Manager Eventlog provider	The Parallel port driver service failed to start due to the following error: The service cannot be started, either because it is disabled or because it has no enabled devices associated with it.	You can safely ignore this event.	See the following URL for details: http://support.microsoft.com/kb/933757
Warning or Error	XXXX (XXXX represents any numeral)	Microsoft-Windows-WHEA-Logger	XXXX (XXXX represents any descriptions)		Microsoft-Windows-WHEA-Logger events are logs related to the hardware error. If the event level is "warning", you can safely ignore this event since it can be modified automatically. If the event level is "error", contact the supplier.
Warning	6005	Microsoft-Windows-Winlogon	The winlogon notification subscriber <GPClient> is taking long time to handle the notification event (CreateSession).	There is no problem if It is logged at system boot time. Make sure the next event log is logged after a period of time.	It may be logged in the event log.
Warning	6006	Microsoft-Windows-Winlogon	The winlogon notification subscriber <GPClient> took XX second(s) to handle the notification event (CreateSession). ("XX" is different based on your environment.)		
Error	10	VDS Dynamic Provider	The provider failed while storing notifications from the driver. The virtual Disk Service should be restarted. Hr=xxxxxxx		See the following URL and restart the Virtual Disk service if required: http://support.microsoft.com/kb/948275
Warning	4374	Microsoft-Windows-Servicing	Windows Servicing identified that package KB4374 (Service Pack) is not applicable for this system	You can safely ignore this event.	It may be logged in the system event log during the OS boot after applying Windows Server 2008 SP2.
Error	7026	Service Control Manager	The following boot-start drivers or system-start drivers failed to load: storflt.	You can safely ignore this event.	It may be logged in the system event log during the OS boot after applying Windows Server 2008 SP2. See the following URL and for details: http://support.microsoft.com/kb/971527

– **Restrictions on changing network adapter parameters**

When the network adapter settings have been changed, the communication may be interrupted through all network adapters and some errors may be logged in OS event logs before the settings take effect. After changing the settings, make sure to communicate properly in advance.

After the network adapter setting has changed, the communication may not be performed properly through the network adapter whose setting has changed. Confirm the network adapter whose setting has changed on the Device Manager. If "!" mark is displayed, right-click the adapter to disable it, and then enable it again. When rebooting OS, the adapter can communicate properly.

– **Local Area Connection**

The network connection is displayed under the name of "**Local Area Connection X**" (X represents a numeral) according to the following steps: Click **Start** > **Administrative Tools** > **Server Manager**, and when **Server Manager** window is displayed, click **Network Connection Display**.

The number following "**Local Area Connection**" and the LAN device number displayed in the "device name" are independent of each other and not equal. In addition, the relationship between the number following "**Local Area Connection**" and the LAN port installed in the default configuration on the system unit is also independent of each other. For example, "**Local Area Connection**" (not followed by a number) is not consistent with LAN1 on the system unit.

Confirm the relationship between "**Local Area Connection**" and LAN device before the initial setting of the network. It is recommended to assign a recognizable name in your environment after confirming since the name of "**Local Area Connection**" is changeable.

– **Displaying event log of network adapter**

\DEVICE\ {354C76B6-E426-4CEB-8015-BF991BA8D75F} may be displayed instead of a network adapter name such as "Intel(R) 82576 Gigabit Dual Port Network Connection" or "Broadcom NetXtreme Gigabit Ethernet" in the event log description column for the network adapter.

This symptom occurs due to the specification and does not affect the operation. The network adapter name and the numerals (GUID) enclosed in braces ({ }) may be different based on your environment.

– **Event log of network adapter during startup**

The error event may occur on a network adapter during system startup. The link-down may occur on the network adapter. The linkup event may be recorded during system startup, whatever the actual link status of the network adapter may be. Confirm the connection status of the target network adapter in **Network Connection**.

– **Displaying file properties**

When displaying **Details** tab through File Properties in Explorer, the information such as File Version, Product Information, or Product Version may not appear. Reboot the OS or change the number of bits for the display color, then these undisplayed information may appear.

– **Microsoft Multipath I/O function**

When Windows Server 2008 SP2 has not been applied and Multipath environment has been configured with OS standard function "Multipath I/O" enabled, a modification program "KB967752" must be installed before applying SP2.

When Windows Server 2008 SP2 is applied before installing the modification program, uninstalling SP2 disables the access to Multipath disk and the OS boot. See the following Microsoft website for details:
http://support.microsoft.com/kb/967752

– **Device Manager**

When Windows Server 2008 SP2 has not been applied, you can encounter a problem that "disabled" device is automatically changed to "enabled" through the device manager after applying SP2. Confirm the "disabled" device through the device manager before applying Windows Server 2008 SP2, and if it has been changed to "enabled" after applying SP2, the "enabled" device must be set to "disabled" again.

– **Using USB flash drive**

Operation of USB flash drives other than optional ones, FK802G, FK804G, and FK808G is not guaranteed. With a USB flash drive connected, the system unit must not be powered on or restarted. Connect the USB flash drive after the OS startup, and then make sure that drive letters for the other drives are not changed.

Do not connect a USB flash drive to the system unit at setup unless otherwise specified in this manual.

– **Restrictions for 10/100Mbps half-duplex communications on network adapter**

When setting the communication speed to 10M half-duplex or 100M half-duplex on the network adapter with the name starting with "Intel" using the device manager, **Large send offload (LSO) (IPv4)**, **Large send offload (LSO) (IPv6)**, and **Header Data Partition** must be set to disable.

Open Properties of the target network adapter through the Device Manager, select **Setting details** tab, and then **Large send offload (LSO) (IPv4)**, **Large send offload (LSO) (IPv6)**, and **Header Data Partition** must be set to **OFF**.

– **Using BitLocker Drive Encryption**

BitLocker Drive Encryption can be supported only when using TPM (Trusted Platform Module). For more information about whether TPM has been installed on your system and how to enable it, see the manual for each system unit.

BitLocker Drive Encryption enables you to encrypt the drive. Some applications and some middleware may not support this function, or the precautions for the operations can be provided. Contact the supplier for more details.

You must set BitLocker Drive Encryption disabled in advance before the operations of the hardware maintenance or extension.

Careful consideration should be given to managing "Recovery password". If you lose the "Recovery password", the OS startup or the data access may be disabled. Furthermore, the operations of the hardware maintenance or extension may not be executed.

When the BitLocker Drive Encryption is enabled, overhead occurs due to the encryption or the decoding process. When using the BitLocker Drive Encryption in the database that high performance is required, or in the Hyper-V environment, the BitLocker Drive Encryption may not provide the expected performance. It is recommended to perform the system verification in advance and check to make sure it works properly.

- **Notes and restrictions only on using Compute Rack**

  None

- **Notes and restrictions only on using Compute Blade 500**

  None

- **Notes and restrictions only on using LPAR manager for Compute Blade 500**

  – **Disabled functions**

  The following functions are disabled on the guest OSs in the LP mode.

  - Hyper-V/VMware/Xen
  - Hot Add Memory
  - Hot Add Processors
  - Hot Replace Memory
  - Hot Replace Processors
  - Power supply option

– **Maximum MTU size**

The following table describes the supported MTU size and the supportability in the LP mode while using Jumbo Frames in the shared NIC or the virtual NIC mode.

Guest OS	MTU size	Supportability in LP mode
Windows	Off (1500 bytes)	✓
	9014 bytes	✓
	16128 bytes	-

✓: supported   -: Unsupported

– **Network**

- When using ALB, it is recommended to configure the team in a dedicated NIC mode.

- When creating teaming, a shared NIC, a virtual NIC, and a dedicated NIC cannot participate in the same team.

- When creating teaming, the team cannot be configured with different types of drivers. The teaming should be created with the same type of drivers.

- A shared NIC, a virtual NIC, and a dedicated NIC can be identified on Windows by the network adapter names as below:

  – Shared NIC and virtual NIC: Network adapter name starting with "Intel(R) 82576 Gigabit"

  – Dedicated NIC: Network adapter name starting with "Broadcom or Emulex"

– **Network adapter**

- The **Link Speed** tab does not enable the change in the link speed and Diagnostics. The link speed cannot be changed from 1 Gbps even if changing it. For Diagnostics, performing Diagnostics causes Error.

- On **Power Management** tab, use default values for all setting items. Even if each setting is changed on **Power Management** tab, these changes cannot take effect on the behaviors of shared NICs and virtual NICs.

— **Setting TCP/IP Checksum Offload function**

The onboard CNA and the LAN expansion card have a function that performs the checksum calculation for TCP/IP protocol through the LAN controller. However, use the TCP/IP checksum calculation function supported as a standard feature of the OS without using this function.

When the checksum calculation is set to perform through the OS, you can configure more reliable system by confirming the consistency of the packet data received from network in the final stage of OS protocol treatment. The network adapter setting must be changed.

If using Emulex 10 Gb LAN expansion card as Dedicated NIC, however, set default values to checksum offload items. If you set the calculation performed on the OS, transmission speed may be less than expected due to heavy load on CPU.

Configure offload settings on both NIC before teaming and the teaming interface.

The following steps show how to change the checksum calculation of the LAN controller through the OS.

1. Open the Control panel window, and click Hardware and Sound > Device Manager.
2. Right-click any network adapter, and then click **Properties (R)**.
3. Click **Setting Details** tab to change the setting of each item as shown in the table below:

Setting Items	Shared NIC and virtual NIC	Dedicated NIC (1 Gbps)
IPv4 Checksum Offload	Disabled	Disabled
IPSec Offload	Disabled	Disabled
TCP Checksum Offload (IPv4)	Disabled	Disabled
TCP Checksum Offload (IPv6)	Disabled	Disabled
UDP Checksum Offload (IPv4)	Disabled	Disabled
UDP Checksum Offload (IPv6)	Disabled	Disabled
Receive Side Scaling	Disabled	Disabled
Large send offload (LSO)(IPv4)	Disabled	Disabled
Large send offload (LSO)(IPv6)	Disabled	Disabled

Tip

Some items may not be displayed depending on the types of network adapters. Create the settings only for the displayed items using your network adapter.

4. Reboot the OS after setting up.

– **Setting teaming**

When creating the teams with AFT, SFT, ALB, or something in the virtual NIC mode or the shared NIC mode, it is recommended to Disable the Probing of adapter created by the team if a lot of team switching events are recorded in the event viewer. The team switching is triggered only by link-down.
For procedures to disable the Probing, see *Hitachi Compute Blade LAN Advanced Function Manual (for ***)* stored on a built-in Flash Memory on Server Chassis.
(*** represents supplier names of Intel, Broadcom, or Emulex.)
For Intel® 82576 functions such as AFT, SFT, or ALB and the use conditions, see *Hitachi Compute Blade LAN Advanced Function Manual (for ***)* stored on a built-in Flash Memory on Server Chassis.
(***represents supplier names of Intel, Broadcom, or Emulex)

– **Shared NIC and virtual NIC**

At the initial OS boot after the OS installation, a shared NIC or a virtual NIC may not be recognized as network devices. They can be recognized correctly by rebooting the OS.

– **Changing LPAR configuration**

- When booting the computer after changing from uni-processor configuration to multi-processor configuration, a message that requires the reboot of the computer may appear. If this is the case, then reboot the computer according to the message, which allows executing operation in the multi-processor configuration.

- When the hardware configuration is changed, Windows product activation may be required for managing Windows license. In this case, execute the Windows product activation again. For Windows product activation, see OS help or documents related to OS.

– **Setting Serial Console**

When using virtual COM console, you need to configure serial console. Execute the following commands through the command prompt on the booted Windows and reboot the OS to use SAC on the OS installed on LPAR.

bcdedit /ems ON

bcdedit /emssettings EMSPORT:2 EMSBAUDRATE:115200

* Serial console can be used on the guest screen for LPAR manager screen. The moving from the LPAR manager screen to the guest screen is allowed only in the enabled LPARs. For the LPAR manager screen operation, see *Logical partitioning manager User's Guide.*

– **Changing Boot order**

The boot order must be changed after the installation. For more details about how to change the boot order, see "Changing Boot order"- "Guest OS Boot" in *Logical partitioning manager User's Guide.*

- **Notes and restrictions only on using Compute Blade 2000**
  – **BitLocker Drive Encryption**

BitLocker Drive Encryption function is not supported.

  – **Intel 82567LF-2 Gigabit Network Connection**

The LAN device "Intel®82567LF-2 Gigabit Network Connection" has been disabled after completing the installation on X57A2 model. Make sure to set this device to "Disabled" since it cannot be used on the OS.

- **Notes and restrictions only on using LPAR manager for Compute Blade 2000**
  – **Disabled functions**

The following functions are disabled on the guest OSs in the LP mode.
  - Hyper-V/VMware/Xen
  - Hot Add Memory
  - Hot Add Processors
  - Hot Replace Memory
  - Hot Replace Processors
  - Power supply option

  – **Maximum MTU size**

The following table describes the supported MTU size and the supportability in the LP mode while using Jumbo Frames in the shared NIC or the virtual NIC mode.

Guest OS	MTU size	Supportability in LP mode
Windows	Off (1500 bytes)	✓
	9014 bytes	✓
	16128 bytes	-

✓: Supported   -: Unsupported

- **Network**
  - When using ALB, it is recommended to configure the team in a dedicated NIC mode.
  - When creating teaming, a shared NIC, a virtual NIC, and a dedicated NIC cannot participate in the same team.
  - When creating teaming, the team cannot be configured with different types of drivers. The teaming should be created with the same type of drivers.
  - A shared NIC, a virtual NIC, and a dedicated NIC can be distinguished on Windows by using the following methods:

Using the PCI bus number of the device:

1. Select **Control Panel** > **System**, and click **Device Manager** shown on the left.
2. Click the **+** button in the **Network Adapter**. LAN devices are displayed.
3. Right-click a LAN device, and click **Properties** from the menu.
4. Select the **General** tab on the displayed **Properties,** and then check the **Location**.

   An adapter with the "PCI bus" of 127 is a shared NIC or a virtual NIC. Subtracting one (1) from the "device" value produces the number of a shared NIC or a virtual NIC on LPAR.

   An adapter with any "PCI bus" other than 127 is a dedicated NIC.

   Note that on X55R3/X55S3/X55R4 model, an adapter with the "PCI bus" of 125 is a shared NIC or a virtual NIC.

Using the MAC address:

1. View the MAC address used for a shared NIC or a virtual NIC in the "VNIC Assignment" flame on LPAR manager.

   Write down the MAC address of the target shared NIC or virtual NIC.
2. Boot Windows, and then enter the following command at the command prompt:

   ipconfig /all

When information on all LAN adapters is displayed, search the target shared NIC or virtual NIC using the MAC address as a keyword.

– **Driver for Shared NIC and Virtual NIC with Windows Server 2008 x64**

With LPAR manager firmware version 59-20/79-20 or earlier and NIC2 is used, proper communication may not be available due to frequent linkup and linkdown in shared NIC and virtual NIC. If so, you need to downgrade versions of the driver for shared NIC and virtual NIC and of Intel PROSet.

The driver and Intel PROSet are stored in the following directories. Use them in the downgrade steps shown below. Where D: is the drive name.

- Driver for shared NIC and virtual NIC

D:\WinSrv2008\Drivers\NIC\IntelNIC_02\x64

- Intel PROSet

D:\WinSrv2008\Utility\PROSet\PROSet_01\APPS\PROSETDX\Win64\DxSetup.exe

Downgrade the driver of shared NIC and virtual NIC and the version of Intel PROSet.

1. Uninstall the currently installed Intel PROSet.
2. Uninstall the currently installed the driver for shared NIC and virtual NIC.
3. Install the driver of shared NIC and virtual NIC in the directory shown above.
4. Install the version of Intel PROSet in the directory shown above.

– **Network adapter**

- When setting VNIC Device Type to NIC2 (Intel 82576), Link Speed changes and Diagnostics are not available on the **Link Speed** tab. The link speed cannot be changed from 1 Gbps even if changing it. For Diagnostics, performing Diagnostics causes "**Error**".
- When setting VNIC Device Type to NIC2 (Intel 82576), use default values for all setting items on **Power Management** tab. Even if each setting is changed on **Power Management** tab, these changes cannot take effect on the behaviors of shared NICs and virtual NICs.

– **Setting TCP/IP Checksum Offload function**

The onboard CNA and the LAN expansion card have a function that performs the checksum calculation for TCP/IP protocol through the LAN controller. However, use the TCP/IP checksum calculation function supported as a standard feature of the OS instead of using this function.

When the checksum calculation is set to perform through the OS, you can configure more reliable system by confirming the consistency of the packet data received from network in the final stage of OS protocol treatment. The network adapter setting must be changed.

If using Emulex 10 Gb LAN expansion card as Dedicated NIC or if using Intel 10 Gb LAN board, however, set default values to checksum offload items. If you set the calculation performed on the OS, transmission speed may be less than expected due to heavy load on CPU.

Configure offload settings on both NIC before teaming and the teaming interface.

The following steps show how to change checksum offload settings.

1. Open the Control panel window, and then click Hardware and Sound > Device Manager.

2. Right-click any network adapter, and then click **Properties (R)**.

3. Click **Setting Details** tab to change the setting of each item as shown in the table below:

Setting Items	Shared NIC and virtual NIC		Dedicated NIC (1 Gbps)
	NIC 1	NIC 2	
IPv4 Checksum Offload	Disabled	Disabled	Disabled
IPSec Offload		Disabled	Disabled
TCP Checksum Offload (IPv4)	Disabled	Disabled	Disabled
TCP Checksum Offload (IPv6)		Disabled	Disabled
UDP Checksum Offload (IPv4)	Disabled	Disabled	Disabled
UDP Checksum Offload (IPv6)		Disabled	Disabled
Receive Side Scaling		Disabled	Disabled
Large send offload (LSO) (IPv4)	Disabled	Disabled	Disabled
Large send offload (LSO) (IPv6)		Disabled	Disabled

Tip

Some items cannot be displayed depending on the types of network adapters. Create the settings only for the displayed items using your network adapter.

4. Reboot the OS after the installation.

– **Disabling SNP**

Disable SNP (Scalable Networking Pack) following steps below after setup.

1. Click **Start** > **Run**.

2. Type **regedit** in the **Open** text box, and click **OK** to start the registry editor.

3. Open the folder HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Para meters.

4. Right-click the following file. If no registry exists, create the entry.

   File name: EnableTCPA

   Type: REG_DWORD

5. Click **Modify** (M).

6. Set **0**, zero, to Value, click **OK**, and close the editor.

7. Strat the command prompt.

8. Perform the following netsh commands at the command prompt.

   netsh int tcp set global chimney =disabled

   netsh int tcp set global rss =disabled

Reboot the OS after setting those values.

– **Setting teaming**

When creating the teams with AFT, SFT, ALB, or something in the virtual NIC mode or the shared NIC mode, it is recommended to Disable the Probing of adapter created by the team if a lot of team switching events are recorded in the event viewer. The team switching is triggered only by link-down.
For procedures to disable the Probing, see *Hitachi Compute Blade LAN Advanced Function Manual (for ***).*
For Intel® 82576 functions such as AFT, SFT, or ALB and the use conditions, see also *Hitachi Compute Blade LAN Advanced Function Manual (for ***).*

– **Shared NIC and virtual NIC**

At the first OS boot after the OS installation, a shared NIC or a virtual NIC may not be recognized as network devices. They can be recognized correctly by rebooting the OS.

- **Changing LPAR configuration**
  - When booting the computer after changing from uni-processor configuration to multi-processor configuration, a message that requires the reboot of the computer may appear. If this is the case, then reboot the computer according to the message, which allows executing operation in the multi-processor configuration.
  - When the hardware configuration is changed, Windows product activation may be required for managing Windows license. In this case, execute the Windows product activation again. For Windows product activation, see OS help or documents related to OS.

- **Setting Serial Console**

When using virtual COM console, you need to configure serial console. Execute the following commands through the command prompt on the booted Windows and reboot the OS to use SAC on the OS installed on LPAR:

> bcdedit /ems ON
>
> bcdedit /emssettings EMSPORT:1 EMSBAUDRATE:115200

Note that serial console is enabled on the guest screen for LPAR manager screen. The moving from the LPAR manager screen to the guest screen is allowed only in the enabled LPARs. For the LPAR manager screen operation, see *User's Guide.*

- **Changing Boot order**

The boot order must be changed after the installation. For more details about how to change the boot order, see "LPAR manager"- "Guest OS Boot" - "Changing Boot orders" in *User's Guide.*

Notes and Restrictions on using Windows Server 2008 Hyper-V

This section describes the restrictions on using Windows Server 2008 Hyper-V.

Tip

Terms used in this guide are defined as below:

- Physical hardware: Physical hardware
- Virtual machine: Virtual hardware that runs virtually on a physical hardware
- Management OS: Operating systems installed on a physical hardware for managing Hyper-V
- Guest OS: Operating systems installed on a virtual machine

- **Common notes and restrictions**
  - – **Recommended physical hardware configuration**

    It is recommended that the system unit use the physical hardware that meets or exceeds the configuration requirements as below:

    - In addition to the total number of CPUs to be assigned to each guest OS running at the same time, at least one CPU for the management OS is required.
    - In addition to the total capacity of the memory, which is recommended by Microsoft, for each guest OS running at the same time, at least another 2 GB for the management OS is required.
    - Separate partitions are required for the management OS and the virtual hard disk file of a virtual machine.

Note

The recommendations above are just general standards and do not guarantee that the system can work well under any conditions. They may be insufficient depending on an application running on the guest OS. It is recommended to perform the system verification in advance and check to make sure it works properly.

Tip

The recommendations above are just general standards. When using the system for a specific purpose such as a test environment, it may not necessarily satisfy the recommended configuration requirements. You should consider carefully the configuration depending on your purpose.

– **Recommended virtual machine configuration**

It is recommended that the virtual machine be configured under the configurations that meet or exceed the system requirements recommended by Microsoft according to the guest OS.

Note

- The recommendations above are just general standards and do not guarantee that the system can work well under any conditions. They may be insufficient depending on an application running on the guest OS. It is recommended to perform the system verification in advance and check to make sure it works properly.
- The virtual hard disk file (.vhd) has three forms such as "fixed-size", "variable-size", and "differentiating vhds". In the "variable-size" or "differentiating vhds", the file size of the virtual hard disk file on the physical disk expands dynamically according to the using capacity of the virtual machine. If the size cannot be expanded due to the capacity shortage of the physical disk, the virtual machine is halted.
Confirm that the capacity of the physical disk is sufficient in the production environment. Otherwise, the virtual machine may stop unexpectedly. Therefore, it is recommended that the virtual hard disk be configured with the "fixed-size" in the production environment.
- The two types of virtual network adapters, the "network adapter" or "legacy network adapter", are selectable. Select the "network adapter". If "legacy network adapter" is used, various communication problems may be caused.

Tip

See the following URLs for the system requirements for each OS recommended by Microsoft:

- Windows Server 2000: Up to 1
- Windows Server 2003 R2 / Windows Server 2003: Up to 2
- Windows Server 2008: Up to 4

- **Supported guest OS**

Hitachi has confirmed that the following guest OSs ran properly.

- Windows Server 2003, Standard Edition with Service Pack 2
- Windows Server 2003, Enterprise Edition with Service Pack 2
- Windows Server 2003, Standard x64 Edition with Service Pack 2
- Windows Server 2003, Enterprise x64 Edition with Service Pack 2
- Windows Server 2003 R2, Standard Edition with Service Pack 2
- Windows Server 2003 R2, Enterprise Edition with Service Pack 2
- Windows Server 2003 R2, Standard x64 Edition with Service Pack 2
- Windows Server 2003 R2, Enterprise x64 Edition with Service Pack 2
- Windows Server 2008 Standard 32-bit with no SP and with Service Pack 2
- Windows Server 2008 Enterprise 32-bit with no SP and with Service Pack 2
- Windows Server 2008 Datacenter 32-bit with no SP and with Service Pack 2
- Windows Server 2008 Standard 64-bit with no SP and with Service Pack 2
- Windows Server 2008 Enterprise 64-bit with no SP and with Service Pack 2
- Windows Server 2008 Datacenter 64-bit with no SP and with Service Pack 2

Note	Support lifecycle for Windows guest Oss is subject to Microsoft Support Lifecycle. Visit the following URL for details. http://support.microsoft.com/?pr=lifecycle&ln

Although guest Oss supported by Microsoft can be installed other than those listed above, the installation and operation are not supported.

- **Maintenance**

When proceeding with the integration using the virtual environment, multiple tasks and environments can run on a single machine. Therefore, it is important to create the operational designs in advance to schedule the maintenance work, such as the system maintenance.

You should manage the operations as planned to schedule the preventive maintenance work for the system including the guest OS so that monthly security patches, application and driver updates, and Service Packs can be applied properly.

– **The number of processors to be used on Hyper-V**

The number of processors that can be used on the physical hardware for Windows Server 2008 Hyper-V has the following restrictions.

Edition	Maximum number of sockets	Maximum number of logical processors
Windows Server 2008 Standard 64-bit with SP2	4	24
Windows Server 2008 Enterprise 64-bit with SP2	8	24
Windows Server 2008 Datacenter 64--bit with SP2	64	24

Up to 4 processors can be assigned to each virtual machine unit.

Tip	• If the number of processors is not more than 4, the number of processors to be assigned cannot exceed that of logical processors being installed on the physical machine. • The maximum number of processors to be supported varies depending on the type of the guest OS.

These restrictions can be applied for Windows Server 2008 and the maximum number of supported processors is different depending on the system unit.

– **Physical memory capacity to be used on Hyper-V**

The memory capacity that can be used on the physical hardware for Windows Server 2008 Hyper-V has the following restrictions.

Edition	Memory capacity
Windows Server 2008 Standard 64-bit with SP2	32 GB
Windows Server 2008 Enterprise 64-bit with SP2	1 TB
Windows Server 2008 Datacenter 64-bit with SP2	1 TB

Note	On the management OS for Enterprise 64-bit with SP2 / Datacenter 64-bit with SP2, only up to 1 TB can be supported for the total amount of the physical memory capacity and the area (memory hole) reserved with Memory Mapped I/O. If the total amount of the physical memory capacity and the MMIO capacity exceeds 1 TB, the hang may occur at OS startup. The capacity of area reserved with Memory Mapped I/O is different depending on the system unit.

Up to 64 GB memory can be assigned to each virtual machine unit.

	• If the memory capacity is not greater than 64 GB, the memory capacity to be assigned cannot exceed that being installed on the physical machine.
Tip	• The supported maximum memory capacity is different depending on the type of the guest OS.

These restrictions can be applied for Windows Server 2008 and the supported maximum memory capacity is different depending on the system unit.

– **Using Application programs**

Some applications and middleware provide the notes on using Hyper-V. Please contact the supplier of each application for details.

– **Configuring cluster**

When configuring a cluster using Hyper-V, it is recommended to configure the Windows Failover Cluster (WSFC) between the management OSs. For more information about how to configure the cluster between management OSs, see the management OS Help.

Cluster configuration between a guest OS and a physical machine is not supported.

Cluster failover is executed when connection failure, such as FC cable disconnection, occurs between the management OS and a shared disk, however the failover may be unsuccessful when the shared quorum disk access fails, and then the cluster service itself may be disabled because of the overload with disk access to the shared disk by guest OSs.

– **Monitoring events related to physical hardware**

The events related to the physical hardware must be monitored on the management OS, not on the guest OS.

– **Shutting down and restarting management OS**

It is recommended to shut down all guest OSs explicitly before restarting and shutting down the management OS. Especially when multiple guest OSs are running, shutting down the management OS at the same time can cause high CPU load. The problems, such as taking too much time or an improper shutdown, may occur.

– **Other restrictions**

For other restrictions, search Microsoft Help and Support at the following URL using "Hyper-V" as a keyword:

http://support.microsoft.com/?ln=en

- **Notes and restrictions only for management OS**
  - **Software on management OS**

  It is not recommended to install task application (middleware), such as a database or an application server, on the management OS with Hyper-V enabled.

  - **Enabling roles**

  It is not recommended to enable any roles except Hyper-V for Windows Server 2008 on the management OS with Hyper-V enabled.

- **Notes and restrictions only for guest OS**
  - **Installing guest OS and integrated services**

  Install a guest OS using only OS media, not using Server installation and monitoring tool. The integrated services must be installed after OS installation.

  - **Server Core installation**

  Windows 2008 Server Core installation is not supported

  - **Saving VM status**

  When click **Action** > **Save** in the management window on the virtual machine, the virtual machine status can be saved on the disk and the virtual machine can halt.
  To restart the virtual machine from the halting point, click **Action** > **Start**.
  However, this operation is different from the shutdown and reboot of the guest OS. Applications communicating with the outside may record an error.

  - **Notes for Active Directory on guest OS**

  Microsoft Help and Support provides "Things to consider when you host Active Directory domain controllers in virtual hosting environments" at the following URL. Access the following URL and read it in advance:

  http://support.microsoft.com/kb/888794

  - **Installing OS installation media**

  When using Windows Server 2003 32-bit with Service Pack 2 as a guest OS, use the OS installation media where SP1 or SP2 has been applied. Otherwise, the guest OS may display the **STOP** error and halt during installation.

– **Using snapshot**

It is not recommended to use the snapshot in the production environment. If using the snapshot, the performance overhead or the inconsistency may occur on the system where multiple servers are combined.

It is also not recommended to use the snapshot on the guest OS where Active Directory is configured. If using the snapshot, the inconsistency in database may be caused.

– **Using virtual hard disk file**

When multiple virtual hard disk files are deployed on a physical hard disk, IO bottleneck may occur depending on processes on the guest OSs. This may affect the entire guest OS processes.

When using multiple guest OSs in the production environment, execute careful verification in advance. It is recommended to deploy virtual hard disk files on separate physical disks if necessary.

– **Installing virtual SCSI controller**

A guest OS cannot be installed on a virtual hard disk connected to a virtual SCSI controller.

When setting a guest OS to Windows 2000 Server, the virtual SCSI controller connected to a virtual machine is not available. Connect all virtual hard disks to the virtual IDE controller when setting a guest OS to Windows 2000 Server.

Notes and Restrictions on using Red Hat Enterprise Linux Server 6.4/6.5/6.6

Contact your reseller where you have purchased the subscription for necessary information.

    — **SELinux message notified during RHEL utility installation**

A notification message might be displayed during the installation of RHEL utility.

Message example:

Writing in the progress log of the RHEL utility installation (/root/hitachi_utilities_progress_yyyymmddhhmmss.log) was refused by the (/sbin/setfiles(restorecon) process.

Output destination of the message:

- SELinux Alert Browser of GUI
- Audit log (/var/log/audit/audit.log)
- System log (/var/log/messages)

- **Output example of Audit log (/var/log/audit/audit.log)**

avc: denied { write } for pid=xxxx comm="restorecon" path="/root/hitachi_utilities_progress_yyyymmddhhmmss.log"

- **Output example of the system log (/var/logmessages)**

SELinux is preventing /sbin/setfiles from write access on the file /root/hitachi_utilities_progress_yyyymmddhhmmss.log

The above notification message does not have a security problem and no influence to the RHEL utility installation result.

– **additional settings**

When using Red Hat Enterprise Linux 6.4/6.5/6.6 with Compute Blade 2500, Compute Blade 500 or Compute Blade 2000, see the following manuals to configure additional settings required.

For Compute Blade 2500, see following manual for details.

- When using Red Hat Enterprise Linux 6.5/6.6:
  Hitachi Compute Blade Series OS Installation Guide for Red Hat Enterprise Linux

For Compute Blade 500, see following manual for details.

- When using Red Hat Enterprise Linux 6.4/6.5:
  Hitachi Compute Blade 500 Series OS Installation Guide for Red Hat Enterprise Linux

- When using Red Hat Enterprise Linux 6.6:
  Hitachi Compute Blade Series OS Installation Guide for Red Hat Enterprise Linux

For Compute Blade 2000, see following manual for details.

- When using Red Hat Enterprise Linux 6.4/6.5:
  Hitachi Compute Blade 2000 SOFTWARE GUIDE

4

Troubleshooting

This chapter explains the troubleshooting when installing OS using Server installation and monitoring tool.

☐ Overview of troubleshooting

☐ Message List and tips for operating GUI window

Overview of troubleshooting

If you receive an error message during operation, or encounter a problem such as a disabled button during GUI window operation, then take the actions to try to solve the problem yourself by following the information indicated on page 4-3 "Message List and tips for operating GUI window".

If these actions do not solve your problem, please make notes about the information listed in "Required information before you contact" as below before you contact your reseller.

- **Required information before you contact**
    - Version of Server installation and monitoring tool (indicated in the media surface)
    - Specific symptoms identified on the error message
    - Name of GUI window where the problem has occurred (indicated in the top of the window) and the details of operation
    - Model name, type name, and memory size of your system unit
    - Version, edition, and architecture of the OS to be installed (Please make notes about the descriptions indicated in the OS media surface.)
    - How to obtain the OS media to be installed (coming with your system unit, purchasing through the Volume Licensing program, purchasing package, and others)
    - How to obtain the media when you use Service Pack media (coming with your system unit, downloading, and others)
    - Whether to use LPAR manager
    - Whether to use USB DVD drive, if available, the model name and the type name
    - Type names of the other cards and devices installed on your system unit
    - Type name, capacity, RAID configuration of disk where the OS is installed

Message List and tips for operating GUI window

The word "this media" or "media" included in the tables below represents "Hitachi Compute Blade Series/Hitachi Compute Rack Series Server installation and monitoring tool" DVD unless otherwise specified.

- **Error message list**

1. "Media read may have failed. (*<ErrorCode>*): *<Inf-File>*""An error has occurred. (*<ErrorCode>*)"

Cause	The media may not have been read.
Solution	- Check to see if the media is dirty or damaged. - Clean the drive. Retry the operation from the beginning after checking the steps above.

2. "Could not find a drive where media has been inserted.: (-1)""An error has occurred. (*<ErrorCode>*)"

Cause	The drive where media has been inserted could not be found.
Solution	- Check to see if the media is dirty or damaged. - For checking to see if your system unit can be supported by this media, see **Support_EN.html** stored on this media. Retry the operation from the beginning after checking the steps above.

3. "Program execution failed. : *<CommandLine>*"

Cause	The program could not be executed.
Solution	- Check to see if the media is dirty or damaged. - For checking to see if your system unit can be supported by this media, see **Support_EN.html** stored on this media. Retry the operation from the beginning after checking the steps above.

4. "File copy failed."

Cause	The file could not be copied.
Solution	- Check to see if the media is dirty or damaged. - For checking to see if your system unit can be supported by this media, see **Support_EN.html** stored on this media. Retry the operation from the beginning after checking the steps above.

5. "An unexpected error has occurred. (*<ErrorCode>*)"

Cause	An unexpected error has occurred.
Solution	▪ Check to see if the media is dirty or damaged. ▪ For checking to see if your system unit can be supported by this media, see **Support_EN.html** stored on this media. Retry the operation from the beginning after checking the steps above.

6. "Unsupported model"

Cause	Your system unit is not supported by this media.
Solution	▪ For checking to see if your system unit can be supported by this media, see **Support_EN.html** stored on this media. Retry the operation from the beginning after checking the steps above.

7. "Unsupported media has been inserted."

Cause	The media being inserted is not supported by your system unit.
Solution	▪ Check to see if the media is dirty or damaged. ▪ For checking to see if your system unit can be supported by this media, see **Support_EN.html** stored on this media. Retry the operation from the beginning after checking the step above.

8. "<FileName(number1)>:error code:<number2>

   <FunctionName>

   Message:<ErrorMessage>"

Cause	The message above may appear due to the status of your system unit or the operation status of Server installation and monitoring tool installation assistant.
Solution	▪ For checking to see if your system unit can be supported by this media, see **Support_EN.html** stored on this media. Retry the operation from the beginning after checking the step above.

> **Note** Please disregard any non English text error messages in a pop up window and follow the instruction described in the Solution.

- **Tips for operating GUI window**

  The following step numbers represent the numbers indicated in Chapter 2 "OS installation procedures".

  – **Step 7 Keyboard layout and Image Selection window (Page 2-21)**

    1. [**Next**] button is disabled and cannot be clicked.

Cause	▪ Your system unit is not supported by this media. ▪ The media being inserted is not supported by your system unit.
Solution	▪ Check to see if the media is dirty or damaged. ▪ For checking to see if your system unit can be supported by this media, see **Support_EN.html** stored on this media. Retry the operation from the beginning after checking the steps above.

  – **Step 8 Start window (Page 2-22)**

    1. [**Start with Hardware configuration**] button is disabled and cannot be clicked.

Cause	The target RAID controller has not been installed in the model with built-in RAID installed.
Solution	▪ Check to see if the media is dirty or damaged. ▪ For checking to see if your system unit can be supported by this media, see **Support_EN.html** stored on this media. Retry the operation from the beginning after checking the steps above.

    2. [**Start installation immediately**] button is disabled and cannot be clicked.

Cause	▪ The target disk does not exist. ▪ The target disk cannot be found.
Solution	[Built-in disk] ▪ Check to see if the media is dirty or damaged. ▪ For checking to see if your system unit can be supported by this media, see **Support_EN.html** stored on this media. [External disk such as FC/iSCSI] ▪ Check to see if the media is dirty or damaged. ▪ Check the RAID configuration and LU setting of external disk devices. ▪ For checking to see if your system unit can be supported by this media, see **Support_EN.html** stored on this media. Retry the operation from the beginning after checking the steps above.

Server installation and monitoring tool OS Setup Guide

- **Step 14 OS Selection window (Page <u>2-32</u>)**

  1. [**Easy Installation**]/[**Installation**] button is disabled and cannot be clicked.

Cause	OS to be installed has not been selected.
Solution	Select OS to be installed.

- **Step 15 Select window for target disk or partition where installed OS is displayed. (Page<u>2-34</u>)**

  1. [**Next**] button is disabled and cannot be clicked.

Cause	The disk / partition where OS can be installed has not been selected.
Solution	Select the disk / partition where OS can be installed.

  2. The partition size is disabled and cannot be clicked.

Cause	▪ "**Full Size**" has been selected for "**Partition size**". ▪ "**Create new partition**" has been selected.
Solution	Select "**Create new partition**", and then select "**Manually**" for "**Partition size**"

  3. The existing partitions cannot be selected.

Cause	▪ "**Select existing partition**" has not been selected. ▪ The existing partitions do not exist.
Solution	▪ Select "**Select existing partition**", and then select a partition. ▪ Select the disk drive where the existing partition exists.

– **Step 16 Server setting window (Page 2-39)**

1. "**Windows OS setting**" window is not displayed.

Cause	"**Easy Installation**" has been selected on step 14 OS Selection window displayed.
Solution	Select "**Installation**" in "**OS Selection**" window.

2. [**Next**] button is disabled and cannot be clicked.

Cause	▪ The computer name has not been entered. ▪ The password has not been entered correctly.
Solution	▪ Enter the computer name, or select "**Automatically generate computer name**". It is recommended that you use only Internet-standard characters in the computer name. The standard characters are the numbers from 0 through 9, uppercase and lowercase letters from A through Z, and the hyphen (-) character. Computer names cannot consist entirely of numbers. If suppression characters are used in the computer name, the installation fails. ▪ Enter the password correctly, or leave blank the password. You can create passwords that contain characters from one-byte alphabets, numerals, and symbols. If 2-byte characters are used in the password, the installation has been completed, while the login is disabled

3. "**Computer name**" is disabled and cannot be clicked.

Cause	"**Automatically generate computer name**" has been selected.
Solution	Uncheck the checkbox for "**Automatically generate computer name**" and enter the computer name.

– **Step 17 Utility selection window (Page)**

1. "**Utility selection**" window cannot be displayed.

Cause	▪ "**Easy Installation**" has been selected. ▪ "**Installation**" has not been selected
Solution	Select "**Installation**" in "**OS Selection**" window.

2. "internal storage monitor" and "MegaRAID Storage Manager" cannot be selected at the same time.

Cause	"internal storage monitor" and "MegaRAID Storage Manager" are mutually exclusive.
Solution	Select either "internal storage monitor" or "MegaRAID Storage Manager".

– **Step 22 Complete OS installation window (Page)**

1. [**Restart**] button is disabled and cannot be clicked.

Cause	OS installation environment is being created.
Solution	Wait until the creation of OS installation environment is completed.

2. The computer cannot restart automatically.

Cause	"**Computer will reboot automatically after installation**" has been unchecked.
Solution	Click "**Restart**" button, then the system unit restarts.

3. "Computer will reboot automatically after installation" is disabled and cannot be selected.

Cause	The reboot is enabled after unchecking the checkbox for "**Computer will reboot automatically after installation**".
Solution	Click "**Restart**" button, then the system unit restarts.

5

Software License

This chapter provides software license information on the Server installation and monitoring tool installation assistant.

- [Software license for Server installation and monitoring tool installation assistant](#)

Software License for Server installation and monitoring tool installation assistant

Server installation and monitoring tool installation assistant uses the following open source software in compliance with each software license agreement shown in the tables below as well as software developed or created by Hitachi, Ltd.

Software	License agreement
gnu cpio	GNU General Public License version 3 Visit the following website: http://www.gnu.org/software/cpio/

xz utils	Excutable files
	    Public Domain
	    GNU Lesser General Public License version 2.1
	    GNU General Public License version 2
	Development environment
	    Public Domain
	    GNU General Public License version 2
	Visit the following website:
	http://tukaani.org/xz/

syslinux	GNU General Public License version 2 Visit the following website: http://www.syslinux.org/wiki/index.php/The_Syslinux_Project
mingw-w64[2]	MinGW-w64 COPYING MinGW-w64 licensing MinGW w64 Runtime Licensing Visit the following website: http://mingw-w64.sourceforge.net/

Booting Media in UEFI Mode

This Appendix A describes how to boot DVD media "Compute Blade Series/Compute Rack Series Server installation and monitoring tool" in UEFI mode.

☐ Procedure for Booting DVD Media in UEFI Mode

Procedure for Booting DVD Media in UEFI Mode

> **Tip**
>
> The procedure described in this section is an example. Some system units may come with other procedures. See manuals of your system unit for details.

1. Boot UEFI Shell.

> **Tip**
>
> See manuals of your system unit for how to boot UEFI Shell.

2. Devices are shown on UEFI Shell at the boot. Move to the DVD device including the Compute Blade Series/Compute Rack Series Server installation and monitoring tool DVD media among them.

   Shell> fsX:

   #X is any number.

3. Move to folders on UEFI Shell as shown below.

   fsX :\> cd EFI

   fsX :\EFI\> cd BOOT

4. Execute the following file on UEFI Shell.

   fsX :\EFI\BOOT\> BOOTX64.EFI

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