

Hitachi Compute Rack 220S Windows Installation Guide

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Preface

This document provides installation procedures of Windows Server 2008 R2 and related software products to the *Compute Rack 220S* (CR 220S) using the Driverkit CD-ROM.

When installing Windows Server using the Driver & Utility for Windows DVD-ROM, see *Hitachi Compute Blade Series / Hitachi Compute Rack Series OS installation Guide for Windows Server*.

This preface includes the following information:

- ☐ [Intended Audience](#)
- ☐ [Release Notes](#)
- ☐ [Referenced Documents](#)
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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 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 the Compute Rack will be installed, including knowledge of physical characteristics, power systems and specifications, and environmental specifications.

Release Notes

Read the release notes before installing and using this product. They may contain requirements or restrictions that are not fully described in this document or updates or corrections to this document.

Referenced Documents

Compute Rack 220S (CR 220S) documents:

- Hitachi Compute Rack 220S Getting Started Guide, MK-90CRS001
- Hitachi Compute Rack 220S User's Guide, MK-90CRS002
- Hitachi Compute Rack 220S CRU Replacement Guide, MK-90CRS003
- Hitachi Compute Rack 220S BIOS Guide, MK-90CRS000
- Hitachi Compute Rack 220S Remote Management User's Guide, MK-90CRS004
- Hitachi Compute Blade Series / Hitachi Compute Rack Series OS Installation Guide for Windows Server, MK-99COM076





Document Conventions

The term “Compute Rack” refers to all Compute Rack models, unless otherwise noted.

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
<i>Italic</i>	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
{ } braces	Required or expected value
vertical bar	Choice between two or more options or arguments
_(underline)	Default value, for example, [<u>a</u>] b]

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	This indicates notes not directly related to injury or severe damage to equipment.
	Tip	This indicates advice on how to make the best use of the equipment.

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

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>.

Comments

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Thank you!

Windows Server 2008 R2

This chapter provides installation procedures of Windows server 2008 R2 and related software products.

- ☐ [Installing Windows Server 2008 R2](#)
- ☐ [Before installation](#)
- ☐ [OS installation](#)
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Installing Windows Server 2008 R2

Overview of installation and requirements

Install both OS and Driver/Utility using the Setup DVD-ROM and the DriverKit CD-ROM.



Install the Driver/Utility after the OS installation. Otherwise Windows Server 2008 R2 cannot operate properly.



When installing Windows Server using the Driver & Utility for Windows DVD-ROM, see Hitachi Compute Blade Series / Hitachi Compute Rack Series OS installation Guide for Windows Server.

Select appropriate Setup DVD-ROMs for your system in the following tables.

Table 1-1: Windows Server 2008 R2 Standard

Representation	Target DVD-ROM
Setup DVD	DVD-ROM for Microsoft Windows Server 2008 R2 Standard, Retail Edition or Volume License

Table 1-2: Windows Server 2008 R2 Enterprise Windows

Representation	Target DVD-ROM
Setup DVD	DVD-ROM for Microsoft Windows Server 2008 R2 Enterprise, Retail Edition or Volume License

Table 1-3: Windows Server 2008 R2 Datacenter

Representation	Target DVD-ROM
Setup DVD	DVD-ROM for Microsoft Windows Server 2008 R2 Datacenter, Retail Edition or Volume License

Table 1-4: Windows Server 2008 R2 Service Pack1

Representation	Target DVD-ROM
Service Pack DVD	DVD-ROM for Microsoft Windows Server 2008 R2 Service Pack 1



The DVD-ROM drive letter is usually after the HDD/SSD.
In the following steps, the d: indicates the DVD drive name.
For example: d:\Win2008R2\Drivers\RAID\MegaSAS_03\x64

Installation general flow

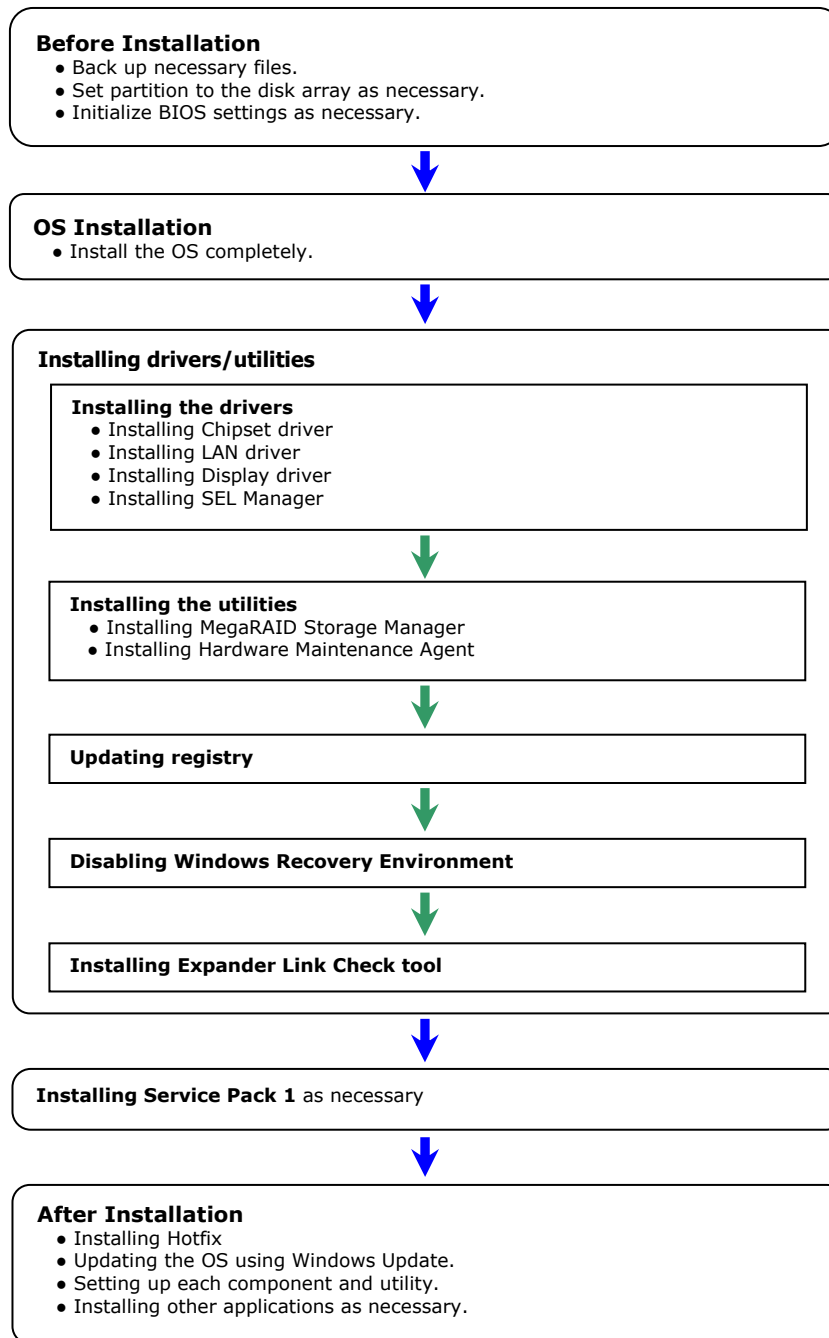


Figure 1-1: Installation workflow

Before installation

This section describes the setup before installation.

Back up necessary files

Re-setup causes the hard disk data to disappear. Back up data that you need in advance.

Set partition to the disk array

Set the partition to the installed disk array that you need in advance.

Initialize BIOS configuration

Set the BIOS configuration that you need in advance.

OS installation

This section describes the procedures to install Windows Server 2008 R2.

For the installation procedure of the driver for optional PCI card, see the manual of optional PCI card before installing OS and Driver/Utility.

Restrictions and specification

- Logical capacity of the install drive
Set the logical drive capacity of installing OS to less than 2 TB. OS does not recognize the capacity of over 2 TB on the logical drive. Rebuild the disk array and logical drive through the RAID management utility or RAID BIOS.
- Setting partition (drive)
All programs and data in the partition are deleted, when you install the OS to the first partition of the boot disk.
- Setting write cache
When use the RAID controller without cache backup module, confirm that the write cache of a logical drive, in which Windows Server 2008 R2 is installed, is in the write through mode (write cache is invalid) before the installation.
If it is in the write back mode (write cache is valid), change it to the write through mode. See *MegaRAID Storage Manager Instruction Manual* for more information about changing the write cache mode.
- DVD-ROM ejection
Press the eject button of the DVD drive only when changing the DVD-ROM or CD-ROM media. Otherwise, you must re-install the OS.
- Multiple disks and partitions (drives)
When multiple disks or partitions (drives) are installed in the system unit, multiple disks are displayed as the candidates of the OS installation. The disk number and the displayed order of disks are unstable and always change. When performing the installation in the multiple disks environment, determine the target disk for installation by its size not by the order or its number.
We recommend that you configure the disk drives with different capacity for each drives in the disk array.
When you select an incorrect disk or partition as the OS installation target, the existing partitions or data in the disk may be deleted. For more details about the multiple disks and partitions, see the following Microsoft website.
<http://support.microsoft.com/kb/937251/en>
You can identify the disk capacity with MegaRAID WebBIOS. For more details about identifying the disk capacity, see *Hitachi Compute Rack 220S BIOS Guide*.

- Necessary device

An external DVD-ROM drive is necessary to install OS. Prepare before installation.

In addition, it is necessary to change the boot devices priority by system BIOS to boot from an external DVD-ROM drive. For details, see *Hitachi Compute Rack 220S BIOS Guide*.

Installation Steps

NOTICE Re-installation causes the storage drive data to be deleted. Back up data that you need in advance.



When external disk array device or SCSI device is connected, turn off the device power before starting the installation. Otherwise, the installing destination may not be recognized correctly.

1. When the system unit is turned on, insert the "setup DVD" into the DVD-ROM drive immediately.
2. **Press any key to boot from CD or DVD** is displayed, and then press any key immediately.



- When pressing a key with a pause, the existing OS may start instead of from the DVD-ROM. In that case, shut down the OS, and then go back to step 1.
 - When pressing a key more than once, **Windows Boot Manager** may start. In that case, select **Windows Setup [EMS Enabled]** and continue the installation.
-

3. **Windows is loading files** and soon after **Install Windows** window is displayed, customize the items as necessary, and then click **Next**.

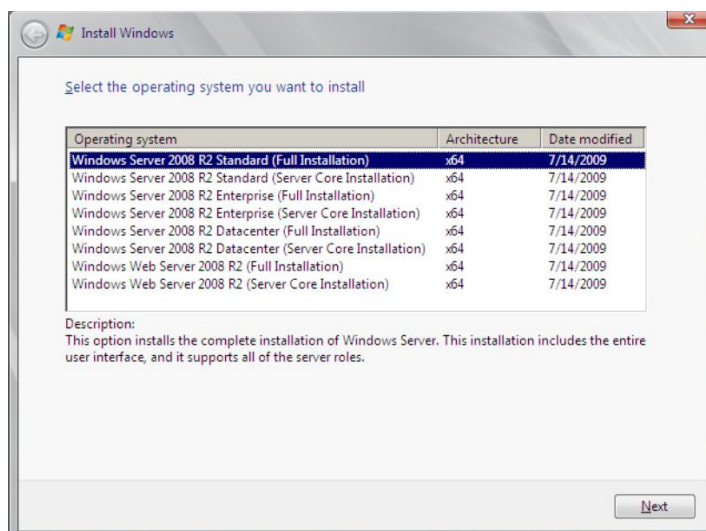


4. The following window is displayed, click **Install now**.



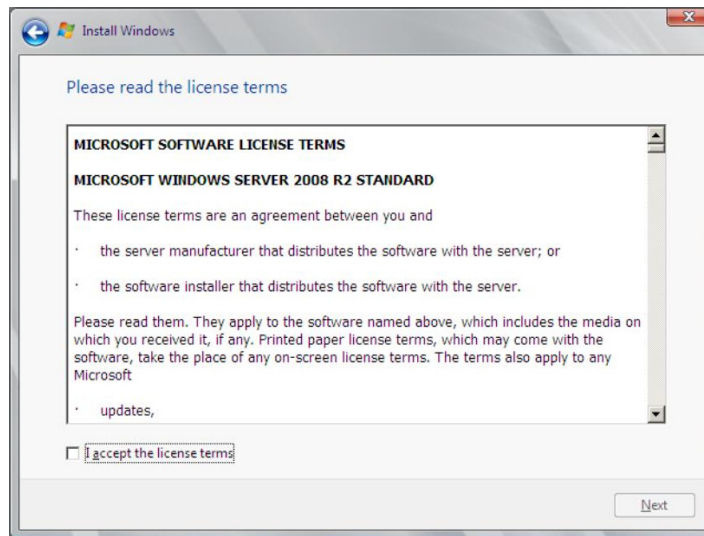
- This Step 4 may not be displayed in some OS installation media.
- When Windows RE (Recovery Environment) need to start, see [Repairing the computer](#).

5. The following window is displayed. Click the edition you need to install, and then click **Next**.

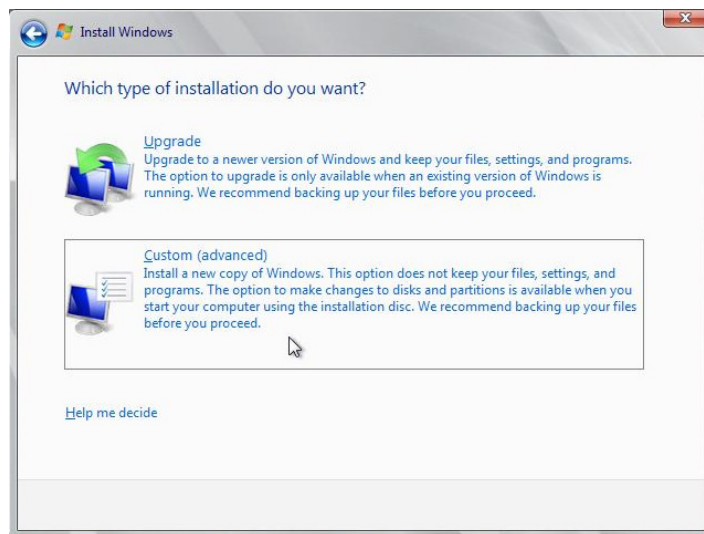


Do not select **Server Core Installation** that is not supported.

6. **Please read the license terms** is displayed, read the contents, click **I accept the license terms** if you agree to the terms, and then click **Next**.

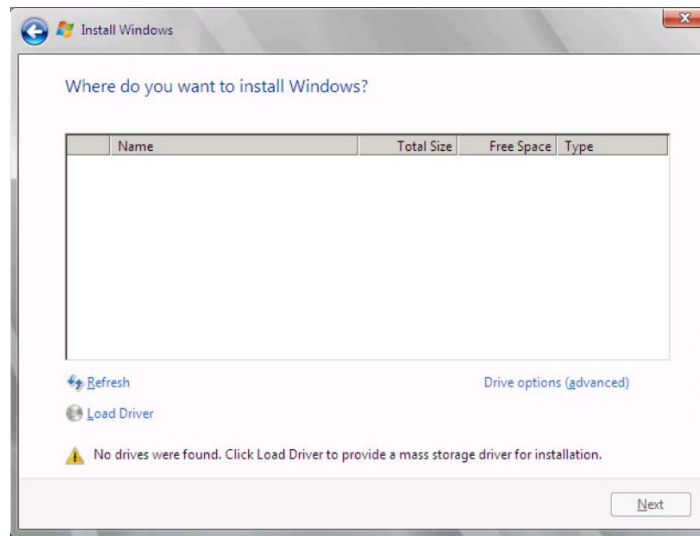


7. **Which type of installation do you want?** is displayed, and then click Custom (advanced).

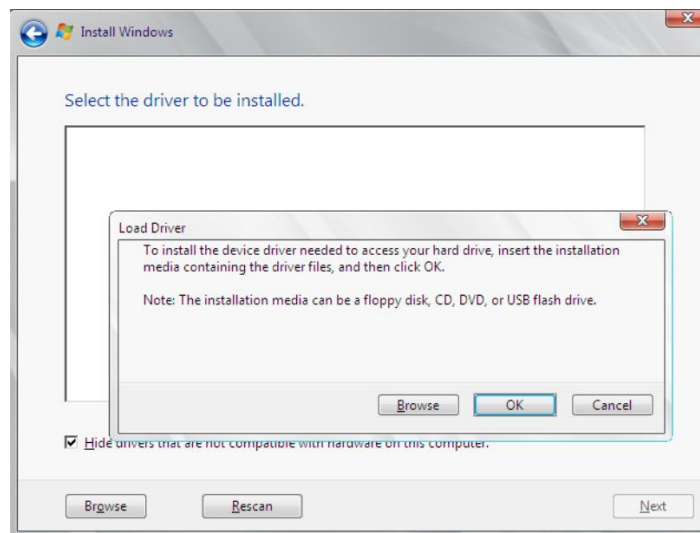


When the window above is not displayed, go to step 8.

8. **Where do you want to install Windows?** is displayed, and then click Load Driver.

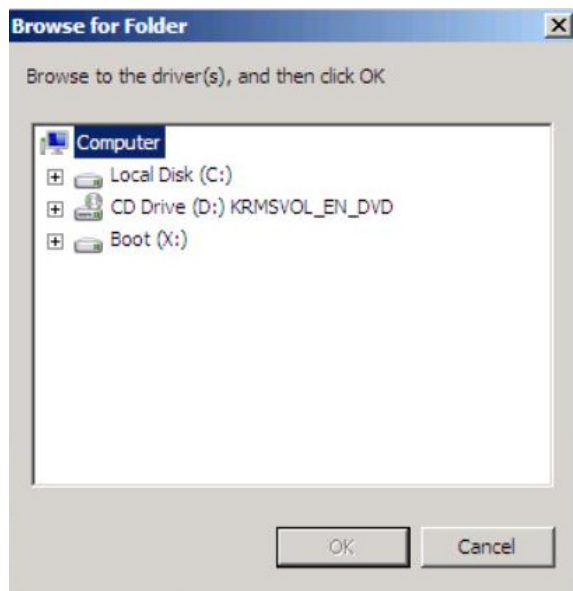


9. The following **Load Driver** window is displayed. Remove the "setup DVD" from the DVD-ROM drive, and then insert the DriverKit CD-ROM. Click **Browse**.



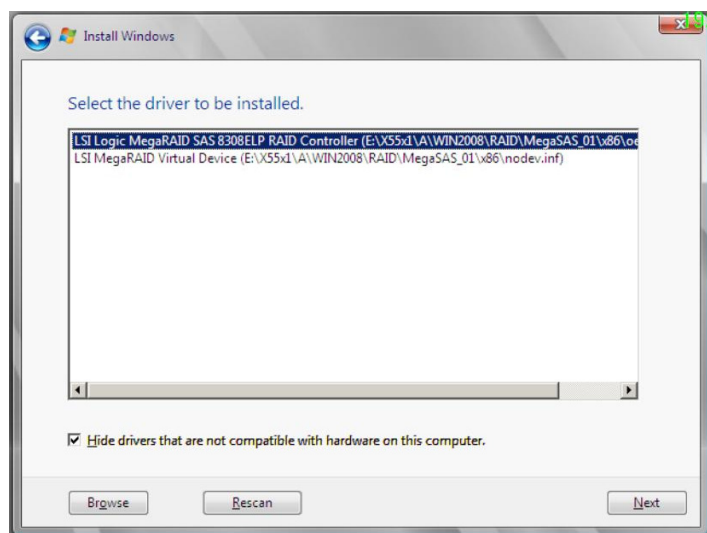
10. The following **Browse for Folder** is displayed. Select an appropriate location described in the following, and then click **OK**.

d:\Win2008R2\Drivers\RAID\MegaSAS_03\x64



11. **Select the driver to be installed.** is displayed, select a driver based on the following, and then click **Next**.

- RAID controller without cache backup module:
LSI MegaRAID SAS 9267-8i
(d:\Win2008R2\Drivers\RAID\MegaSAS_03\x64\megasas2.inf)
- RAID controller with cache backup module:
LSI MegaRAID SAS 9266-8i
(d:\Win2008R2\Drivers\RAID\MegaSAS_03\x64\megasas2.inf)

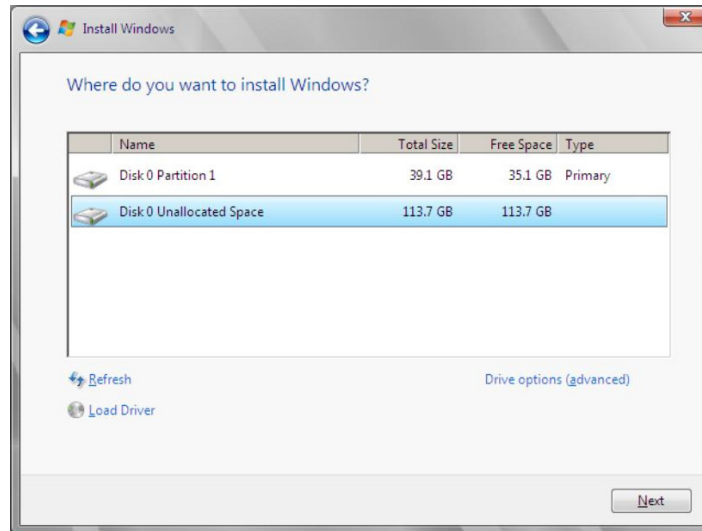


12. **Where do you want to install Windows?** is displayed, remove the DriverKit CD-ROM from the DVD-ROM drive, insert the "setup DVD", and then click **Refresh**.



If you do not change the media, **Unable to install Windows in the disk** is displayed in the bottom of the window. You cannot continue the installation.

13. In the following window, click an appropriate partition from the window, and then click **Next**.



You can identify the disk capacity with MegaRAID WebBIOS. For more details about identifying the disk capacity, see *Hitachi Compute Rack 220S BIOS Guide*.

If there are some disks with the same size, follow the steps below to find out a target disk.

- Press **Shift + F10** keys to display the command prompt.
- Enter the following command in the command line to start **diskpart**.
`>diskpart`
- Enter the following command in **diskpart**.
`>select disk=system.`
Disk n is selected. is displayed.
- Install the OS in an appropriate partition in the **disk n** displayed in the previous step.

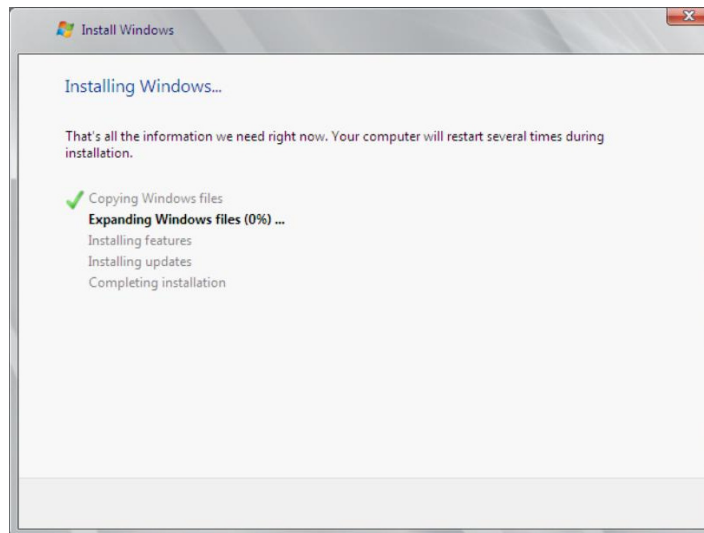


- When multiple disks are displayed, the order and the number of disks are not always same. Select the target disk for installation by size not by the order of disks or the disk number. If possible, change the disk settings to recognize only the target disk beforehand. See [Restrictions and specification](http://support.microsoft.com/kb/937251/en) in advance. If you select an incorrect disk or partition, the existing data in the disk may be deleted. For more details about the multiple disks and partitions environment, see the following Web site.
<http://support.microsoft.com/kb/937251/en>
- The **Delete** cannot be used to partitions in the dynamic disk. See the following URL for more details about partitions in the dynamic disk.
<http://support.microsoft.com/kb/926190/en>

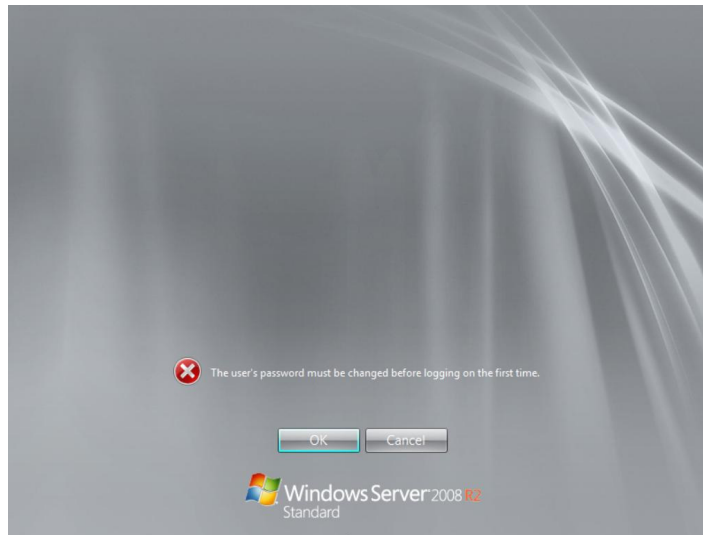


- To specify the size of an installed partition, click **Drive Options (advanced)**.
- When you select a disk without specifying the partition size and click **Next**, or you click **OK** when **Another partition may be added for the system file to work all functions of Windows properly.** is displayed, another 100 MB partition is created. This partition is called "system partition". For more details about the system partition, see the following URL.
[http://technet.microsoft.com/en-us/library/dd799232\(W.S.10\).aspx](http://technet.microsoft.com/en-us/library/dd799232(W.S.10).aspx)

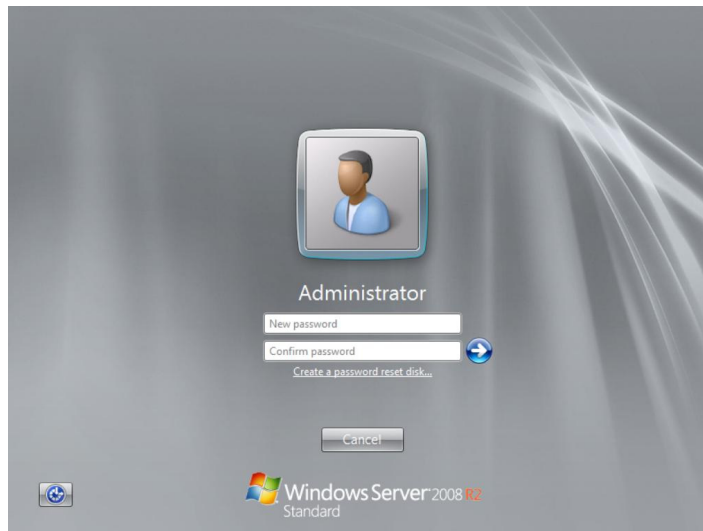
14. **Installing Windows...** is displayed. OS setup will be completed.



15. When boot the OS on the first time after the installation, **The user's password must be changed before logging on the first time.** is displayed, and then click **OK**.



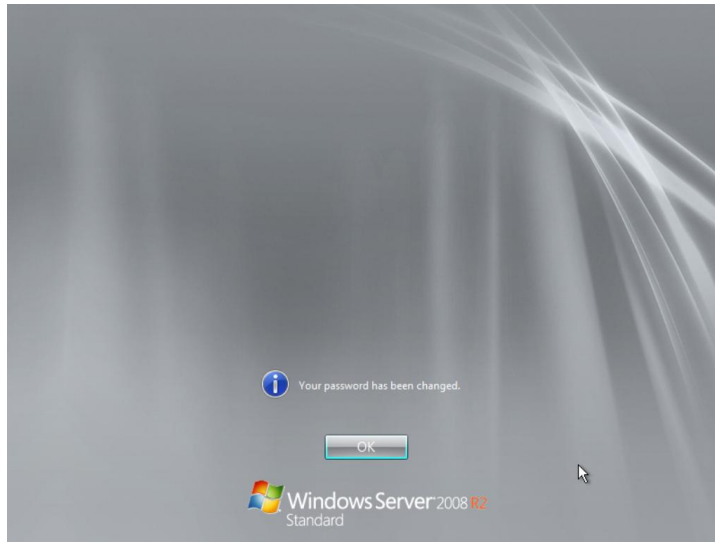
16. Enter any Administrator password into **New password** and **Confirm password**, and then click → button.



A password is required to satisfy the following conditions.

- Combine at least 3 characters among the followings:
English capital letters (A to Z); English lower case (a to z);
numbers (1 to 9); comma, period
- Do not contain 3 or more consecutive letters from the user name
or full name.

17. Your password has been changed is displayed, and then click OK.



OS Installation is completed. Go on to the [Installing drivers/utilities](#).

Installing drivers/utilities

This subsection describes the installation procedures of drivers/utilities for Windows Server 2008 R2 using the DriverKit CD-ROM.

Install the following drivers, utilities, and registry update respectively.

Drivers

- Chipset driver
- LAN driver
- Display driver
- SEL Manager

Utilities

- MegaRAID Storage Manager
- Hardware Maintenance Agent

Registry update

Windows Recovery Environment (RE)

Expander Link Check tool



For the installation procedure of the driver for optional PCI card, see the manual of optional PCI card before installing OS and Driver/Utility. Install a PCI card driver after installation of the above drivers and utilities is completed. Perform registry update after installation of the PCI card.

Installing drivers

Installing Chipset driver

Install the chipset driver using the following steps.

1. Insert the DriverKit CD-ROM into the DVD-ROM drive.
2. Click **Start** > **Run**.
3. Enter the following, and then click **OK**.

d:\Win2008R2\Drivers\chipset\INTEL_03\infinst_autol.exe

The **Setup** window is displayed.

4. Click **Next**.

License Agreement Terms is displayed.

5. Read the license agreement, and then click **Yes** if you agree.
Install the chipset driver following to the instructions in windows.
Setup completed is displayed in the end of the installation.
6. Remove the DriverKit CD-ROM from the DVD-ROM drive.
7. If a restart request is issued, restart the system unit in accordance with the window. Otherwise, close the window.

Installing LAN driver

Install the LAN driver using the following steps.

1. Insert the DriverKit CD-ROM into the DVD-ROM drive.
2. Click **Start > Administrative Tools > Server Manager**.
Server Manager window is displayed.
3. Click **Diagnostics > Device Manager**.
4. Right-click the network adapter, of which driver has not been applied, and then click **Update Driver Software**.
Update Wizard is displayed.
5. Click **Browse my computer for driver software**.
6. Enter the following in **Browse for driver software on your computer**, and then click **Next**.
`d:\Win2008R2\Drivers\LAN\BROAD_01\x64`
Uncheck **Search subfolders**.
7. Confirm **Windows has successfully updated your driver software**. is displayed, and then click **Close**.
8. If there are some network adapters of which LAN driver has not been applied, repeat the steps from 4 to 7 for each network adapters.
9. Remove the DriverKit CD-ROM from the DVD-ROM drive, and then restart the system unit.



This hardware cannot be started. may be displayed during the driver installation. In this case, restart the system unit, so that it operates correctly. Confirm that the device runs correctly using the Device Manager.

Installing Display driver

Install the Display driver using the following steps.

1. Insert the DriverKit CD-ROM into the DVD-ROM drive.
2. Click **Start** > **Run**.
3. Enter the following, and then click **OK**.
`d:\Win2008R2\Drivers\SVGA\Matrox_02\install.bat`
4. Complete the installation following to the instructions in the window.
5. Remove the DriverKit CD-ROM from the DVD-ROM drive, and then restart the system unit.
6. Change the screen resolution to a value that you like within the range of your display specifications.

Installing SEL Manager

This driver is needed for the system unit logging.
See *SEL Manager Instruction Manual* for details, and installation.



If the SEL Manager is not installed, an error analysis will be unreliable.

Installing utilities

Installing MegaRAID Storage Manager

MegaRAID Storage Manager is a utility to monitor a disk array device.
See *MegaRAID Storage Manager Instruction Manual* for details, and installation.



If this utility is not installed, double fault may occur because an HDD/SSD failure cannot be detected, and also the failure cannot be analyzed correctly.

Installing Hardware Maintenance Agent

The Hardware Maintenance Agent is a utility necessary for maintenance of the system unit. If a failure occurs on the system unit, this utility analyzes such a failure automatically, thus facilitating identification of this failure and shortening system recovery time.

See *Hardware Maintenance Agent Windows Edition User's Guide* for details, and installation.



To use the Hardware Maintenance Agent, the SEL Manager is required. Install the SEL Manager to the system unit in advance.

Updating registry

Insert the DriverKit CD-ROM into the DVD-ROM drive, and then install the Registry Update using following steps.

The purpose of the following step is dumps to be collected when NMI is issued.

1. Click **Start** > **Run**.
2. Enter the following, and then click **OK**.

`d:\utility\NMIDump\NMID.bat`

To enabling the updates above, restart the system unit.

Disabling Windows Recovery Environment (RE)

With Windows Server 2008 R2, when the system unit restarts due to a failure during the OS startup, a message appears, saying that the computer failed to start and that Windows will attempt to repair it. With no operation, Windows RE (Recovery Environment) starts 30 seconds later instead of Windows Server 2008 R2.

When Windows RE starts up, you need to start Windows Server 2008 R2 manually. If you manage the system with a setting, which automatically restart the system with Windows Server 2008 R2 after a failure is detected during the OS startup, the startup of Windows RE can be troublesome.

We recommend you that you should disable the setting because features provided by Windows RE are available by booting up from the installation medium.

Insert the DriverKit CD-ROM into the DVD-ROM drive, and then perform the following steps.

1. Click **Start** > **Run**.
2. Enter the following, and then click **OK**.

```
d:\utility\WinRE\WinRE.cmd
```

Installing Expander Link Check tool

Insert the DriverKit CD-ROM into the DVD-ROM drive, and then install the Expander Link Check tool using following steps.

3. Click **Start** > **Run**.
4. Enter the following, and then click **OK**.

```
d:\utility\ExpanderLinkCheck_xM\ExpanderLinkChk.exe -install
```

Installing Windows Server 2008 R2 SP1

This subsection describes the installation procedures of Windows Server 2008 R2 SP1. Install components as necessary.

Download the SP1 installer in the Microsoft web site page if you do not have the SP1 DVD-ROM.



If you use the setup DVD slipstreaming Windows Server 2008 R2 SP1 when installing the OS, you do not have to install SP1.

Preparation

You must apply the update module KB2487426 before installing Windows Server 2008 R2 SP1. An application error occurs in 32-bit applications when you do not apply the update module.

Download the update module in the following Microsoft web site.

<http://support.microsoft.com/kb/2487426/en>

Installing SP1

1. Turn on the system unit, start Windows, and log on as Administrator.
2. Insert the Service Pack DVD into the DVD-ROM drive.
3. Click **Start** > **Run**.
4. Enter d: \setup.exe, and then click **OK**.

Welcome to Windows Server® R2 Service Pack1 is displayed.

5. Click **Next**.

License Agreement Terms is displayed.

6. Read the license agreement, and then click **Yes** if you agree.
7. **Welcome to Windows Server® R2 Service Pack1** is displayed.
8. Click **Install**.

Installation proceeds.

Soon after the system unit is restart.

When you log on, **Windows Server® R2 Service Pack 1 has been successfully installed** is displayed

9. Click **Close** to close the window.
10. Remove the Service Pack DVD from the DVD-ROM drive.

After Installation

- ☐ Installing Hotfix

Install the Windows Hotfix in reference to [Applying Hotfix](#) on page 1-35.

- ☐ Updating the OS using Windows Update.

Update using Windows Update.

- ☐ Setting up each component and utility.

Set up each component and utility as necessary.

- ☐ Installing other applications as necessary.

Install other applications as necessary.

Turning on/off power

This section describes to the procedures to turning on the system, starting the OS, turning off the system after the OS shutdown, and forcibly terminating the applications and system.

See Turning on/off Power in the *Hitachi Compute Rack 220S Getting Started Guide* for power operations.

Turning on power

1. Turn on the Power of peripheral units such as a display unit.
2. Press the POWER switch on the front side of the system unit.

Start Logon window is displayed.



Do not press the keys repeatedly when booting the system. Otherwise, an error message may be displayed.



It may take about 10 minutes to display the **Start Logon** window.

-
3. Press **Ctrl + Alt + Delete** keys.
Logon Information is displayed.
 4. Enter your user name and password, and then press **Enter**.
Windows boots itself and the Desktop window appears.

Turning off power

Follow to the steps below after completing all tasks on the system unit to turn off the power.

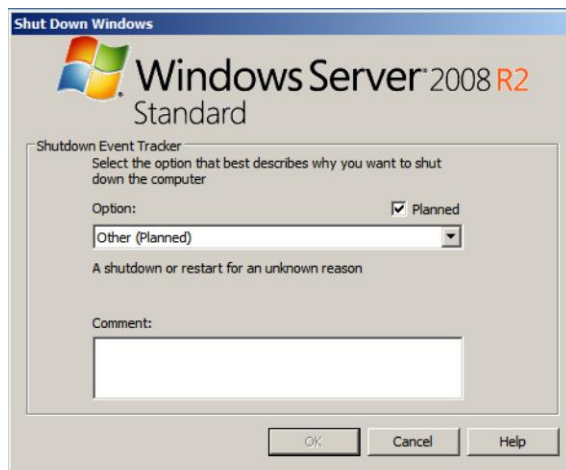
NOTICE Do not press the POWER switch without the shutdown. It may cause data loss or Windows not to start.
Perform the shutdown process before turning off the power.

1. Click **Start** >  > **Shutdown**.

Shutdown Windows window is displayed.



2. Select a reason for shutdown from **Option:** in **Shutdown Event Tracker**.





When you click **Other** in the **Option:** box for shutdown, enter the reason in the **Comment:** box.

3. Click **OK**.

The system unit is powered off.

4. Turn off the peripherals.

Resetting Application/System forcibly

When the system function fails during it is processing applications, resetting the system, which includes terminating applications forcibly or restarting the system unit forcibly, may effect to regain the system for the normal operation.

Terminating Application forcibly

Right-click the task bar and click **Task Manager** of the shortcut menu. Click the **Application**, select an application you want to terminate, and then click **End Task**.

After you terminate an application forcibly, the OS or other applications may not work normally or a data security problem may occur. In such a case, try to reinstall the OS or applications, or restore the system unit from backup data.

Turning off the server unit power forcibly

When Windows runs abnormally, press the POWER switch for more than four seconds to turn off the power. You may be required formatting the HDD/SSD to enabling the system.

After you turn off the system unit forcibly, the OS or other applications may not work normally or a data security problem may occur. In such a case, try to reinstall the OS or applications, or restore the system unit from backup data.



- Do not press the POWER switch until Windows restart is completed except emergency.
 - When resetting, boot up and terminate Windows properly, and then restart it. Otherwise, Windows may not work normally.
-

Bundled Software

This section describes the usages of software products bundled with the system unit.

MegaRAID Storage Manager

This utility is necessary to manage disk array devices.

If this utility is not installed, no HDD/SSD failure can be detected, which will cause a double failure and loss of data.

For details about using this utility, see *MegaRAID Storage Manage Instruction Manual*.

Hardware Maintenance Agent

The Hardware Maintenance Agent is a utility necessary for maintenance of the system unit. If a failure occurs on the system unit, this utility analyzes such a failure automatically, thus facilitating identification of this failure and shortening system recovery time.

For details about using this utility, see *Hardware Maintenance Agent Windows Edition User's Guide*.

Broadcom Advanced Control Suite 4 (BACS4)

This utility is a LAN tool for using the extended functions of a network adapter. For details about using this utility, see *Windows Server 2008 R2 LAN Extended Functions User's Guide*.

Restrictions for using Windows Server 2008 R2

This section describes the restrictions for using Windows Server 2008 R2.

Restrictions for using of Windows Server 2008 R2

The number of processors recognizable by the Windows Server 2008 R2

There are the following restrictions on the number of processors recognizable by the OS:

Table 1-5: Restrictions on the number of processors recognizable

Edition	Max. number of sockets (Total of physical processors)	Max. number of logical processors (Total of multi-core, hyper threading processors)
Windows Server 2008 R2 Standard	4	256
Windows Server 2008 R2 Enterprise	8	256
Windows Server 2008 R2 Datacenter	64	256

Server Core

Do not install Server Core, which is not supported.

Shutting down Windows Server

If you shut down Windows while the services registered to start at the boot are still activated, the shut down may not operate normally. Wait more than five minutes after booting Windows before shutting down.

Repairing the computer

Step 4 of the installation procedure (click [here](#).) may not be displayed in some OS installation media. When this happens, **Repair your computer** in the step 4 window is not displayed, so that Windows Recovery Environment (Windows RE) cannot be started.

See the following URL for more details about the problem.
<http://support.microsoft.com/kb/951495/en>

An attempt to read the boot driver on the Windows RE may cause an error output. Start Windows RE as follows, if necessary.

1. In the window of **Select OS to install**, press **Shift + F10** keys simultaneously.
A command prompt is displayed.
2. Enter the following in the command prompt to execute **recenv.exe**.

```
> cd /d %SystemDrive%\sources\recovery  
> RecEnv.exe
```

Windows RE starts.

Fault tolerant

The system unit does not support a span volume, a stripe volume, a RAID-5 volume, or a mirror volume. Periodically make a backup.

Making backup file

Windows Server Backup does not support backing up to the tape media. When backing up data to a tape device, purchase the backup software.

Backing up to the DVD±R/RW/RAM is not also 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.

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 happens, change the windows such as by maximizing another window.

Functioning power saving

Do not select **System Standby**, **Hybrid Sleep**, and **Hibernate**. These three functions are not supported.

Among power supply options, you can only change the time-out period before the display shutdown.

If you fail to observe two restrictions above, the monitor may not operate properly.

Setting recovery operation after system shutdown

We recommend that the **Automatically restart** check box is unchecked. The procedure is as follows:

1. Click **Start > Management Tool > Server Manager**.
2. Click **Change System Property**, and open **System Property**.
3. Click **Details Setting > Set in Start and Recovery**. **Start and Recovery** window is displayed.
4. Remove the check mark in **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 from **Write Debug Information** in **Start and Recovery**. Perform the following procedure 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 DriverKit CD-ROM into the DVD-ROM drive.
2. Click **Run** in the **Start** menu, enter following file name, and then click **OK**.
d:\utility\Dump\PMDE.bat
3. Press any key when the following message appears.
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 the following [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 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 +400 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. See the following URL for more details about setting the virtual memory size for kernel memory dump.

<http://support.microsoft.com/kb/949052/en-us>

1. Click **Start > Management Tool > Server manager**.
2. Click **Change System Property**.
3. Click **Details > Setting in Performance** pane.
4. Click **Details > Setting in Virtual Memory** pane.
5. Remove the check mark in Manage automatically all the drive paging file sizes box.
6. Click **Custom Size**, and then enter the value greater than <xxx+400>MB to Initial size and Maximum size boxes.



The **Maximum size** must be greater than **Initial size**.

7. Restart the system unit.

Checking System Event viewer logs

The following error logs may be recorded in the System event log.

Table 1-6: Error logs

Event type	Event ID	Event source	Description	Effects	Remarks
Error	10	Microsoft-Windows-WMI	Event filter with query "SELECT * FROM __InstanceModificationEvent WITHIN 60 WHERE TargetInstance ISA 'Win32_Processor' AND TargetInstance.LoadPercentage > 99" could not be reactivated in namespace ":///root/CIMV2" because of error 0x80041003. Events cannot be delivered through this filter until the problem is corrected.	See the following Website for further details. http://support.microsoft.com/kb/950375/en-us	It may happen when you use the setup DVD slipstreaming Windows Server 2008 R2 SP1 when installing the OS.
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 file size by Windows is different depending on the physical memory. When the C-drive capacity or space cannot satisfy the recommended size, this event is recorded. No problem in the usual OS operation. But complete memory dump cannot be obtained. When large physical memory is required, set the C: drive to a larger size.	It may happen immediately after the OS installation. Setting C-drive to larger size is recommendable before installing physical memory with large capacity.
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 figure in {} (GUID) may be different depending on the environment.	Ignore this event.	
Error	7030	Service Control Manager Eventlog provider	The RAID Monitor service is marked as an interactive service. However, the system is configured to not allow interactive services. This service may not function properly.	Ignore this event.	

Event type	Event ID	Event source	Description	Effects	Remarks
Error	10128	Microsoft-Windows-WinRM	The WinRM service does not listen to a HTTP request because an error has occurred during the binding of the HTTP.SYS's URL (http://+:47001/wsman/). The URL is not used to process a remote request. Use user operation "netsh http" to verify that the ACL of URL (http://+:47001/ wsman/) is set to the network service.	Ignore this event.	
Error or Warning	(Any)	Microsoft-Windows-WHEA-Logger	(Any)	If the event level is an error, contact the sales representative or maintenance personnel.	Microsoft-Windows-WHEA-Logger's event is a log related to a hardware error. If the event level is a warning, the error is automatically fixed and thus the event log is ignorable.

Disabling TCP/IP Checksum Offload function of the network adapter

Onboard network adapters and Optional LAN cards have the TCP/IP protocol checksum calculation function that is executed on the LAN controller.

We recommend that you use the TCP/IP checksum calculation function that OS provides as standard rather than using the function in the adapters.

You can construct more highly reliable system if the calculation function of OS side is set available. That is because the consistency check of the packet data received from the network is performed in the last phase of the OS protocol processing.

Change the setting of network adapter to turn off the checksum function by LAN controller off as follows.

Open the properties of each network adapter from the Device Manager, and the setting of the following items under the **Advanced** tab to **None** or **Disabled**.

- Ipv4 Checksum Offload [**None**]
- TCP/UDP Checksum Offload (Ipv4) [**None**]
- TCP/UDP Checksum Offload (Ipv6) [**None**]
- Large Send Offload (Ipv4) [**Disabled**]
- Large Send Offload v2 (Ipv4) [**Disabled**]
- Large Send Offload v2(Ipv6) [**Disabled**]
- Receive Side Scaling [**Disabled**]

After the setting, restart the system unit.



Depending on a type of network adapter, some items are not displayed. Set the displayed items for your adapter.

Restriction on changing the network adapter parameter

When the network adapter configuration is changed, the communication with the all the network adapters may break down until the setup is saving, or an error may be recorded in the OS event log. After the setup, make sure that communication is normal.

When the network adapter setting has been changed, communication may not be done properly through the adapter.

Check the network adapter with the changed setting in the **Device Manager**. If **!** is displayed, right-click the adapter, disable it, and then enable it again. When rebooting OS, the adapter can communicate properly.

Device location of onboard network adapter

The location relationship between the onboard network adapters (LAN controllers) and network interface connectors is as follows:

Table 1-7: Device location of onboard network adapter

LAN controller	Connector number and location
Broadcom BCM5719	<ul style="list-style-type: none">- Network interface connector 1: PCI bus 6, Device 0, function 0- Network interface connector 2: PCI bus 6, Device 0, function 1- Network interface connector 3: PCI bus 6, Device 0, function 2- Network interface connector 4: PCI bus 6, Device 0, function 3

Link speed of network adapter

The network adapter link speed is specified in Auto Negotiation by default. If the network adapter is not connected to the hub normally, specify a line speed appropriate to the normal communication with the hub.

To set up the adapter, click **Device Manager > Network Adapters**. And then click the **Properties** of a target network adapter to change.

Select **Link Speed & Duplex** or **Sped & Duplex of Property** on the **Advanced** tab, and select a proper line speed from **Value**. You can change the line speed.

Displaying event log of network adapter

\DEVICE \354C76B6-E426-4CEB-8015-BF991BA8D75F may be displayed instead of a network adapter name such as Broadcom NetXtreme Gigabit Ethernet in the event log describing the network adapter. This occurs due to the specification, which is not affected the operation. The network adapter name and the number enclosed by \\ (GUID) may be different depending on your environment.

Displaying network adapter connection status

The network connection status in the **Network Connection** window or **Task** tray may not be quickly updated at the network adapter linkup. Click **View in Network Connections > Latest Update** to update and display the current status.

Confirming network adapter event log at OS boot

Error event may occur in the network adapter at the system boot. The network adapter may be linked down. Click **Network Connections**, and then confirm that the targeted network adapter is connected.

A linkup event may be recorded at the system boot in whatever the link status of the network adapter. Click **Network Connections**, and then confirm the link status of the network adapter.

Updating firmware of external disk array

When using an external disk array with Windows Server 2008 R2, updating the firmware or change the settings for Windows Server 2008 R2 may be required.

See the documents of the using disk array for more details about the updates.

Displaying file properties

Details of **File Properties** by Explorer may not display the File Version, Product Information, or Product Version. Reboot the OS or change the screen resolution or number of the color bits, and then not-displayed items may be displayed.

Confirming SAN Storage Manager availability

A disk array that supports VDS (Virtual Disk Service) is necessary to use SAN storage manager.

See the documents of the using disk array for more details about the support status of VDS.

Confirming physical memory capacity

Microsoft recommends that Windows Server 2008 R2 should have 2 GB memory. If the memory is not enough, processing may not be completed by the time expected or may be interrupted due to resource shortage at the overload.

Applying Hotfix

Install all of the following hotfixes before operating Windows Server 2008 R2.

- KB974672 (Target: without SP1)

Modifies a problem that a virtual machine hangs up at its startup time. See following URL for details:

<http://support.microsoft.com/kb/974672>

This hotfix is applicable only after the role of Hyper-V is enabled. Install this hotfix without fail if the role of Hyper-V is enabled.

- KB982383 (Target: without SP1)

Modifies a problem that may degrade the I/O performance. See following URL for details:

<http://support.microsoft.com/kb/982383>

This hotfix has corrected other problems including KB974598.

- KB2487426 (Target: With/Without SP1)

Modifies a problem that a 32-bit application terminates abnormally when a service pack is applied. See following URL for details:

<http://support.microsoft.com/kb/2487426>

- KB2517374 (Target: without SP1)
Modifies various Hyper-V problems. See following URL for details:
<http://support.microsoft.com/kb/2517374>
A problem that the Hyper-V virtual machine cannot be started in a specific environment is described on the reference Web site but other problems including KB975530/KB2133637/KB2264080 are also modified.
This hotfix is applicable only after the role of Hyper-V is enabled. Install this hotfix without fail if the role of Hyper-V is enabled.
- KB2528357 (Target: With/Without SP1)
Modifies a memory leak problem of a storage device. See following URL for details:
<http://support.microsoft.com/kb/2528357>
- KB2528507 (Target: With SP1)
Modifies a crash problem of a memory dump file. See following URL for details:
<http://support.microsoft.com/kb/2528507>
- KB2553549 (Target: With/Without SP1)
Modifies a problem that cannot communicate after 497 days from system startup. See following URL for details:
<http://support.microsoft.com/kb/2553549>

Using USB memory

With a USB memory connected, do not power on the system unit or perform reboot-up. Boot the OS and then connect the USB memory. After that, confirm that drive letters of other drives are not changed.

BitLocker drive encryption function

The BitLocker drive encryption function is supported only when the TPM (Trusted Platform Module) is used. The TPM is an optional, provided the TPM board (EQ7001-R). Install the TPM board in the system unit before using the BitLocker drive encryption function.

By default, the TPM is disabled. Before use, enable the TPM. For details on how to enable the TPM, see *Hitachi Compute Rack 220S BIOS Guide*.

After the BitLocker drive encryption function is enabled when not installing Service Pack 1, you should also install the following hotfix without fail:
<http://support.microsoft.com/kb/975496/>

The BitLocker drive encryption function encrypts drives. Some applications or middleware do not support this function, or there are operational precautions. Confirm with the sales representative.

You should disable the BitLocker drive encryption function before hardware maintenance work or expansion work.

Strictly manage your recovery password. If the recovery password is lost, you cannot start the OS or access data. Also, you may not conduct hardware maintenance work or expansion work.

When the BitLocker drive encryption function is enabled, an overhead by encryption/decryption process occurs. If this function is used with a database where performance is required, or in the Hyper-V 2.0 environment, expected performance may not achieve.

Before use, verify the BitLocker drive encryption function.

Defragmenting SSD

Unlike the HDD, the SSD (Solid State drive) may be decreased the life of SSD if optimized using the defragmentation tool. Do not run the defragmentation tool on the SSD.

Before applying Service Pack 1

Apply the hotfix KB2487426 before installing Service Pack 1. Otherwise, a 32-bit application will issue an application error.
For details, see the following URL:
<http://support.microsoft.com/kb/2487426>

Display resolution

The Windows Server 2008 R2 automatically sets the maximum number of colors supported by hardware when you set a display resolution. The set number of colors is retained as it is, and the number of bits is not reduced automatically.

Therefore, if you attempt to change the resolution from a high value to a low one and then from a low value to a high one, you may not select the high resolution due to hardware restrictions. If you should not select a high resolution, click **Screen resolution > Advanced > Adapter tab > List All Modes...** Match the solution with the number of colors.

Using Windows Hypervisor 2.0

Windows Hypervisor 2.0 (Hyper-V 2.0) is a virtualization function provided as a part of Windows Server 2008 R2. Hyper-V 2.0 allows you to run multiple Windows OS on a physical server, which can improve efficiency of a physical server and reduce IT costs.

Hyper-V 2.0 overview

Hyper-V 2.0 adopts the hypervisor-based virtualization architecture. Hypervisor is a software layer between hardware and OS.

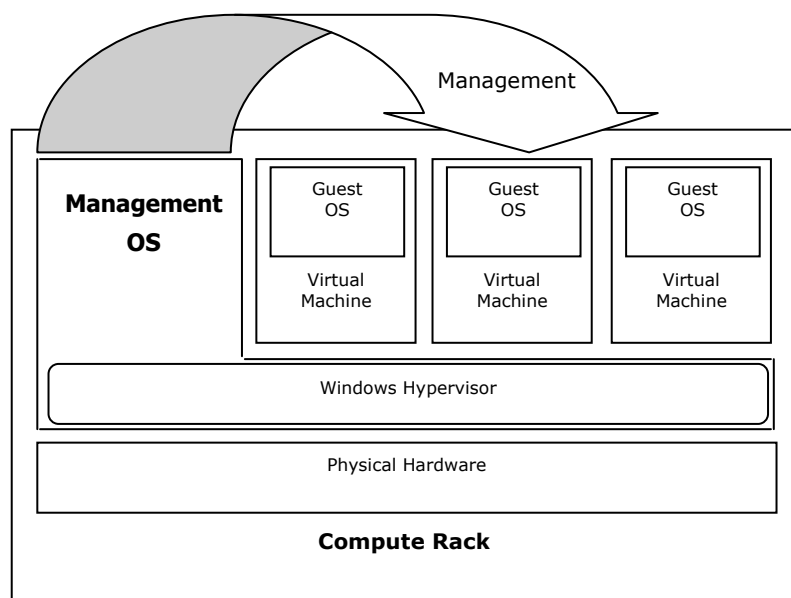


Figure 1-2: Hyper-V 2.0 overview



Terms used in this guide is defined as follows:

- Physical hardware:
Physical server
- Virtual machine:
Virtual hardware that operates virtually on a physical hardware
- Management OS:
Operating system installed in a physical hardware for managing Hyper-V 2.0
- Guest OS:
Operating systems installed in a virtual machine

Accessing further information for Hyper-V 2.0

Access the following URL for further details of Hyper-V.

<http://www.microsoft.com/windowsserver2008/en/us/hyperv-main.aspx>

Configuring system for Hyper-V 2.0

This section describes the system configuration to use Hyper-V 2.0.

Requirements for software configuration

Following software requirements should be satisfied to configure Hyper-V 2.0.

Requirements for Software

- Windows Server 2008 R2 Standard/Enterprise/Datacenter for the management OS.
- Windows Server 2008 R2 SP1 Standard/Enterprise/Datacenter for the management OS.

Requirement for physical hardware configuration

In addition to the system requirements for Windows Server 2008 R2, the following hardware requirements should be satisfied to use Hyper-V 2.0.



See the following URL for the system requirements for Windows Server 2008 R2.

[http://technet.microsoft.com/en-us/library/dd379511\(v=ws.10\).aspx](http://technet.microsoft.com/en-us/library/dd379511(v=ws.10).aspx)

Requirements for Hardware

- Data Execute Prevention (DEP):
DEP settings of the system unit are all enabled by default. Use it as is.
- Intel 64 (x64-based processor):
The CPU mounted in the system unit supports Intel x64 features. Use it as is.
- Intel Virtualization Technology (Intel VT):
Intel VT settings to the CPU are all enabled by default. Use it as is.

It is recommended that the system unit should use the physical hardware that satisfies the requirements shown below or more for configuration.

See [Guaranteed virtual machine configuration](#) as well.

- **Number of CPU core:**
In addition to the total number of CPUs to be assigned to each guest OS running simultaneously, at least one CPU for the management OS is required.
- **Memory capacity:**
In addition to the total capacity of the memory, which is recommended by Microsoft to each guest OS running simultaneously, at least another 2 GB for the management OS is required.
- **Partitions:**
Separate partitions are required for the management OS and the virtual hard disk file (.vhd) of a virtual machine.



Recommendations above are just general standards and do not guarantee that the system will work well at any condition. They may be insufficient depending on an application to run on the guest OS. Give the system test run and check if it works properly beforehand.



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. Examine the configuration depending on your purpose.

Guaranteed virtual machine configuration

The following guest OSs confirmed that ran properly on the system unit.

- Windows 2000 Server with Service Pack 4
- Windows 2000 Advanced Server with Service Pack 4
- Windows Server 2003, Standard Edition with Service Pack 2 (including R2)
- Windows Server 2003, Enterprise Edition with Service Pack 2 (including R2)
- Windows Server 2003, x64 Standard Edition with Service Pack 2 (including R2)
- Windows Server 2003, x64 Enterprise Edition with Service Pack 2 (including R2)
- Windows Server 2008 Standard 32-bit
- Windows Server 2008 Enterprise 32-bit
- Windows Server 2008 Datacenter 32-bit
- Windows Server 2008 Standard 64-bit
- Windows Server 2008 Enterprise 64-bit
- Windows Server 2008 Datacenter 64-bit
- 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
- Windows Server 2008 R2 Enterprise
- Windows Server 2008 R2 Datacenter
- 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 XP Professional x86 Edition +Service Pack 3
- Windows Vista Business x86 Edition +Service Pack 2
- Windows Vista Enterprise x86 Edition +Service Pack 2
- Windows Vista Ultimate x86 Edition +Service Pack 2
- Windows 7 Professional x86 Editions
- Windows 7 Enterprise x86 Editions
- Windows 7 Ultimate x86 Editions
- Windows 7 Professional x64 Editions
- Windows 7 Enterprise x64 Editions
- Windows 7 Ultimate x64 Editions
- Windows 7 Professional x86 Edition +Service Pack 1
- Windows 7 Enterprise x86 Edition +Service Pack 1
- Windows 7 Ultimate x86 Edition +Service Pack 1
- Windows 7 Professional x64 Edition +Service Pack 1
- Windows 7 Enterprise x64 Edition +Service Pack 1
- Windows 7 Ultimate x64 Edition +Service Pack 1



In addition to the above, other guest OSs supported by Microsoft Corporation are installable. However, their installation and operation are out of our support. The system may not work normally.

We recommend that you configure a virtual machine that has at least the Microsoft Corporation's recommended system requirements in accordance with a guest OS.



- Guest OSs, not included in the list above but supported by Microsoft, can be installed in the server blade. However, we do not support the installation and operation.
We recommend that virtual machine should be configured in the server blade better than Microsoft recommend to a guest OS.
- 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 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. We recommend that the virtual hard disk should be configured with the fixed-size in the production environment.
- The two types of virtual network adapters, the "network" adapter or "legacy network adapter", is selectable.
Select the "network adapter" for the blade server.
When setting up the integrated service in Windows 2000 described in [Applying hotfix for Windows 2000](#) or applications specify the using of a legacy network adapter, use the legacy network adaptor for that purpose.



See the following URLs for the system requirements for each OS recommended by Microsoft.

- Windows Server 2008 R2
[http://technet.microsoft.com/en-us/library/dd379511\(v=ws.10\).aspx](http://technet.microsoft.com/en-us/library/dd379511(v=ws.10).aspx)
- Windows Server 2008
<http://technet.microsoft.com/en-us/windowsserver/bb414778>
- Windows Server 2003 (See Windows Server 2003 R2.)]
<http://technet.microsoft.com/en-us/windowsserver/bb430827>
- Windows 2000 Server
<http://support.microsoft.com/kb/304297/en>
- Windows 2000 Advanced Serve
<http://support.microsoft.com/kb/304297/en>
- Windows 7
<http://windows.microsoft.com/en-us/windows7/products/system-requirements>
- Windows Vista
<http://windows.microsoft.com/en-us/windows-vista/products/system-requirements>
- Windows XP
<http://support.microsoft.com/kb/314865/en-us>



The maximum number of processors that can be assigned depends on a guest OS.

- One processor for Windows 2000 Server or Windows 2000 Advanced Server
 - Maximum two processors for Windows Server 2003 R2, Windows Server 2003, Windows Vista, or Windows XP + SP3
 - Maximum four processors for Windows Server 2008 R2, Windows Server 2008, or Windows 7
-

Installing Hyper-V 2.0

This section describes the installation procedure of Hyper-V 2.0.



- Always log on to the management OS with the administrator privilege.
 - See [Configuring system for Hyper-V 2.0](#) before the installation.
 - For the details of how to use the Hyper-V 2.0 manager, see the management OS help.
-

Preparation

Make sure both DEP and Intel VT are enabled in the system BIOS of the system unit. If disabled, enable their configurations. For details, see [Requirement for physical hardware configuration](#) on page 1-40.

Installing management OS

For the procedure of installing management OS, see [Installing Windows Server 2008 R2](#) on page 1-2.

Installing Hyper-V 2.0

Follow the steps shown below to install Hyper-V 2.0.

1. Start the server manager on the management OS
Click **Start > Administrative Tools > Server Manager**.
2. Add the Hyper-V role.
Click **Roles > Roles Summary > Add Roles** to start the **Add Roles** Wizard.
Click **Hyper-V**, and then proceed to the completion of the wizard following to the instructions in the **Server Roles** windows.



The following event is recorded in the system event when you add Hyper-V roles. The event is negligible.

Event ID: 6004

Source: Winlogon

Event Level: Warning

Description:

The Winlogon notification subscriber <TrustedInstaller>
failed a critical notification event.

3. When prompted, restart the OS to complete the installation.

Installing virtual hard disk

Follow the steps shown below to install a virtual hard disk.

1. Click **Start > Administrative Tools > Hyper-V Manager** to start the Hyper-V manager.
2. Click **Action > New > Hard Disk** to open the **new Virtual Hard Disk wizard**.
3. Create a new virtual hard disk following to the wizard.



We recommend you that the virtual hard disk should be configured with the fixed-size.
See [Guaranteed virtual machine configuration](#) for further details.

Installing virtual machine

Follow the steps shown below to install a virtual machine.

1. Click **Start > Administrative Tools > Hyper-V Manager** to start the Hyper-V manager.
2. Click **Action > New > Virtual Machines** to open the new Virtual Machine wizard.
3. Create a new virtual machine following to the wizard.

While executing Connect Virtual Hard Disk, Click **Use an existing virtual hard disk**, and then click the hard disk created in [Installing virtual hard disk](#).



For the recommended virtual machine configuration for the server blade, see [Guaranteed virtual machine configuration](#).

4. When completing the wizard, add hardware if needed.
For the details such as the procedure, see the management OS help.

Installing guest OS

Install a guest OS following to the steps shown below in the virtual machine created in [Installing virtual machine](#).



There are restrictions on OS media to be used as a guest OS. See [Restrictions of guest OS](#)

1. In the **Virtual Machines** section of **Hyper-V Manager**, right-click a virtual machine name to install a guest OS. Click **Connect** to open **Virtual Machine Connection**.
2. Insert the OS setup medium into the DVD drive that is configured in the virtual machine.



If a DVD drive is not included in the virtual machine, configure a DVD drive in the virtual machine. For the procedure, see the management OS help. To configure it, for example, click **Media > DVD Drive > D: Capture** in **Virtual Machine Connection**.

3. Click **Action > Start**. The virtual machine starts.
4. Boot up from the OS setup medium, proceed to install the guest OS following to the instructions in the windows.
If the guest OS is Windows Server 2008 R2, omit steps 5 and 6.
5. After completing the guest OS installation, click **Action > Insert Integration Services Setup Disk** in the **Virtual Machine Connection** when the guest OS is running.
6. Install the integrated service following to the window instructions. See Help for the details of how to install the integrated service.



See [Applying hotfix for Windows 2000](#) when using VLAN IDs with Hyper-V.



- For Windows 2000, execute step 5 after setting up Service Pack 4.
 - For Windows Server 2003 including R2, execute step 5 after setting up Service Pack 2.
-

Restrictions for using Hyper-V 2.0

This section describes restrictions when using Hyper-V 2.0 on the server blade.

General Restrictions

Planning maintenance

As advancing the integration using the virtual environment, multiple tasks and environments run in a single machine. Make a plan for the schedule management including to ensure the maintenance work. Maintenance tasks include applying security patches, updating application and drivers, and installing service packs for virtual machines and management OS.

The number of processors available with Hyper-V 2.0

There are the following restrictions on the number of processors recognizable by the OS:

Table 1-8: Number of processors available with Hyper-V 2.0

Edition	Max. number of sockets (Total of physical processors)	Max. number of logical processors (Total of multi-core, hyper threading processors)
Windows Server 2008 R2 Standard	4	64
Windows Server 2008 R2 Enterprise	8	64
Windows Server 2008 R2 Datacenter	64	64

Server Core

Installation of Windows Server 2008 R2/Windows Server 2008 Server Core is not supported.

Using application programs

Some application or middleware may have notice when using with Hyper-V 2.0. See the documents of application distributor from which you have bought it for more details.

Configuring cluster

- When configuring a cluster using Hyper-V 2.0, we strongly recommend you to configure Windows Failover Cluster (WSFC) between the management OSs. See the management OS Help for configuring a cluster between management OSs.
- 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, but the failover may be unsuccessful when the shared quorum disk access fails because of the overload to the disk by guest OSs.

Proceeding 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.

Using Broadcom Advanced Control Suite 4

When you install Broadcom Advanced Control Suite 4 (BACS4) in the management OS to use, see *Windows Server 2008 R2 LAN Extended Functions User's Guide*.

Do not install BACS4 in any guest OS.

Monitoring events related to physical hardware

Monitor events related to the physical hardware on the management OS, not on the guest OS.

Shutting down and restarting management OS

We recommend you to shut down all guests OS explicitly before restarting and shutting down the management OS. Especially when multiple guests OS are running, shutting down the management OS at the same time puts high workload on CPU. This may cause trouble such as too much time to take or improper shutdown.

Using dynamic memory

Dynamic Memory is available when you install Windows Server 2008 R2 SP1 or later as the management OS.

Hitachi confirmed that the following guest OSs ran properly.

- Windows Server 2003, Standard Edition with Service Pack 2 (including R2)
- Windows Server 2003, Enterprise Edition with Service Pack 2 (including R2)
- Windows Server 2003, x64 Standard Edition with Service Pack 2 (including R2)
- Windows Server 2003, x64 Enterprise Edition with Service Pack 2 (including R2)
- 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 Vista Enterprise x86 Edition + Service Pack 2
- Windows Vista Ultimate x86 Edition + Service Pack 2
- Windows 7 Enterprise x86 Edition + Service Pack 1
- Windows 7 Ultimate x86 Edition + Service Pack 1
- Windows 7 Enterprise x64 Edition + Service Pack 1
- Windows 7 Ultimate x64 Edition + Service Pack 1

When you use following OSs as the guest OS, you must adapt the hotfix before activating dynamic memory.

- Windows Server 2008 Standard 32-bit with Service Pack 2
- Windows Server 2008 Standard 64-bit with Service Pack 2

For more details about the hotfix, see the following website:

<http://support.microsoft.com/kb/2230887/en>

RemoteFX

RemoteFX function is not supported.

Other restrictions

Search in the following URL **Microsoft Help and Support** using **Hyper-V** as a keyword.

<http://support.microsoft.com/>

Restrictions of management OS

Not installing software products on the management OS

We recommend you not to install task application (middleware), such as a database or application server, on the management OS with Hyper-V enabled.

Enabling role

We recommend you to disabling any role but Hyper-V in Windows Server 2008 R2 on the management OS with Hyper-V enabled.

Restrictions of guest OS

Saving VM status

When click **Action** > **Save** in the management window of the virtual machine, the virtual machine status is saved and the virtual machine halts.

To restart the virtual machine from the halting point, click **Action** > **Start**. However, this operation is different from the guest OS shutdown and reboot. Applications communicating with the outside may detect an error.

Notes for Active Directory on the guest OS

Microsoft Help and Support provides Considerations when hosting Active Directory domain controller in virtual hosting environments in the following URL. Access the following URL and read it in advance.

<http://support.microsoft.com/kb/888794/en-us>

Installing 32-bit OS installation media

When using Windows Server 2003 32-bit with Service Pack2 as a guest OS, use the OS medium to which Service Pack 1 or 2 has been applied. Otherwise, the guest OS may display the **STOP** error and halt during installation.

Using snapshot

We do not recommend that you use the snapshot. If using the snapshot, performance overhead or inconsistency may occur where multiple servers combined.

We also do not recommend that you use snapshot in the guest OS where Active Directory is configured. If using the snapshot, inconsistency in database may occur.

Using virtual hard disk file (.vhd)

When multiple virtual hard disk files (.vhd) are 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, execute careful test runs in advance. We recommend you to deploy virtual hard disk files (.vhd) on separate physical disks if necessary.

Installing virtual SCSI controller

A guest OS cannot be installed in a virtual hard disk connected to a virtual SCSI controller. With Windows 2000 Server as a guest OS, the virtual SCSI controller connected to a virtual machine is not available. Connect all virtual hard disks to the virtual IDE controller with Windows 2000 Server as a guest OS.

Applying hotfix for Windows 2000

When using Windows 2000 with service pack 4, in which the integrated service has been installed, and applying the following hotfixes to the guest OS, stop code 0xCE is displayed and the guest OS may halt.

Apply following hotfixes before setting up the integrated service if necessary.

- KB891861
<http://support.microsoft.com/kb/891861/en>
- KB905590
<http://support.microsoft.com/kb/905590/en>
- KB922582
<http://support.microsoft.com/kb/922582/en>

Since hotfixes KB891861 and KB922582 are prioritized in Windows update programs, perform Windows update before the integrated service. When hotfixes KB891861 and KB922582 have been applied, there is no problem if you perform the integrated service and then Windows updates.

Use the legacy network adapter as a virtual network adapter on a virtual machine before setting up the integrated service. After setting up the integrated service, delete the legacy network adapter from the virtual machine and use a network adapter.

If trouble occurs, the guest OS may have to be re-installed.

Sound playback with a guest OS

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



When using a remote connecting application which cannot play a sound if some connecting destinations have no physical sound device, you cannot replay a sound even though using remote connection. See your application manual for details.

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