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Hitachi Compute Blade Series
Hitachi Compute Rack Series
OS Installation Guide for Windows Server

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Hitachi Data Systems

MK-99COM076-10

Contents

Preface

This document describes how to use the Compute Blade and Compute Rack.

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

This preface includes the following information:

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 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 Blade will be installed, including knowledge of physical characteristics, power systems and specifications, and environmental specifications.

Product Version

This document revision applies to new CPU for CB 520H B4.

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.

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, Installing Windows Server	Describes the procedure for installing Windows Server and related drivers and utilities.
Chapter 2, Notes and restrictions	Provides notes and restrictions when you use Windows Server.
Appendix A, Memory Dump for Emulex 10 Gbps CNA	Describes the procedure for a setting required when Emulex 10 Gbps CNA (Converged Network Adapter) is used as an FCoE boot device.

Referenced Documents

- Hitachi Compute Blade 2500 Series Server Blade Getting Started Guide, MK-99CB2500003
- Hitachi Compute Blade 500 Series Server Blade Setup Guide, MK-91CB500012
- Hitachi Compute Blade 320 USER'S GUIDE, with no document number

- Hitachi Compute Blade 2000 USER'S GUIDE, with no document number
- Hitachi Compute Rack 220S BIOS Guide, MK-90CRS000
- Hitachi Gigabit Fibre Channel Adapter User's Guide (BIOS/EFI Edition), MK-99COM009

Document Conventions

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

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
{ } braces	Required or expected value
| vertical bar	Choice between two or more options or arguments

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

Icon	Meaning	Description
WARNING:	WARNING	This indicates the presence of a potential risk that might cause death or severe injury.
CAUTION:	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	Calls attention to important or additional information.

Icon	Meaning	Description
Tip	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

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!

1

Installing Windows Server

This chapter describes the procedure for installing Windows Server and related drivers and utilities.

About supported OS

This section describes the supported OSs that can be set up in server blades.

- For Compute Blade 320, see the *Hitachi Compute Blade 320 USER'S GUIDE*.
- For Compute Blade 2000, see the *Hitachi Compute Blade 2000 USER'S GUIDE*.
- For Compute Blade 500 and Compute Blade 2500, the following table:

Table 1-1 Supported OS of CB 520 series - 1

OS version	Server blade[1]			
	CB 520A A1 CB 520H A1/B1	CB 520H B2	CB 520H B3	CB 520H B4
Windows Server 2008 Standard	Y (SP2 or later)	Y (SP2 or later)	--	--
Windows Server 2008 Enterprise	Y (SP2 or later)	Y (SP2 or later)	--	--
Windows Server 2008 Datacenter	Y (SP2 or later)	Y (SP2 or later)	--	--
Windows Server 2008 R2 Standard[2]	Y	Y (SP1 or later)	Y (SP1 or later)	--
Windows Server 2008 R2 Enterprise[2]	Y	Y (SP1 or later)	Y (SP1 or later)	--
Windows Server 2008 R2 Datacenter[2]	Y	Y (SP1 or later)	Y (SP1 or later)	--
Windows Server 2012 Standard	Y	Y	Y	Y
Windows Server 2012 Datacenter	Y	Y	Y	Y
Windows Server 2012 R2 Standard	Y	Y	Y	Y
Windows Server 2012 R2 Datacenter	Y	Y	Y	Y

Legend:

Y: Supported

--: Not supported

Note:

1. For the server blades supported by Compute blade 2500, see the *Hitachi Compute Blade 2500 Series Getting Started Guide*.

   Also, for the server blades supported by Compute blade 500, see the *Hitachi Compute Blade 500 Series System Overview Guide*.
2. Compute blade 2500 does not support the OS.

Table 1-2 Supported OS of CB 520 series - 2

OS version	Server blade[1]			
	CB 540A A1	CB 520X B1	CB 520X B2	CB 520X B3
Windows Server 2008 Standard	Y (SP2 or later)	--	--	--
Windows Server 2008 Standard	Y (SP2 or later)	--	--	--
Windows Server 2008 Standard	Y (SP2 or later)	--	--	--
Windows Server 2008 R2 Standard	Y	Y[2] (SP1 or later)	--	--
Windows Server 2008 R2 Enterprise	Y	Y (SP1 or later)	--	--
Windows Server 2008 R2 Datacenter	Y	Y (SP1 or later)	--	--
Windows Server 2012 Standard	Y	Y	Y	--
Windows Server 2012 Datacenter	Y	Y	Y	--
Windows Server 2012 R2 Standard	Y	Y	Y	--
Windows Server 2012 R2 Datacenter	Y	Y	Y	--

Legend:

Y: Supported

--: Not supported

Note:

1. For the server blades supported by Compute blade 2500, see the *Hitachi Compute Blade 2500 Series Getting Started Guide*.

   Also, for the server blades supported by Compute blade 500, see the *Hitachi Compute Blade 500 Series System Overview Guide*.
2. When you installed this OS version to the guest OS partition of the virtual machine software, only supports.

Outline for Windows Server Installation

This section provides an outline for Windows Server installation.

Obtain "Driver Kit for Windows Server 2012" DVD or "Driver & Utility DVD for Windows" DVD that contains all necessary drivers and utilities.

1. Prepare for installation reading through Notes and Requirements for Installation on page 1-4. Set up hardware as necessary.

2. Install the OS referring to Procedure for Installing Windows Server on page 1-6.
3. Install drivers and utilities referring to Support_EN.html contained in "Driver Kit for Windows Server 2012" DVD or "Driver & Utility DVD for Windows" DVD.

Notes and Requirements for Installation

This section provides notes and requirements for installation.

- Logical drive size for OS installation

  When booting in BIOS, set the size of a logical drive, on which the OS is installed, to less than 2 TB*. For setting the size, see manuals of the external disk array device or RAID device on which to install the OS.

  * 2 TB is calculated based on 1024 bytes for 1 KB. If based on 1000 bytes for 1 KB, 2199 GB (2,199,023,255,552 bytes) is the answer.

- Write cache setting

  For an internal disk array other than that with cache backup, make sure that write cache of the disk for installation is disabled (write through mode). If the write cache is enabled (write back mode), disable it to write through mode.

- Eject button

  Do not press the eject button on a DVD drive except when changing media. If pressing the button during installation, you need to install the OS all over again.

- Path setting

  When multiple paths are set to LU of an external disk array for OS installation, make sure to change to a single path before starting installation. With multiple paths set to the LU, installation fails. Generally, you can change to single path setting from a management utility of the external disk array device. See the manual of your external disk array device for details. Install the OS and then multipath software before setting multiple paths.

- Partition size

  Installing the OS on a partition with less than 40 GB may fail. Additional packages, such as a service pack, may require a large space. Then, it is strongly recommended that you create a partition with 80 GB or greater for installation.

Tip: Since capacity required for page files and dump files depends on the memory capacity installed, 80 GB may not be enough. Configure the system for your environment and purpose.

- Time for OS installation

  The more processors, memory, and devices are installed, the longer it takes to install the OS. Required time is added by a few hours for many devices installed, especially for many I/O expansion cards installed. When the window may seem hang-up without any change, wait for dozens of minutes or a few hours without resetting or powering off the system.

- Multiple disks and partitions

  When the system unit has multiple disks, logical units, multiple disks are shown as destination for installation. The number and order of those disks are not fixed and will be changed. It is recommended that you install the OS with a single disk in view, and then add other data disks except for the system disk after installation.

  If you need to install the OS with multiple disks in view, identify the target disk for installation by the size not by the order or number.

  If a wrong disk or wrong partition is selected, the existent partition (data) may be deleted. See the following Microsoft website for details.

  http://support.microsoft.com/kb/937251

- External DVD drive for Computer Rack 220S

  For CR 220S, an external DVD-ROM drive is required. Prepare one before installation. You need to change boot priority on the system BIOS to boot from the external DVD -ROM drive. See *Hitachi Compute Rack 220S BIOS Guide* for details.

- License activation

  License activation is required after installation. See the following Microsoft website for details.

  - For Windows Server 2012 R2

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

  - For Windows Server 2012

    http://technet.microsoft.com/en-us/library/jj618328.aspx

  - For Windows Server 2008 R2

    http://technet.microsoft.com/en-us/library/ee126089(v=WS.10).aspx

  - For Windows Server 2008

    http://technet.microsoft.com/en-us/library/cc755094(v=WS.10).aspx

- Server Core installation

  - For Windows Server 2012 R2/Windows Server 2012

    When using Server Core option, install the OS and supplied software with a GUI option. Then, convert to the Server Core Installation option. See the following Microsoft website for details.

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

  - For Windows Server 2008 R2 and Windows Server 2008

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

- Microsoft Generic Compliant Device

  When ServerConductor/Agent is installed, Microsoft Generic Compliant Device may show "!" on Device Manager. But there is no problem in operation. Use the system as it is. See the readme file of ServerConductor/Agent for details.

- Setting procedures for the memory more than 1 TB

When install Windows Server 2008 R2 Enterprise/Datacenter on the server blade that has 1 TB or more of memory using the OS installation media without SP1, decrease in size less than 1 TB memory. Apply SP1 or KB980598 (http://support.microsoft.com/kb/980598) after OS installation, and then return the memory size.

- Server blade setting for Compute Blade 2000

  Set the following to EFI setting on Compute Blade 2000 Web console before installing Windows Server.

  - PCI Error Handling Mode: PCIe Error Isolation

  Without this setting, installing Windows Server may fail due to OS hang-up or hardware malfunction. Return the setting to the previous one after installation. See Chapter 5: Server Blade Setup in *Hitachi Compute Blade 2000 USER'S GUIDE* for PCI Error Handling Mode setting.

- Server blade setting for Compute Blade 320

  For R5/H5/S5/P5 models in Basic mode, disable ACPI Power Meter in BIOS Setup as shown below before installing Windows Server 2012.

  - ACPI Power Meter: Disabled

  You need to update BIOS to G26 or higher, find ACPI Power Meter in "Server: Server menu", and then to change settings to Disabled from Enabled. Without this setting, installing Windows Server 2012 may fail due to STOP Error. Use the system unit with the setting value above.

- Remote console in LPAR manager mode

  Power operation with the remote console is executed to a server blade. Power operation to the server blade in LPAR manager mode affects to all LPARs managed by LPAR manager. Thus, remote console power operating functions, such as powering on or off and resetting, are disabled.

  Use the remote console only when installing the OS. Use remote desktop after installing the OS.

- Shared NIC and Virtual NIC in LPAR manager mode

  Shared NIC and virtual NIC may not be recognized as a network device at the first OS startup. They are properly recognized by re-starting the OS.

- Product key in LPAR manager mode

  LPAR manager is a virtual environment. When a message asking a product key to enter during OS installation is shown, enter the key for virtual environment.

- CB 520X

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

- Supported OS by Compute Blade 320

  Compute Blade 320 does not support Windows Server 2012 R2 or higher.

Procedure for Installing Windows Server

This section describes how to install Windows Server.

Note: You need to satisfy requirements before OS installation in LPAR manager mode. See OS Installation in LPAR manager Mode on page 1-19 for details.

Notice:

Re-installation deletes all data from the hard disk. Back up your necessary data beforehand.

For Windows Server 2012 R2

This section describes how to install Windows Server 2012 R2.

1. Power on the system unit, and quickly insert Windows Server 2012 R2 media into the DVD drive.
2. When "Press any key to boot from CD or DVD" appears on the screen, quickly press any key.

Note:

- If any OS has been installed, the OS starts instead of one on the DVD-ROM when the key is pressed late. If so, start with step 1 again.
- 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.
- If any OS has been installed, the message may not appear. If so, you need to select the DVD drive as a boot device. For Compute Blade 2000, select it with Boot Override, Save & Exit Menu, Chapter 5: Server Blade Setup, *Hitachi Compute Blade 2000 USER'S GUIDE*.
- When any key is pressed several times in BIOS boot, Windows Boot Manager may start. If so, select **EMS Enabled** for Windows Setup to continue installation.

3. In a while, the following window appears. Change settings as necessary, and click **Next**.

Tip: Depending of the media, Windows Server 2012 may be shown instead of Windows Server 2012 R2 in some windows.

4. Click **Install now** on the window.
5. "Type your product key for activation" is displayed. Enter your product key, and click **Next**.
6. "Select the operating system you want to install" is displayed. Select one to install, and click **Next**.

Note: Do not select the first line "Windows Server 2012 R2 Standard Server Core Installation" in step 6.

7. "Please read the license terms" is displayed. Read License Agreement, check **I accept the license terms** when you agree to it, and click **Next**.
8. "Which type of installation do you want?" is displayed. Select **Custom: Install Windows only (Advanced)**.
9. "Where do you want to install Windows?" Is displayed. If the driver for a disk controller, such as a RAID adapter, which is connected to the disk for installation, is an inbox driver, jump to step 14. If not, click **Load driver**.
10. **Load driver** dialog box appears. Remove Windows Server 2012 R2 media from the DVD drive, insert the CD/DVD media containing the driver, and click **Browse**.

Tip: See Outline for Windows Server Installation on page 1-3 to obtain drivers.

11. Folders are displayed on the window. Select one containing the driver for the disk controller, such as RAID adapter, which is connected to the disk for installation, and click **OK**.

12. Drivers are displayed on the window. Select an appropriate driver, and click **Next**.
13. Destinations are shown on the window. Remove CD/DVD media containing drivers, and insert Windows Server 2012 R2 media.

Note: Make sure to change media. If not, you cannot go on installation.

14. Select a partition for installation, and click **Next**.

Note:

- When the system unit has multiple disks, they are shown as destination for installation. The number and the order of those disks are not fixed and will be changed. It is recommended that you install the OS with a single disk in view, and then add other data disks except for the system disk after installation.
- If you need to install the OS with multiple disks in view, identify the target disk for installation by the size not by the order or the number. If a wrong disk or wrong partition is selected, the existent partition (data) may be deleted. See the following Microsoft website for details.
  http://support.microsoft.com/kb/937251

Tip:

- When specifying the capacity of a partition for installation, click **Drive options (advanced)**.
- If you select a disk without specifying capacity of a partition and click **Next**, or if you click **OK** when a dialog box showing "To ensure that all Windows features work correctly, Windows might create additional partitions for system files." is displayed in creating a partition for installation, click **OK**, and another 350-MB partition will be created. This partition is called a system partition. Visit the following Microsoft website for details.
  http://technet.microsoft.com/en-us/library/dd799232(v=ws.10).aspx

15. "Installing Windows" is displayed to show the installation process. The computer automatically restarts a couple of times. Then, installation is complete.
16. **Settings** window appears. Enter a new password for Administrator, and click **Finish**.

Note: A password is required to satisfy the following requirements.

- Combine at least 3 characters among the following
  Alphanumerics (A to Z; a to z; 1 to 9); comma, period
- Do not contain 3 or more consecutive letters from the user name or full name.

17. Installation is complete.

Note: If installing the OS in LPAR manager mode, you need to execute additional settings after OS installation. See Notes and Restrictions on LPAR manager on page 2-37.

For Windows Server 2012

This section describes how to install Windows Server 2012.

1. Power on the system unit, and quickly insert Windows Server 2012 media into the DVD drive.
2. When "Press any key to boot from CD or DVD" appears on the screen, quickly press any key.

Note:

- If any OS has been installed, the OS starts instead of one on the DVD-ROM when the key is pressed late. If so, start with step 1 again.
- 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.
- If any OS has been installed, the message may not appear. If so, you need to select the DVD drive as a boot device. For Compute Blade 2000, select it with Boot Override, Save & Exit Menu, Chapter 5: Server Blade Setup, *Hitachi Compute Blade 2000 USER'S GUIDE*.
- When any key is pressed several times in BIOS boot, Windows Boot Manager may start. If so, select **EMS Enabled** for Windows Setup to continue installation.
- Because of the errata of Windows Server 2012, the server system that has 15 or more core processors cannot be installed OS by using DVD-Drive connected to USB3.0 port.

  In that case, please install OS by using Virtual Media.

3. In a while, the following window appears. Change settings as necessary, and click **Next**.

4. Click **Install now** on the window.
5. "Type your product key for activation" is displayed. Enter your product key, and click **Next**.
6. "Select the operating system you want to install" is displayed. Select one to install, and click **Next**.

Note: Do not select the first line "Windows Server 2012 Standard Server Core Installation" in step 6.

7. "Please read the license terms" is displayed. Read License Agreement, check **I accept the license terms** when you agree to it, and click **Next**.
8. "Which type of installation do you want?" is displayed. Select **Custom: Install Windows only (Advanced)**.
9. "Where do you want to install Windows?" Is displayed. If the driver for a disk controller, such as a RAID adapter, which is connected to the disk for installation, is an inbox driver, jump to step 14. If not, click **Load driver**.
10. The following **Load driver** dialog box appears. Remove Windows Server 2012 media from the DVD drive, insert the CD/DVD media containing the driver, and click **Browse**.

Tip: See Outline for Windows Server Installation on page 1-3 to obtain drivers.

11. Folders are displayed on the window. Select one containing the driver for the disk controller, such as RAID adapter, which is connected to the disk for installation, and click **OK**.
12. Drivers are displayed on the window. Select an appropriate driver, and click **Next**.
13. Destinations are shown on the window. Remove CD/DVD media containing drivers, and insert Windows Server 2012 media.

Note: Make sure to change media. If not, you cannot go on installation.

14. Select a partition for installation, and click **Next**.

Note:

- When the system unit has multiple disks, they are shown as destination for installation. The number and the order of those disks are not fixed and will be changed. It is recommended that you install the OS with a single disk in view, and then add other data disks except for the system disk after installation.
- If you need to install the OS with multiple disks in view, identify the target disk for installation by the size not by the order or the number. If a wrong disk or wrong partition is selected, the existent partition (data) may be deleted. See the following Microsoft website for details.
  http://support.microsoft.com/kb/937251

Tip:

- When specifying the capacity of a partition for installation, click **Drive options (advanced)**.
- If you select a disk without specifying capacity of a partition and click **Next**, or if you click **OK** when a dialog box showing "To ensure that all Windows features work correctly, Windows might create additional partitions for system files." is displayed in creating a partition for installation, click **OK**, and another 350-MB partition will be created.

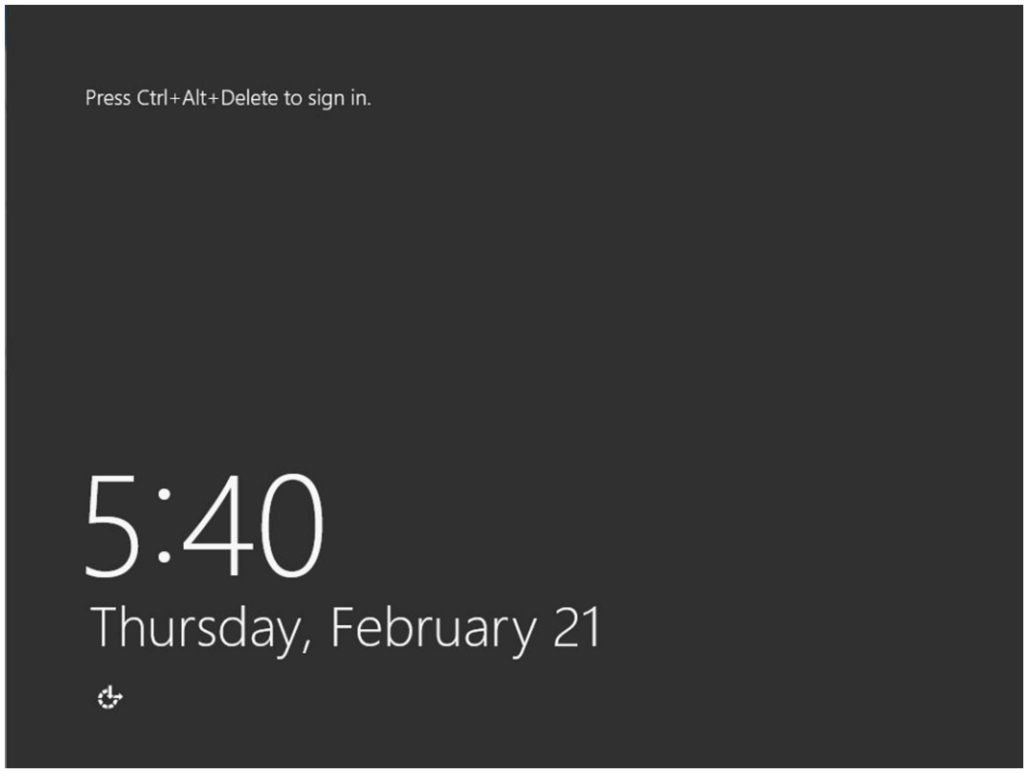
This partition is called a system partition. Visit the following Microsoft website for details.
http://technet.microsoft.com/en-us/library/dd799232(v=ws.10).aspx

15. "Installing Windows" is displayed to show the installation process. The computer automatically restarts a couple of times. Then, installation is complete.
16. **Settings** window appears. Enter a new password for Administrator, and click **Finish**.

Note: A password is required to satisfy the following requirements.

- Combine at least 3 characters among the following Alphanumerics (A to Z; a to z; 1 to 9); comma, period
- Do not contain 3 or more consecutive letters from the user name or full name.

17. Installation is complete.



Note: If installing the OS in LPAR manager mode, you need to execute additional settings after OS installation. See Notes and Restrictions on LPAR manager on page 2-37.

For Windows Server 2008 R2

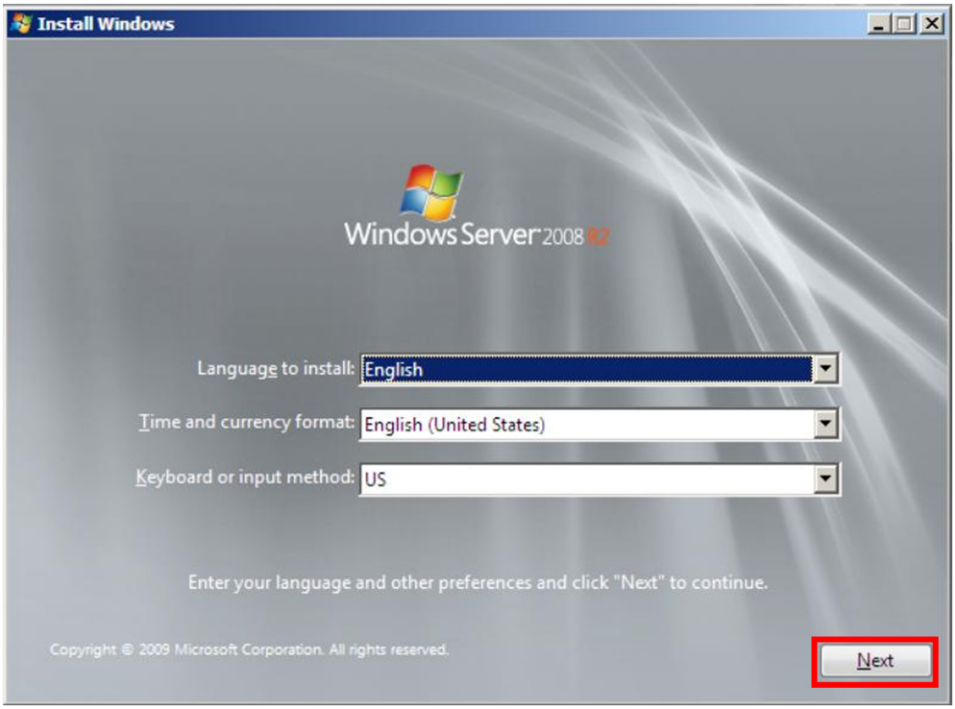
This section describes how to install Windows Server 2008 R2.

1. Power on the system unit, and quickly insert Windows Server 2008 R2 media into the DVD drive.
2. When "Press any key to boot from CD or DVD" appears on the screen, quickly press any key.

Note:

- If any OS has been installed, the OS starts instead of one on the DVD-ROM when the key is pressed late. If so, start with step 1 again.
- When any key is pressed several times, Windows Boot Manager may start. If so, select **EMS Enabled** for Windows Setup to continue installation.

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



Tip: The window with the message described in step 4 may not be displayed depending on the media. If so, go to step 5.

4. Click **Install now** on the window.

Note: Do not select Server Core Installation in step 5.

5. "Select the operating system you want to install" is displayed. Click the edition you need to install, and then click **Next**.
6. When"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**.

Tip: The window with the message described in step 7 may not be displayed depending on the media. If so, go to step 8.

7. "Which type of installation do you want?" is displayed, and then click **Custom (advanced)**.
8. "Where do you want to install Windows?" Is displayed. If the driver for a disk controller, such as a RAID adapter, which is connected to the disk for installation, is an inbox driver, jump to step 13. If not, click **Load driver**.
9. The following **Load driver** dialog box appears. Remove Windows Server 2008 R2 media from the DVD drive, insert the CD/DVD media containing the driver, and click **Browse**.

Tip: See Outline for Windows Server Installation on page 1-3 to obtain drivers.

10. Folders are displayed on the window. Select one containing the driver for the disk controller, such as RAID adapter, which is connected to the disk for installation, and click **OK**.
11. Drivers are displayed on the window. Select an appropriate driver, and click **Next**.
12. Destinations are shown on the window. Remove CD/DVD media containing drivers, and insert Windows Server 2008 R2 media.

Note: Make sure to change media. If not, you cannot go on installation.

13. Select a partition for installation, and click **Next**.

Note:

- When the system unit has multiple disks, they are shown as destination for installation. The number and the order of those disks are not fixed and will be changed. It is recommended that you install the OS with a single disk in view, and then add other data disks except for the system disk after installation.
- If you need to install the OS with multiple disks in view, identify the target disk for installation by the size not by the order or the number. If a wrong disk or wrong partition is selected, the existent partition (data) may be deleted. See the following Microsoft website for details.

http://support.microsoft.com/kb/937251

Tip:

- When specifying the capacity of a partition for installation, click **Drive options (advanced)**.
- If you select a disk without specifying capacity of a partition and click **Next**, or if you click **OK** when a dialog box showing "To ensure that all Windows features work correctly, Windows might create additional partitions for system files." is displayed in creating a partition for installation, click **OK**, and another 350-MB partition will be created. This partition is called a system partition. Visit the following Microsoft website for details.
  http://technet.microsoft.com/en-us/library/dd799232(v=ws.10).aspx

14. "Installing Windows" is displayed to show the installation process. The computer automatically restarts a couple of times. Then, installation is complete.
15. "The user's password must be changed before logging on the first time." is displayed at the first boot after installation. Click **OK**.
16. Enter any Administrator password into **New password** and **Confirm password**, and then click → button.

Tip: 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, and period.
- Do not contain 3 or more consecutive letters from the user name or full name.

17. OS Installation is completed.

For Windows Server 2008

This section describes how to install Windows Server 2008.

1. Power on the system unit, and quickly insert Windows Server 2008 media into the DVD drive.
2. When "Press any key to boot from CD or DVD" appears on the screen, quickly press any key.

Note:

- If any OS has been installed, the OS starts instead of one on the DVD-ROM when the key is pressed late. If so, start with step 1 again.
- When any key is pressed several times, Windows Boot Manager may start. If so, select **EMS Enabled** for Windows Setup to continue installation.

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

Tip: The window with the message described in step 4 may not be displayed depending on the media. If so, go to step 5.

4. Click Install now on the window.

Tip: Do not select Server Core Installation in step 5.

5. "Select the operating system you want to install" is displayed. Click the edition you need to install, and then click **Next**.
6. When "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**.

Tip: The window with the message described in step 7 may not be displayed depending on the media. If so, go to step 8.

7. "Which type of installation do you want?" is displayed, and then click **Custom (advanced)**.
8. "Where do you want to install Windows?" Is displayed. If the driver for a disk controller, such as a RAID adapter, which is connected to the disk for installation, is an inbox driver, jump to step 14. If not, click **Load driver**.
9. The following **Load driver** dialog box appears. Remove Windows Server 2008 media from the DVD drive, insert the CD/DVD media containing the driver, and click **Browse**.

Tip: See Outline for Windows Server Installation on page 1-3 to obtain drivers.

10. Folders are displayed on the window. Select one containing the driver for the disk controller, such as RAID adapter, which is connected to the disk for installation, and click **OK**.
11. Drivers are displayed on the window. Select an appropriate driver, and click **Next**.
12. Destinations are shown on the window. Remove CD/DVD media containing drivers, and insert Windows Server 2008 media.

Note: Make sure to change media. If not, you cannot go on installation.

13. Select a partition for installation, and click **Next**.

Note:

- When the system unit has multiple disks, they are shown as destination for installation. The number and the order of those disks are not fixed and will be changed. It is recommended that you install the OS with a single disk in view, and then add other data disks except for the system disk after installation.
- If you need to install the OS with multiple disks in view, identify the target disk for installation by the size not by the order or the number. If a wrong disk or wrong partition is selected, the existent partition (data) may be deleted. See the following Microsoft website for details.
  http://support.microsoft.com/kb/937251

Tip: When specifying the capacity of a partition for installation, click **Drive options (advanced)**.

14. "Installing Windows" is displayed to show the installation process. The computer automatically restarts a couple of times. Then, installation is complete.
15. "The user's password must be changed before logging on the first time." is displayed at the first boot after installation. Click **OK**.

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

Tip: 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, and period.
- Do not contain 3 or more consecutive letters from the user name or full name.

17. OS Installation is completed.

OS Installation in LPAR manager Mode

When using a server blade in LPAR manager mode, you need the following requirements mentioned below.

Note: Installation procedure depends on the server blade model or management module firmware version. See the procedure for your server blade model and management module firmware version.

- Setting the LPAR manager
  Select LPAR manager firmware, perform the initial settings, and start the LPAR manager.
  See *Hitachi Compute Blade 2500 Series Getting Started Guide* for Compute Blade 2500.
  See *Hitachi Compute Blade 500 Series Server Blade Setup Guide* for Compute Blade 500.
  See *Hitachi Compute Blade 2000 USER'S GUIDE* for Compute Blade 2000.
  See *Hitachi Compute Blade 320 USER'S GUIDE* for Compute Blade 320.
- Creating LPARs
  Create LPARs.
  See *Hitachi Compute Blade 2500 Series Logical Partitioning Manager User Guide* for Compute Blade 2500.
  See *Hitachi Compute Blade 500 Series Server Blade Setup Guide* for Compute Blade 500.
  See *Hitachi Compute Blade 2000 USER'S GUIDE* for Compute Blade 2000.
  See *Hitachi Compute Blade 320 USER'S GUIDE* for Compute Blade 320.

Note: If Assigning Broadcom NIC in dedicated mode to an LPAR with CB 2000 X55R3/X55S3/X55R4 model, assign four or more processors to the LPAR. However, if the version of the Broadcom NIC driver is 16.4.0.1 or later, you can assign one or more processors.

Tip: The following table shows an example of recommended LPAR configuration for installing and using the OS. Assign resources to an LPAR depending on the purpose and environment.
Windows Server 2012 R2/ Windows Server 2012

Item	Recommended setting value
Processor	2 or more[1]
Memory	2.0 GB or greater[2]
Disk	80 GB or greater[3]
Network	At least 1 virtual NIC
Notes: 1. 1 at a minimum 2. 1.0 GB: the smallest memory per 1 processor 3. 32 GB at a minimum	

Windows Server 2008 R2

Item	Recommended setting value
Processor	2 or more[1]
Memory	2.0 GB or greater[2]
Disk	40 GB or greater[3]
Network	At least 1 virtual NIC
Notes: 1. 1 at a minimum 2. 1.0 GB: the smallest memory per 1 processor 3. 32 GB at a minimum	

Windows Server 2008

Item	Recommended setting value
Processor	2 or more[1]
Memory	2.0 GB or greater[2]
Disk	40 GB or greater[3]
Network	At least 1 virtual NIC
Notes: 1. 1 at a minimum 2. 1.0 GB: the smallest memory per 1 processor 3. 40 GB at a minimum	

- Saving configuration information.

  See *Hitachi Compute Blade 2500 Series Logical Partitioning Manager User Guide* for Compute Blade 2500.

  See *Hitachi Compute Blade 500 Series Server Blade Setup Guide* for Compute Blade 500.

  See *Hitachi Compute Blade 2000 USER'S GUIDE* for Compute Blade 2000.

  See *Hitachi Compute Blade 320 USER'S GUIDE* for Compute Blade 320.

- Starting an LPAR.

  See *Hitachi Compute Blade 2500 Series Logical Partitioning Manager User Guide* for Compute Blade 2500.

  See *Hitachi Compute Blade 500 Series Server Blade Setup Guide* for Compute Blade 500.

  See *Hitachi Compute Blade 2000 USER'S GUIDE* for Compute Blade 2000.

  See *Hitachi Compute Blade 320 USER'S GUIDE* for Compute Blade 320.

- Setting a boot order.

Set a boot on an LPAR, create a boot option, and change the boot order.

See *Hitachi Compute Blade 2500 Series Logical Partitioning Manager User Guide* for Compute Blade 2500.

For management module firmware version A0124 or lower with CB 500, see *Hitachi Compute Blade 500 Series Logical partitioning manager User's Guide* for details.

For management module firmware version A0125 or higher with CB 500, see *Hitachi Compute Blade 500 Series Server Blade Setup Guide* for details.

See *Hitachi Compute Blade 2000 USER'S GUIDE* for Compute Blade 2000.

See *Hitachi Compute Blade 320 USER'S GUIDE* for Compute Blade 320.

Note: When using a shared fibre channel as a boot device, the OS may not properly boot up depending on the number of LPARs assigned to the shared fibre channel. This problem may be avoided by extending LOGINDELAY TIME, an operation parameter for the fibre channel switch module. See *HITACHI Gigabit Fibre Channel Adapter User's Guide (BIOS/EFI Edition)* for details.

Install the OS referring to step 3 through step 17 in Procedure for Installing Windows Server on page 1-6.

Installing Drivers/Utilities

Install drivers and then utilities in order referring to manuals for drivers and utilities. See Outline for Windows Server Installation on page 1-3 for obtaining drivers and utilities.

2

Notes and Restrictions

This chapter provides notes and restrictions when you use Windows Server.

Notes and Restrictions on Windows Server

This section describes notes and restrictions when you use Windows Server.

Common Notes and Restrictions on Windows Server

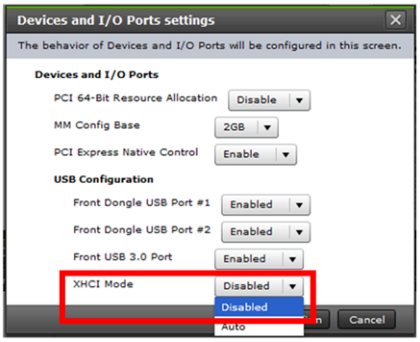
This section describes common notes and restrictions when you use Windows Server.

USB 3.0 disabled on CB 520H B3 only for CB 500

When installing Windows Server 2008 R2 on a CB520H B3 server blade in a CB 500 chassis, USB 3.0 must be disabled by changing the "xHCI" setting in USB Configuration in the EFI menu. If you do not disable USB 3.0, the USB device might not be usable.

Procedure of changing xHCI mode on EFI settings

1. Click **Resources** > **Modules** > target server blade, then click **EFI** tab and **Edit** button on Web Console. In SMP(Symmetric Multi Processor) configuration, select the primary server blade when selecting target server blade.
2. Click **Devices and I/O Ports**.
3. In **Devices and I/O Ports setting** dialog box, select Select **Disabled** on **xHCI Mode**. And click **Confirm** button.



Windows shutdown

If you try to shut down Windows before automatic startup service items

have completely started on boot, Windows may not properly shut down. Wait for five minutes or more, and then shut down and restart Windows.

Restore the computer

When clicking "Repair your computer" displayed during installation with some OS installation media, you cannot start Windows Recovery Environment, hereinafter referred to as Windows RE. Visit the following Microsoft website for details.

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

Backup

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

Screen Display

After switching the window display to change a task, the previous display may remain depending on the timing. If so, refresh it to display properly.

When many windows are open, the message box may be hidden behind other windows. Close applications before changing settings, such as display color. If you do without closing an application, the application window may be distorted. When it occurs, switch windows to another to show a proper display.

Some monitors cannot display a window with a certain refresh rate. When changing refresh rates, check that your monitor can display the window properly.

A window may still remain if you stop replaying video files with some applications. When this happens, switch windows, such as maximize another window.

Hardware Power Options

Do not select System Standby, Hybrid Sleep, and Hibernate. These three are not supported. Among power options, you can only change a time period for "Turn off the display" on Edit Plan Settings. If you fail to observe two restrictions above, the monitor may not operate properly.

Network adapter parameters

When a network adapter setting is changed, communication via all network adapters may be disconnected before the setting is reflected, or an error may be recorded in the OS event log. Check that you can communicate properly with network adapters after changing the setting before use.

Communication may not be properly available with the network adapter after the network adapter setting is changed. Check that "!" is shown for the network adapter on Device Manager. If so, right-click the adapter to disable it, then enable it again, and restart the OS to use the network adapter.

Event log on a network adapter

\DEVICE {354C76B6-E426-4CEB-8015-BF991BA8D75F} instead of a network adapter name such as Intel(R) 82576 Gigabit Dual Port Network Connection or Broadcom NetXtreme Gigabit Ethernet may be displayed in the event log description of the network adapter. This occurs due to the specifications, which will not affect the operation. A network adapter name and a number in brackets (GUID) may be different depending on your environment.

USB memory

Only the optional USB memory, FK802 GB/FK 804 GB, is supported and operation with other USB memory devices are not be guaranteed. With the USB memory connected, do not power on the system unit, or restart the OS. Restart the OS and then connect the USB memory. Then, check that drive letters of other drives are not changed.

Intel(R) 82576LF-2 Gigabit Network Connection only for CB 2000

Disable the LAN device, Intel 82567LF-2 Gigabit Network Connection, with X55A2/X57A1/X57A2 model after installing the OS.

Emulex 10 Gbps CNA as FCoE device

When using Emulex 10 Gbps CNA (converged network adapter) as an FCoE device, make sure to configure a setting to produce a page file, DedicatedDumpFile.sys, to the internal HDD. See Appendix A, Memory Dump for Emulex 10 Gbps CNA for the procedure.

CPU Hyper-Threading

CPU (Central Processing Unit) Hyper-Threading is enabled at shipment from factory. If CPU Hyper-Threading is disabled, network function of compute blade may not work properly depending on the CPU SKU (Stock Keeping Unit) or the number of installed CPU.

It is recommended that Hyper-Threading is enabled for the compute blades with the CPU SKU and the number of CPU shown in Table 2-1 CPU configuration restricted on Hyper-Threading for CB 500 on page 2-4 and Table 2-2 CPU configuration restricted on Hyper-Threading for CB 2500 on page 2-5.

Table 2-1 CPU configuration restricted on Hyper-Threading for CB 500

Compute blade	CPU SKU	Number of CPU
CB 520A A1	E5-2420, E5-2430L, E5-2440, E5-2470	1
CB 520H A1/B1	E5-2620, E5-2630L, E5-2640, E5-2670, E5-2680	1
CB 540A A1/B1	E5-4603	2 or 4
	E5-4610, E5-4650	2
CB 520H B2	E5-2637v2	1 or 2
	E5-2630v2, E5-2643v2, E5-2650v2, E5-2670v2, E5-2690v2	1
CB 520H B3	E5-2637v3	1 or 2

Compute blade	CPU SKU	Number of CPU
	E5-2620v3, E5-2640v3, E5-2643v3, E5-2660v3, E5-2667v3	1
CB 520H B4	E5-2637v4	1 or 2
	E5-2643v4, E5-2667v4	1
CB 520X B2	E7-8893v3	2, 4(2-Blade SMP Configuration), or 8(4-Blade SMP Configuration)

Table 2-2 CPU configuration restricted on Hyper-Threading for CB 2500

Compute blade	CPU SKU	Number of CPU
CB 520H B3	E5-2640v3, E5-2660v3, E5-2667v3	1
	E5-2603v3, E5-2620v3, E5-2637v3	1 or 2
CB 520H B4	E5-2637v4, E5-2643v4	1 or 2
	E5-2667v4	1
CB 520X B1	E7-8891v2,	8(4-Blade SMP Configuration)
	E7-4820v2	2
CB 520X B2	E7-8893v3	2
CB 520X B3	E7-8880v4	8(4-Blade SMP Configuration)

Variable port partitioning of Emulex devices on CB 500

If variable port partitioning of Emulex devices on CB 500 is enabled for the compute blades with the CPU SKU and the number of CPU shown in Table 2-3 CPU configuration restricted on variable port partitioning on page 2-5, network function of compute blade may not work properly.

Variable port partitioning for these compute blades must be disabled.

Table 2-3 CPU configuration restricted on variable port partitioning

Compute Blade	CPU SKU	Number of CPU
CB 520A A1	E5-2403	1 or 2
CB 540A A1/B1	E5-4603	2
CB 520H A1/B1	E5-2603	1 or 2
CB 520H B2	E5-2603v2	1 or 2
	E5-2637v2	1
CB 520H B3	E5-2637v3, E5-2603v3	1
CB 520H B4	E5-2637v4	1

iSCSI connection of Emulex devices on CB 500

If iSCSI connection of Emulex devices on CB 500 is enabled for the compute blades with the CPU SKU and the number of CPU shown in Table 2-4 CPU configuration restricted on iSCSI connection on page 2-6, network function of compute blade may not work properly.

iSCSI connection for these compute blades must be disabled.

Table 2-4 CPU configuration restricted on iSCSI connection

Compute Blade	CPU SKU	Number of CPU
CB 520A A1	E5-2403	1 or 2
CB 540A A1/B1	E5-4603	2
CB 520H A1/B1	E5-2603	1 or 2
CB 520H B2	E5-2603v2	1 or 2
	E5-2637v2	1
CB 520H B3	E5-2603v3, E5-2637v3	1
CB 520H B4	E5-2637v4	1

CPU degradation

EFI firmware will suppress CPU degradation for the CPUs under the conditions shown in Table 2-5 CPU conditions to suppress CPU degradation on page 2-6, to prevent network function of compute blade may not work properly.

This restriction applies to all supported OSs.

Table 2-5 CPU conditions to suppress CPU degradation

Compute Blade	CPU conditions
CB 520A A1	After CPU degradation, the available logical core will be reduced below 12 cores.
CB 540A A1/B1	After CPU degradation, the available logical core will be reduced below 24 cores.
CB 520H A1/B1/B2/B3/B4	After CPU degradation, the available logical core will be reduced below 12 cores.
CB 520X B1/B2/B3	After CPU degradation, the available logical core will be reduced below 12 cores per blade.

Intake temperature

Compute blades with CPU SKU shown in Table 2-6 Configuration restricted on intake temperature on page 2-7, must be used at intake temperature shown the table to avoid performance degradation and reduced lifetime of CPUs.

Table 2-6 Configuration restricted on intake temperature

Compute Blade	CPU SKU	Intake temperature conditions
CB 520H B2	E5-2637v2, E5-2643v2	Must be used below 30 degrees C.
CB 520H B3	E5-2637v3, E5-2643v3, E5-2667v3, E5-2697v3, E5-2699v3	Must be used below 35 degrees C.
CB 520H B4	E5-2637v4, E5-2643v4, E5-2667v4, E5-2697v4, E5-2699v4	Must be used below 35 degrees C.

For Windows Server 2012 R2

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

The number of processors recognized by Windows Server 2012 R2

The following table shows the maximum number of processors each OS can recognize.

OS edition	Maximum number of Sockets: Total number of physical processors	Maximum number of Logical processors: Total number of multi-core hyper threading
Windows Server 2012 R2 Standard	64	640
Windows Server 2012 R2 Datacenter	64	640

Each number is supported by Windows Server 2012 R2, and not by the system unit.

Physical memory size recognized by Windows Server 2012 R2

The following table shows the maximum amount of memory each OS can recognize.

OS edition	Memory size
Windows Server 2012 R2 Standard	4 TB
Windows Server 2012 R2 Datacenter	4 TB

Each value is supported by Windows Server 2012 R2, and not by the system unit. Microsoft has recommended memory size for Windows Server 2012 R2 is 2 GB. When the onboard memory is not enough, some processing may take longer than expected or it may be aborted due to a lack of resources under heavy load conditions.

Server Core

When using Server Core option, install the OS and supplied software with a GUI option. Then, convert to the Server Core Installation option. See the following Microsoft website for details.

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

Some application or middleware may have restrictions on Server Core. Consult your reseller of the application for details.

Update Rollup

Installing Windows Server 2012 R2 with some of the OS installation media provided by Microsoft includes the update rollup, KB2883200, KB2894029, and 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.

Restart setting after Bug Checks (blue screen)

You can turn off the Automatically restart option, by which Windows does not automatically restart your computer after the blue screen appears. Change settings depending on your environment.

1. Click **Start** > **Control Panel** to open Control Panel.
2. Click **System and Security** > **System** > **Advanced system settings** to open System Properties.
3. Click **Advanced** tab > **Settings** button for Startup and Recovery to open Startup and Recovery.
4. Clear **Automatically restart**, and click **OK**.

Setting Virtual Memory Size

When setting Virtual Memory to get the complete memory dump, set the virtual memory file to a size larger than that of the physical memory. If you try to set the file size of the virtual memory smaller than that of 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, a system error can occur and useful information to identify the problem cannot be saved. Do you like to continue?" appears. Set the file size to [xxx] MB or larger.

When setting Virtual Memory to get the kernel memory dump, set enough size for the virtual memory. If not, 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.

Event Viewer

- The following event might be recorded in the system event log when you add roles or features, or apply update modules.
  - Event ID: 6004
  - Source: Winlogon
  - Event level: Warning
  - Description: The Winlogon notification subscriber <TrustedInstaller> failed a critical notification event.

  Ignore this event: no problem.
- The following event might be recorded in the system event log during OS shutdown.
  - Event ID: 10010
  - Source: Microsoft-Windows-DistributedCOM
  - Event level: Error
  - Description: The server {<GUID of the component>} did not register with DCOM within the required timeout.

  Ignore this event: no problem. See the following website for details.
  http://support.microsoft.com/kb/903072/en-us
- The following event might be recorded in the system event log during OS shutdown.
  - Event ID: 10149
  - Source: Microsoft-Windows-WinRM
  - Event level: Error
  - Description: The WinRM service is not listening to WS-Management requests. If you did not intentionally stop the service use the following command to see the WinRM configuration:

    Winrm enumerate winrm/config/listener

  Ignore this event: no problem.
- The following event might be recorded in the system event log during OS shutdown.
  - Event ID: 1530
  - Source: User Profile Service

- Event level: Warning
- Description: Windows detected your registry file is still in use by other applications or services. The file will be unloaded now. The applications or services that hold your registry file may not function properly afterwards.

Ignore this event: no problem.

- The following event might be recorded once in the system event log during OS shutdown.
  - Event ID: 46
  - Source: volmgr
  - Event level: Error
  - Description: Crash dump initialization failed!

  Ignore this event: no problem.
- The following event might be recorded once in the system event log during OS shutdown.
  - Event ID: 7023
  - Source: Service Control Manager
  - Event level: Error
  - Description: The IP Helper service terminated with the following error: <error description>

  Ignore this event: no problem.
- The following event might be recorded once in the system event log during OS shutdown.
  - Event ID: 7023
  - Source: Service Control Manager
  - Event level: Error
  - Description: The Network List service terminated with the following error: <error description>

  Ignore this event: no problem.
- The following event might be recorded once in the system event log during OS shutdown.
  - Event ID: 49
  - Source: volmgr
  - Event level: Error
  - Description: 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 for Windows depends on the physical memory size. This event is recorded if the memory size is less than the recommended one due to the C drive size or space. You can operate the OS without problems on a routine basis, but cannot collect complete

memory dump. If installing a large amount of physical memory, it is recommended that you configure a C drive size large enough for the memory size beforehand.

- The following event might be recorded in the system event log when you change network adapter settings for the OS or when the network adapter link is down.
  - Event ID: 4202
  - Source: Microsoft-Windows-Iphlpsvc
  - Event level: Error
  - Description: Unable to update the IP address on Isatap interface: isatap.{8E208284-65BF-43D8-92DD-89FFAAF47DF0}. Update: 0; Error code: 0x57. GUID inside the braces {} may depend on the environment.

  Ignore this event: no problem.
- The following event might be recorded in the system event log.
  - Event ID: **** (any numerics)
  - Source: Microsoft-Windows-WHEA-Logger
  - Event level: Error or Warning
  - Description: **** (any description)

  Microsoft-Windows-WHEA-Logger is source for hardware errors. With Warning, the error was automatically fixed and you can ignore the event log. With Error, consult your reseller or call for maintenance personnel.
- The following event might be recorded in the system event log when the OS or Server Manager starts up.
  - Event ID: 1058
  - Source: Microsoft-Windows-Security-SPP
  - Event level: Warning
  - Description: Installation of the Proof of Purchase from the ACPI table failed. Error code: 0xC004F057

  Ignore this event: no problem.

NIC teaming/VLAN

For NIC teaming/VLAN with Windows Server 2012 R2, use NIC teaming as the OS standard. The built-in NIC teaming feature has the following notes and restrictions.

- Configure a team among only adapters with the same vendor and the same speed. If adapters with a different vendor or different speed are configured, the team may not work properly. To find the vendor of an adapter, right-click the target adapter in Adapter and Interface on NIC Teaming dialog box, select Properties to open a sub-window. You can find the vendor in description.

- When linkdown occurs in a LAN device, it switches to another LAN device in the team, which may take a few minutes. When a network failure without linkdown occurs, no LAN device is switched in the team.
- When a team/VLAN is configured or the setting is changed, communication may not be available for all network adapters or an error may be recorded in the OS event log.

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 higher:

Compute Blade 2000:

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

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

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

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).

For equipment or devices not supporting CDN, a network name is shown as EthernetX (X is a number). A number with Ethernet is different from the LAN device number shown in the device name, which may not be the same. A number with Ethernet is also different from the built-in LAN port number for a system unit as standard. For example, Ethernet without number is not corresponded to LAN1 for the system unit.

When configuring a network for the first time, check compatibility of LAN devices before configuration. You can change network names. It is recommended that you give it an easy-to-remember name for your environment after checking it.

Network adapter event log at OS startup

Error event may occur in the network adapter at the system startup. The network adapter may be linked down. A linkup event may be recorded at the system startup whatever link status the network adapter is actually in. When you have communicated properly after the event was registered, ignore the event.

10/100 Mbps half duplex network adapter

When setting the speed of a network adapter shown as a name starting with "Intel" on Device Manager to 10 M half duplex or 100 M half duplex for use, you need to disable Large Send Offload (LSO) (IPv4) and Large Send Offload (LSO) (IPv6).

On Device Manager, right-click a target network adapter to open the network adapter properties, click the Advanced tab, and disable Large Send Offload (LSO) (IPv4) and Large Send Offload (LSO) (IPv6).

BitLocker Drive Encryption

BitLocker Drive Encryption is supported only when TPM (Trusted Platform Module) is used. See the manual for each system unit for whether or not TPM installed and how to enable TPM.

This feature encrypts drives. Some applications and middleware may not support the feature or have some restrictions on it. Consult your reseller before using it.

Make sure to disable BitLocker Drive Encryption before hardware maintenance or expansion work starts.

Make sure to keep the recovery password. If it is lost, you cannot perform the recovery work, which results in problems with the OS startup, data access, and hardware maintenance or expansion work.

Enabling BitLocker Drive Encryption causes overhead due to encrypting and decrypting. When this feature is used with database requiring high performance or with Windows Server 2012 R2 Hyper-V and Windows Server 2012 Hyper-V, the disk performance may be lower than expected. Thus, test it beforehand.

Standard SATA AHCI controller only for CR 220S

With CR 220S, "!" is shown for Standard SATA AHCI controller on Device Manager. This does not affect operation.

Remote Desktop Connection only for CB 500

When you try to display a window on the monitor or remote console after connecting to the remote desktop with CB 500, the window may not be displayed properly. Operate the OS with the remote desktop after establishing a Remote Desktop connection. If the problem occurs, restart the system unit for recovery.

MCA recovery only for CB 2000

When releasing memory isolated due to MCA recovery function with CB 2000 X57A2 model, ask maintenance personnel to change the memory. Then, execute the following command on the command prompt after the memory is replaced with a new one.

```
bcdedit -deletevalue {badmemory} badmemorylist
```

Note: When you execute the command above without memory change by maintenance personnel, Bug Checks, blue screen, may occur. Make sure to have the target memory replaced by maintenance personnel before executing the command.

Tip: You can check which memory is currently isolated by executing the following command shown below.

```
bcdedit /enum {badmemory}
```

CB 520X

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.

Installation assistant feature of Server installation and monitoring tool

In case compute blades with both conditions shown in Table 2-7 Compute blade configuration restricted on installation assistant on page 2-15 you cannot use installation assistant feature. The OS must be installed manually.

Table 2-7 Compute blade configuration restricted on installation assistant

Compute Blade	Condition
CB 520X B1/B2/B3	• 2-blades or 4-blades SMP • SAN boot with Emulex 16Gb 2-ports fibre channel mezzanine card (GG-CC3M161X1-Y)

Procedure of manual installation

1. Procedure of OS installation.
   See the Chapter 1, Installing Windows Server on page 1-1. Note that you must use inbox driver for Emulex 16Gb 2-ports fibre channel mezzanine card driver.
2. Procedure of driver updating
   After OS installation, update the driver, see the "Install driver on Windows Server 2012 and 2012 R2." section in the *Hitachi Compute Blade Emulex Adapter User's Guide for Driver*.

For Windows Server 2012

This section describes notes and restrictions when you use Windows Server 2012.

The number of processors recognized by Windows Server 2012

The following table shows the maximum number of processors each OS can recognize.

OS edition	Maximum number of Sockets: Total number of physical processors	Maximum number of Logical processors: Total number of multi-core hyper threading
Windows Server 2012 Standard	64	640
Windows Server 2012 Datacenter	64	640

Each number is supported by Windows Server 2012, and not by the system unit.

Physical memory size recognized by Windows Server 2012

The following table shows the maximum amount of memory each OS can recognize.

OS edition	Memory size
Windows Server 2012 Standard	4 TB
Windows Server 2012 Datacenter	4 TB

Each value is supported by Windows Server 2012, and not by the system unit. Microsoft has recommended memory size for Windows Server 2012 is 2 GB. When the onboard memory is not enough, some processing may take longer than expected or it may be aborted due to a lack of resources under heavy load conditions.

Server Core

When using Server Core option, install the OS and supplied software with a GUI option. Then, convert to the Server Core Installation option. See the following Microsoft website for details.

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

Some application or middleware may have restrictions on Server Core. Consult your reseller of the application for details.

Restart setting after Bug Checks (blue screen)

You can turn off the Automatically restart option, by which Windows does not automatically restart your computer after the blue screen appears. Change settings depending on your environment.

1. Click **Start** > **Control Panel** to open Control Panel.
2. Click **System and Security** > **System** > **Advanced system settings** to open System Properties.
3. Click **Advanced** tab > **Settings** button for Startup and Recovery to open Startup and Recovery.
4. Clear **Automatically restart**, and click **OK**.

Setting Virtual Memory Size

When setting Virtual Memory to get the complete memory dump, set the virtual memory file to a size larger than that of the physical memory. If you try to set the file size of the virtual memory smaller than that of 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, a system error can occur and useful information to identify the problem cannot be saved. Do you like to continue?" appears. Set the file size to [xxx] MB or larger.

When setting Virtual Memory to get the kernel memory dump, set enough size for the virtual memory. If not, 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.

Using USB3.0 port

You should install the following patch program in Windows Server 2012 to use USB3.0 port on server system that has 15 or more processors.

http://support.microsoft.com/kb/2865197/en-us

Event Viewer

- The following event might be recorded in the system event log when you add roles or features, or apply update modules.
  - Event ID: 6004
  - Source: Winlogon
  - Event level: Warning
  - Description: The Winlogon notification subscriber <TrustedInstaller> failed a critical notification event.

  Ignore this event: no problem.
- The following event might be recorded in the system event log during OS shutdown.
  - Event ID: 10010
  - Source: Microsoft-Windows-DistributedCOM
  - Event level: Error
  - Description: The server {<GUID of the component>} did not register with DCOM within the required timeout.

  Ignore this event: no problem. See the following website for details.
  http://support.microsoft.com/kb/903072/en-us
- The following event might be recorded in the system event log during OS shutdown.
  - Event ID: 10149
  - Source: Microsoft-Windows-WinRM
  - Event level: Error

- Description: The WinRM service is not listening to WS-Management requests. If you did not intentionally stop the service use the following command to see the WinRM configuration:

  Winrm enumerate winrm/config/listener

Ignore this event: no problem.

- The following event might be recorded in the system event log during OS shutdown.
  - Event ID: 1530
  - Source: User Profile Service
  - Event level: Warning
  - Description: Windows detected your registry file is still in use by other applications or services. The file will be unloaded now. The applications or services that hold your registry file may not function properly afterwards.

  Ignore this event: no problem.

- The following event might be recorded once in the system event log during OS shutdown.
  - Event ID: 46
  - Source: volmgr
  - Event level: Error
  - Description: Crash dump initialization failed!

  Ignore this event: no problem.

- The following event might be recorded once in the system event log during OS shutdown.
  - Event ID: 7023
  - Source: Service Control Manager
  - Event level: Error
  - Description: The IP Helper service terminated with the following error: <error description>

  Ignore this event: no problem.

- The following event might be recorded once in the system event log during OS shutdown.
  - Event ID: 7023
  - Source: Service Control Manager
  - Event level: Error
  - Description: The Network List service terminated with the following error: <error description>

  Ignore this event: no problem.

- The following event might be recorded once in the system event log during OS shutdown.

- Event ID: 49
- Source: volmgr
- Event level: Error
- Description: 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 for Windows depends on the physical memory size. This event is recorded if the memory size is less than the recommended one due to the C drive size or space. You can operate the OS without problems on a routine basis, but cannot collect complete memory dump. If installing a large amount of physical memory, it is recommended that you configure a C drive size large enough for the memory size beforehand.

- The following event might be recorded in the system event log when you change network adapter settings for the OS or when the network adapter link is down.
  - Event ID: 4202
  - Source: Microsoft-Windows-Iphlpsvc
  - Event level: Error
  - Description: Unable to update the IP address on Isatap interface: isatap.{8E208284-65BF-43D8-92DD-89FFAAF47DF0}. Update: 0; Error code: 0x57. GUID inside the braces {} may depend on the environment.

  Ignore this event: no problem.
- The following event might be recorded in the system event log.
  - Event ID: **** (any numerics)
  - Source: Microsoft-Windows-WHEA-Logger
  - Event level: Error or Warning
  - Description: **** (any description)

  Microsoft-Windows-WHEA-Logger is source for hardware errors. With Warning, the error was automatically fixed and you can ignore the event log. With Error, consult your reseller or call for maintenance personnel.
- The following event might be recorded in the system event log when the OS or Server Manager starts up.
  - Event ID: 1058
  - Source: Microsoft-Windows-Security-SPP
  - Event level: Warning
  - Description: Installation of the Proof of Purchase from the ACPI table failed. Error code: 0xC004F057

  Ignore this event: no problem.

NIC teaming/VLAN

For NIC teaming/VLAN with Windows Server 2012, use NIC teaming as the OS standard. The built-in NIC teaming feature has the following notes and restrictions.

- Configure a team among only adapters with the same vendor and the same speed. If adapters with a different vendor or different speed are configured, the team may not work properly. To find the vendor of an adapter, right-click the target adapter in Adapter and Interface on NIC Teaming dialog box, select Properties to open a sub-window. You can find the vendor in description.
- When linkdown occurs in a LAN device, it switches to another LAN device in the team, which may take a few minutes. When a network failure without linkdown occurs, no LAN device is switched in the team.
- When a team/VLAN is configured or the setting is changed, communication may not be available for all network adapters or an error may be recorded in the OS event log.

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 higher:

Compute Blade 2000:

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

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

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

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).

For equipment or devices not supporting CDN, a network name is shown as EthernetX (X is a number). A number with Ethernet is different from the LAN device number shown in the device name, which may not be the same. A number with Ethernet is also different from the built-in LAN port number for a system unit as standard. For example, Ethernet without number is not corresponded to LAN1 for the system unit.

When configuring a network for the first time, check compatibility of LAN devices before configuration. You can change network names. It is recommended that you give it an easy-to-remember name for your environment after checking it.

Network adapter event log at OS startup

Error event may occur in the network adapter at the system startup. The network adapter may be linked down. A linkup event may be recorded at the system startup whatever link status the network adapter is actually in. When you have communicated properly after the event was registered, ignore the event.

10/100 Mbps half duplex network adapter

When setting the speed of a network adapter shown as a name starting with "Intel" on Device Manager to 10 M half duplex or 100 M half duplex for use, you need to disable Large Send Offload (LSO) (IPv4) and Large Send Offload (LSO) (IPv6).

On Device Manager, right-click a target network adapter to open the network adapter properties, click the Advanced tab, and disable Large Send Offload (LSO) (IPv4) and Large Send Offload (LSO) (IPv6).

BitLocker Drive Encryption

BitLocker Drive Encryption is supported only when TPM (Trusted Platform Module) is used. See the manual for each system unit for whether or not TPM installed and how to enable TPM.

This feature encrypts drives. Some applications and middleware may not support the feature or have some restrictions on it. Consult your reseller before using it.

Make sure to disable BitLocker Drive Encryption before hardware maintenance or expansion work starts.

Make sure to keep the recovery password. If it is lost, you cannot perform the recovery work, which results in problems with the OS startup, data access, and hardware maintenance or expansion work.

Enabling BitLocker Drive Encryption causes overhead due to encrypting and decrypting. When this feature is used with database requiring high performance or with Windows Server 2012 R2 Hyper-V and Windows Server 2012 Hyper-V, the disk performance may be lower than expected. Thus, test it beforehand.

Standard SATA AHCI controller only for CR 220S

With CR 220S, "!" is shown for Standard SATA AHCI controller on Device Manager. This does not affect operation.

Remote Desktop Connection only for CB 500

When you try to display a window on the monitor or remote console after connecting to the remote desktop with CB 500, the window may not be displayed properly. Operate the OS with the remote desktop after establishing a Remote Desktop connection. If the problem occurs, restart the system unit for recovery.

MCA recovery only for CB 2000

When releasing memory isolated due to MCA recovery function with CB 2000 X57A2 model, ask maintenance personnel to change the memory. Then, execute the following command on the command prompt after the memory is replaced with a new one.

```
bcdedit -deletevalue {badmemory} badmemorylist
```

Note: When you execute the command above without memory change by maintenance personnel, Bug Checks, blue screen, may occur. Make sure to have the target memory replaced by maintenance personnel before executing the command.

Tip: You can check which memory is currently isolated by executing the following command shown below.

```
bcdedit /enum {badmemory}
```

CB 520X

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.

For Windows Server 2008 R2

This section describes notes and restrictions when you use Windows Server 2008 R2.

The number of processors recognized by Windows Server 2008 R2

The following table shows the maximum number of processors each OS can recognize.

OS edition	Maximum number of Sockets: Total number of physical processors	Maximum number of Logical processors: Total number of multi-core hyper threading
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

Each number is supported by Windows Server 2008 R2, and not by the system unit.

Physical memory size recognized by Windows Server 2008 R2

The following table shows the maximum amount of memory each OS can recognize.

OS edition	Memory size
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

Each value is supported by Windows Server 2008 R2, and not by 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 has recommended memory size for Windows Server 2008 R2 is 2 GB. When the onboard memory is not enough, some processing may take longer than expected or it may be aborted due to a lack of resources under heavy load conditions.

Server Core

Server Core installation is not supported.

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.

When you install Windows Server 2008 R2 using Server installation and monitoring tool, Windows RE is automatically disabled.

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

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 "Driver & Utility DVD for Windows" into the DVD drive.
2. Select **Run** in the **Start** menu, enter "d*:\WinSrv2008\Utility\PMDE (*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, see 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.

Event Viewer

- It may be logged in the event log when changing the setting of network adapter or link-down on it occurs.
  - Event ID: 4202
  - Source: Microsoft-Windows-Iphlpsvc
  - Event level: Error

- Description: 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.)

Ignore this event: You can safely ignore this event.

- It may be logged in the event log during the OS installation.
  - Event ID: 49
  - Source: volmgr
  - Event level: Error
  - Description: 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.

  Ignore this event: 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.
  - Event ID: XXXX (XXXX represents any numeral)
  - Source: Microsoft-Windows-WHEA-Logger
  - Event level: Warning or Error
  - Description: XXXX (XXXX represents any descriptions)

  Ignore this event: 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.

- It may be logged in the event log when adding roles /functions and applying modification modules.
  - Event ID: 6004
  - Source: Winlogon
  - Event level: Warning
  - Description: The Winlogon notification subscriber <TrustedInstaller> failed a critical notification event.

  Ignore this event: You can safely ignore this event.

- It may be logged in the event log when connecting USB device.
  - Event ID: 1
  - Source: VDS Basic Provider
  - Event level: Error
  - Description: An unexpected error occurred.

Error code: 32@01000004

Ignore this event: There is no problem if the log is output when connecting USB device.

- It may be logged in the event log when operating SP1.
  - Event ID: 10128
  - Source: Microsoft-Windows-WinRM
  - Event level: Error
  - Description: 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.

  Ignore this event: You can safely ignore this event.
- It may be logged in the event log for each OS startup when installing OS on the media operated with SP1.
  - Event ID: 10
  - Source: Microsoft-Windows-WM1
  - Event level: Error
  - Description: 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.

  Ignore this event: See the following Microsoft website for more details.

  http://support.microsoft.com/kb/950375

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.

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**.

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.

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

Slipstream installation media

Slipstream installation media is an OS medium to install the OS and Service Pack at a single procedure. For CB 520X, use Windows Server 2008 R2 slipstream media with SP1 applied for installation.

CB 520X

- 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.
- When PCI Express Native Control is enabled on CB 520X B1 with Windows Server 2008 R2, in case the device is replaced or server blades is switched in the N+M cold standby feature, the device will be identified a new device. As a result, the device settings will be reset. You must install the hotfix shown below.

  http://support.microsoft.com/kb/2550978

For Windows Server 2008

This section describes notes and restrictions when you use Windows Server 2008.

The number of processors recognized by Windows Server 2008

The following table shows the maximum number of processors each OS can recognize.

OS edition	Maximum number of Sockets: Total number of physical processors	Maximum number of Logical processors: Total number of multi-core hyper threading
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

Each number is supported by Windows Server 2008, and not by the system unit.

Physical memory size recognized by Windows Server 2008

The following table shows the maximum amount of memory each OS can recognize.

OS edition	Memory size
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

Each value is supported by Windows Server 2008, and not by 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.

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 "Driver & Utility DVD for Windows" into the DVD drive.
2. Select **Run** in the **Start** menu, enter "d*:\WinSrv2008\Utility\PMDE (*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, see 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.

Event Viewer

- It may be logged in the event log during the OS installation.
  - Event ID: 63
  - Source: Microsoft-Windows-WM1
  - Event level: Warning
  - Description: 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.

  Ignore this event: 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.
  - Event ID: 263
  - Source: PlagPlayManager
  - Event level: Warning
  - Description: The service 'ShellHWDetection' may not have unregistered for device event notifications before it was stopped.

  Ignore this event: There is no problem if It is logged only one time during the OS installation.
- It may be logged in the system event log after the OS installation.
  - Event ID: 10009
  - Source: DistributedCOM
  - Event level: Error
  - Description: DCOM was unable to communicate with the computer-ilc using any of the configured protocols.

  Ignore this event: You can safely ignore this event.
- It may be logged in the event log during the OS boot.
  - Event ID: 49
  - Source: volmgr
  - Event level: Error

- Description: 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.

  Ignore this event: 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.
  - Event ID: 15016
  - Source: Microsoft-Windows-HttpEvent
  - Event level: Error
  - Description: Unable to initialize the security package Kerberos for server side authentication. The data field contains the error number.

  Ignore this event: You can safely ignore this event.

- It may be logged in the event log.
  - Event ID: 5
  - Source: Storflt
  - Event level: Warning
  - Description: The Virtual Storage Filter Driver is disabled through the registry. It is inactive for all disk drives.

  Ignore this event: 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

- It may be logged in the event log.
  - Event ID: 7000
  - Source: Service Control Manager Eventlog provider
  - Event level: Error
  - Description: 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.

  Ignore this event: You can safely ignore this event.

  See the following URL for details: http://support.microsoft.com/kb/933757

- It may be logged in the event log.
  - Event ID: XXXX (XXXX represents any numeral)
  - Source: Microsoft-Windows-WHEA-Logger
  - Event level: Warning or Error
  - Description: XXXX (XXXX represents any descriptions)

Ignore this event: 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.

- It may be logged in the event log.
  - Event ID: 6005
  - Source: Microsoft-Windows-Winlogon
  - Event level: Warning
  - Description: The winlogon notification subscriber <GPClient> is taking long time to handle the notification event (CreateSession).

  Ignore this event: 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.

  - Event ID: 6006
  - Source: Microsoft-Windows-Winlogon
  - Event level: Warning
  - Description: The winlogon notification subscriber <GPClient> took XX second(s) to handle the notification event (CreateSession). ("XX" is different based on your environment.)
- It may be logged in the event log.
  - Event ID: 10
  - Source: VDS Dynamic Provider
  - Event level: Error
  - Description: The provider failed while storing notifications from the driver. The virtual Disk Service should be restarted. Hr=xxxxxxx

  Ignore this event: See the following URL and restart the Virtual Disk service if required:

  http://support.microsoft.com/kb/948275
- It may be logged in the system event log during the OS boot after applying Windows Server 2008 SP2.
  - Event ID: 4374
  - Source: Microsoft-Windows-Servicing
  - Event level: Warning
  - Description: Windows Servicing identified that package KB4374 (Service Pack) is not applicable for this system.

  Ignore this event: 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.
  - Event ID: 7026
  - Source: Service Control Manager
  - Event level: Error

- Description: The following boot-start drivers or system-start drivers failed to load: storflt.

Ignore this event: You can safely ignore this event.

See the following URL and for details: http://support.microsoft.com/kb/971527

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.

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**.

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.

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 theencryption 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 verificationin advance and check to make sure it works properly.

Note: Only on using Compute Blade 2000, BitLocker Drive Encryption function is not supported.

Notes and Restrictions on LPAR manager

This section describes notes and restrictions when you use LPAR manager.

Common Notes and Restrictions for Windows Server

This section describes common notes and restrictions for Windows Server when you use LPAR manager.

Unavailable features

The following features are not available on a guest OS of LPAR manager.

- Windows Server 2012 R2 Hyper-V and Windows Server 2012 Hyper-V/ Hyper-V2.0/ Hyper-V/VMware/Xen
- Hot Add Memory
- Hot Add Processors
- Hot Replace Memory
- Hot Replace processors
- Power Options

Maximum MTU size

When Jumbo Frame is used in the shared NIC and virtual NIC, the following MTU (maximum transfer unit) sizes are supported by LPAR manager.

Guest OS	MTU size	Supported by LPAR manager
Windows	Off: 1500 bytes	Supported
	9014 bytes	Supported
	16128 bytes	Not supported

Network

- Shared NIC and virtual NIC cannot be mixed with dedicated NIC in the same team.
- Configure a team with the same driver. You cannot configure a team with different drivers.
- To configure teaming by using Intel(R) 10 Gbps Ethernet VF NICs, you need to specify the same MAC address for all VF NICs to be set in the same team.

  For example, to configure a team with VNIC#0 and VNIC#1, and configure another team with VNIC#2 and VNIC#3, specify the MAC address of VNIC#0 for VNIC#1, and the MAC address of VNIC#2 for VNIC#3.

  For details about to configure a team, or to unconfigure a team, see the *Hitachi Compute Blade 2500 Series Logical Partitioning Manager User Guide*.

- You can use the following ways for distinguishing between shared NIC/ virtual NIC and dedicated NIC.

  For CB 2500 or CB 500 with a part of the network adapter name

  - Shared NIC and virtual NIC: Network adapter name starting with Intel(R) 82576 Gigabit
  - Dedicated NIC: Network adapter name starting other than the above.

  For CB 2000 or CB 320

  - With PCI bus number of a 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. Check the location in the **General** tab.

    An adapter with the PCI bus of 127 is shared NIC or virtual NIC. A shared NIC or virtual NIC number in LPAR is the same as a value subtracted one (1) from the device value. Any other PCI bus than 127 is dedicated NIC.

    When PCI bus is 125 with CB 2000 X55R3, X55S3, or X55R4 model, the adapter is shared NIC and virtual NIC.
  - With MAC address

    1. View the MAC address used for shared NIC and virtual NIC in the LPAR manager VNIC Assignment window. Write down the MAC address of the target shared NIC and virtual NIC.
    2. Start up Windows, and then enter the following command in the command prompt.

    ```
    ipconfg /all
    ```

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

Network adapter

- On the **Link Speed** tab, Speed and Diagnostics are not available. If you have changed Link Speed, its value 1 Gbps remains unchanged. Also if you try to click the **Diagnostics** button, Error is shown.
- On the Power Management tab, use default values for all setting items. If you change any setting on the **Power Management** tab, behavior of shared NICs and virtual NICs will not be affected.

Shared NIC and virtual NIC

Shared NIC and virtual NIC may not be recognized as a network device at the first OS startup after installation. Restart the OS to be properly recognized.

LPAR re-configuration

- When you boot after changing LPAR configuration from uni-processor to multi-processor, a message asking to reboot your computer may appear. If so, follow the direction in the message to reboot the computer, which allows you to use the multi-processor configuration.
- When hardware configuration is changed, re-authenticating Windows license may be asked for Windows license management. If so, perform Windows license authentication once more. See the OS Help or documents for details.

Serial Console

When using virtual COM console on the OS installed in an LPAR, perform the following command in the command prompt on Windows to restart the OS.

- For CB 2500 or CB 500

```
bcdedit /ems ON
bcdedit /emssettings EMSPORT:2 EMSBAUDRATE:115200
```

- CB 2000

```
bcdedit /ems ON
bcdedit /emssettings EMSPORT:1 EMSBAUDRATE:115200
```

- CB 320

```
bcdedit /ems ON
bcdedit /emssettings EMSPORT:1 EMSBAUDRATE:9600
```

Serial console is available on a guest screen on LPAR manager screen. Switching from LPAR manager screen to the guest screen can be available only to active LPARs.

For CB 2500, see *Hitachi Compute Blade 2500 Series Logical Partitioning Manager User Guide* for how to operate LPAR manager screens.

For CB 500, see *Hitachi Compute Blade 500 Series Logical partitioning manager User's Guide* for how to operate LPAR manager screens.

For CB 2000, see *Hitachi Compute Blade 2000 USER'S GUIDE* for how to operate LPAR manager screens.

For CB 320, see *Hitachi Compute Blade 320 USER'S GUIDE* for how to operate LPAR manager screens.

Boot order

Change the boot order after installation.

For CB 2500, see *Hitachi Compute Blade 2500 Series Logical Partitioning Manager User Guide* for how to change the boot order.

For CB 500, see *Hitachi Compute Blade 500 Series Logical partitioning manager User's Guide* for how to change the boot order.

For CB 2000, see *Hitachi Compute Blade 2000 USER'S GUIDE* for how to change the boot order.

For CB 320, see *Hitachi Compute Blade 320 USER'S GUIDE* for how to change the boot order.

Drivers for Emulex adapters

In the LPAR manager environment for CB2500 and CB500, when assigning an Emulex converged network adapter (including onboard and mezzanine card) to a dedicated NIC and VF NIC, make sure you check the version of the installed driver to make sure the driver supports the operation in LPAR manager.

When you apply the correct version driver, a manual setup is required. For details about the driver setup procedure, see the *Hitachi Compute Blade Emulex Adapter User's Guide for Driver*.

For Windows Server 2012 R2

This section describes notes and restrictions for windows Server 2012 R2 when you use LPAR manager.

Link aggregation

Link aggregation (LACP) is not supported. When configuring a team, select **Switch Independent** and **Static teaming** for Teaming mode.

EFI boot

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

Network

- For CB 2000
  When shared NIC and virtual NIC is used, set NIC2 (Intel 82576) for VNIC Device Type. NIC1 (PRO/1000) is not supported.

TCP/IP Checksum Offload function of the network adapter

The onboard CNA and LAN expansion card have the TCP/IP protocol checksum calculation function that is executed on the LAN controller. Use the calculation function with OS as standard instead of that.

You can construct a more highly reliable system if the calculation function of OS side is set available. This is because the consistency check of the packet data received from the network will be performed in the last phase of the OS protocol processing. When changing the setting of the LAN controller checksum function from the OS, follow the procedure below.

When using an Emulex 10 Gbps LAN expansion card, Emulex onboard CNA, or Emulex CNA onboard as a dedicated NIC or VF NIC, or when using an Intel 10 Gbps LAN board as a dedicated NIC or VF NIC, set the checksum offload

setting to the default. If you allow the OS to calculate in settings, transmission performance may be lower than expected due to high CPU load.

When teaming is used, specify offload settings for non-teamed NICs and the teaming interface.

The following is steps for shared NIC and virtual NIC offload settings.

1. Select **Control Panel** > **Hardware and Sound**, and click **Device Manager**.
2. Right-click a network adapter and click **Properties**.
3. Click **Advanced** tab, and change the value of each item shown in the following table.

Property	Shared NIC/ 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 Scaling	Disabled	Disabled
Large Send Offload V2 (IPv4)	Disabled	Disabled
Large Send Offload V2 (IPv6)	Disabled	Disabled

Tip: Displayed properties depend on the type of a network adapter. Configure properties displayed for your adapter.

4. Restart the OS after setting values.

Disabling RSS

After you set up the OS, execute the command below on the command prompt to disable Receive Side Scaling (RSS). Then, reboot the OS.

netsh int tcp set global rss=disabled

When using a remote console application

Note that, if you use a remote console application such as JP1, NETM, or Remote Control on Windows Server 2012, Windows Server 2012 R2 installed on an LPAR to which no USB device is assigned, the mouse pointer remains an arrow. Therefore, you need to specify the following setting.

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, select the Turn on Mouse Keys check box.

Note that, when you specify the setting above, you must perform the following:

1. Because NumLock is off during Remote Desktop connection, select the Off radio button in Use Mouse Keys when NUM LOCK is: on the Set up Mouse Keys window.
2. If you release the USB device allocation, you need to turn on mouse keys again.

Teaming

Windows Server 2008

See the *Hitachi Compute Blade LAN Advanced Function Manual (for Intel, Broadcom, or Emulex)*.

Windows Server 2012, Windows Server 2012 R2

Use the NIC teaming feature of the OS standard.

For teaming, see *Hitachi Compute Blade LAN Advanced Function Manual (for Intel, Broadcom, or Emulex)*.

For Windows Server 2012

This section describes notes and restrictions for windows Server 2012 when you use LPAR manager.

Link aggregation

Link aggregation (LACP) is not supported. When configuring a team, select **Switch Independent** and **Static teaming** for Teaming mode.

EFI boot

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

Network

- When using shared NIC and virtual NIC with CB 2000 or CB 320, set NIC 2 (Intel 82576) for VNIC Device Type. NIC1 (PRO/1000) is not supported.
- Shared NIC and virtual NIC cannot be mixed with dedicated NIC in the same team.
- Configure a team with the same driver. You cannot configure a team with different drivers.
- You can use the following ways for distinguishing between shared NIC/ virtual NIC and dedicated NIC.

  For CB 500 with a part of the network adapter name

TCP/IP Checksum Offload function of the network adapter

The onboard CNA and LAN expansion card have the TCP/IP protocol checksum calculation function that is executed on the LAN controller. Use the calculation function with OS as standard instead of that.

You can construct a more highly reliable system if the calculation function of OS side is set available. This is because the consistency check of the packet data received from the network will be performed in the last phase of the OS protocol processing. When changing the setting of the LAN controller checksum function from the OS, follow the procedure below.

When using Emulex 10 Gbps LAN expansion card, Emulex onboard CNA, or Emulex CNA board as dedicated NIC or VF NIC, or using Intel 10 Gbps LAN expansion card, set the checksum offload value to Default. If you allow the OS to calculate in settings, transmission performance may be lower than expected due to high CPU load.

When teaming is used, specify offload settings for non-teamed NICs and the teaming interface.

The following is steps for shared NIC and virtual NIC offload settings.

1. Select **Control Panel** > **Hardware and Sound**, and click **Device Manager**.
2. Right-click a network adapter and click **Properties**.
3. Click **Advanced** tab, and change the value of each item shown in the following table.

Property	Shared NIC/ 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 Scaling	Disabled	Disabled
Large Send Offload V2 (IPv4)	Disabled	Disabled
Large Send Offload V2 (IPv6)	Disabled	Disabled

Tip: Displayed properties depend on the type of a network adapter. Configure properties displayed for your adapter.

4. Restart the OS after setting values.

Disabling RSS

After you set up the OS, execute the command below on the command prompt to disable Receive Side Scaling (RSS). Then, reboot the OS.

netsh int tcp set global rss=disabled

When using a remote console application

Note that, if you use a remote console application such as JP1, NETM, or Remote Control on Windows Server 2012 R2 installed on an LPAR to which no USB device is assigned, the mouse pointer remains an arrow. Therefore, you need to specify the following setting.

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, select the Turn on Mouse Keys check box.

Note that, when you specify the setting above, you must perform the following:

1. Because NumLock is off during Remote Desktop connection, select the Off radio button in Use Mouse Keys when NUM LOCK is: on the Set up Mouse Keys window.
2. If you release the USB device allocation, you need to turn on mouse keys again.

Teaming

For teaming, see *Hitachi Compute Blade LAN Advanced Function Manual (for Intel, Broadcom, or Emulex)*.

For Windows Server 2008 R2

This section describes notes and restrictions for windows Server 2008 R2 when you use LPAR manager.

Network

When using ALB, it is recommended to configure the team in a dedicated NIC mode.

TCP/IP Checksum Offload function of the network adapter

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 or using Intel 10 Gbps LAN expansion card, 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.

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

Tip: When using the LAN expansion function of Intel® 82576 (AFT/ALB/SFT/Tag VLAN), remove the configuration for the LAN expansion function, and then change the setting. Reconfigure the LAN expansion function after changing the setting.

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:

CB 2500 or CB 500

Property	Shared NIC/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

CB 2000

Property	Shared NIC/Virtual NIC		Dedicated NIC (1 Gbps)
	NIC1	NIC2	
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

Property	Shared NIC/Virtual NIC		Dedicated NIC (1 Gbps)
	NIC1	NIC2	
Receive Side Scaling	-	Disabled	Disabled
Large send offload (LSO) (IPv4)	Disabled	Disabled	Disabled
Large send offload (LSO) (IPv6)	-	Disabled	Disabled
Legend: -: Not applicable			

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. Restart the OS after setting 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 LAN Advanced Function Manual.

For Intel® 82576 functions such as AFT, SFT, or ALB and the use conditions, see also LAN Advanced Function Manual.

Driver for Shared NIC and Virtual NIC

With LPAR manager firmware version 59-20/79-20 or lower 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.

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.

For Windows Server 2008

This section describes notes and restrictions for windows Server 2008 when you use LPAR manager.

Network

When using ALB, it is recommended to configure the team in a dedicated NIC mode.

TCP/IP Checksum Offload function of the network adapter

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 or using Intel 10 Gbps LAN expansion card, 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.

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

Tip: When using the LAN expansion function of Intel® 82576 (AFT/ALB/SFT/Tag VLAN), remove the configuration for the LAN expansion function, and then change the setting. Reconfigure the LAN expansion function after changing the setting.

---

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:

CB 500

Property	Shared NIC/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

CB 2000

Property	Shared NIC/Virtual NIC		Dedicated NIC (1 Gbps)
	NIC1	NIC2	
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

Property	Shared NIC/Virtual NIC		Dedicated NIC (1 Gbps)
	NIC1	NIC2	
Receive Side Scaling	-	Disabled	Disabled
Large send offload (LSO) (IPv4)	Disabled	Disabled	Disabled
Large send offload (LSO) (IPv6)	-	Disabled	Disabled
Legend: -: Not applicable			

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. Restart the OS after setting 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 ***) 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)

Driver for Shared NIC and Virtual NIC with Windows Server 2008 x64

With LPAR manager firmware version 59-20/79-20 or lower 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.

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\Parameters**.
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. Start 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
9. Reboot the OS after the setting.

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

This section describes notes and restrictions when you use Windows Server 2012 R2 Hyper-V and Windows Server 2012 Hyper-V.

Tip: Terms and definitions in this section

- Physical hardware: physical hardware
- Virtual machine: virtual hardware running on the physical hardware
- Management OS: OS installed on the physical hardware to manage Windows Server 2012 R2 Hyper-V and Windows Server 2012 Hyper-V
- Guest OS: OS installed on a virtual machine

General Information and Restrictions

Recommended physical hardware configuration

It is recommended that the system unit be configured with the following requirements satisfied, or greater.

- CPU cores: the total number of CPUs assigned to guest OSs that you operate simultaneously and one CPU for the management OS
- Memory: the total memory of memory size recommended by Microsoft for guest OSs that you operate simultaneously and 2 GB for the management OS, or greater
- Virtual hard disk file must be stored in the partition of a virtual machine different from that on which the management OS is installed.

Note: Recommended configuration above is a guideline, which does not guarantee correct behavior in any situations. It may not be enough depending on applications running on the guest OS. Check that there is no problem by performing tests in advance.

Tip: Since recommended configuration above is a guideline, it may not be required when the system is used for a specific purpose, such as a test. Configure the system for your purpose.

Recommended virtual machine configuration

It is recommended that a virtual machine be configured with greater than system requirements recommended by Microsoft depending on your guest OS.

Note:

- Recommended configuration above is a guideline, which does not guarantee correct behavior in any situations. It may not be enough depending on applications running on the guest OS. Check that there is no problem by performing tests in advance.
- The virtual hard disk file (.vhd) has 3 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 amount that the virtual machine is using. If the size cannot be expanded due to the capacity shortage of the physical disk, the virtual machine will halt. Always make sure that the capacity of the physical disk is sufficient in the actual operation. If not, the virtual machine may stop unexpectedly. Therefore, it is recommended that the virtual hard disk should be configured with the fixed-size in the actual operation.
- For generation 1 virtual machines, there are 2 types of virtual network adapters such as the network adapter and the legacy network adapter. Select the network adapter for the blade server. If you select the legacy network adapter, various problems with communication may occur.

Tip: Visit the following URLs for the system requirements for each OS recommended by Microsoft.

- Windows Server 2012 R2
  http://technet.microsoft.com/en-us/library/dn303418.aspx
- Windows Server 2012
  http://technet.microsoft.com/en-us/library/jj134246.aspx
- Windows Server 2008 R2
  http://technet.microsoft.com/en-us/library/dd379511(v=WS.10).aspx
- Windows Server 2008
  http://technet.microsoft.com/en-us/windowsserver/bb414778.aspx
- Windows Server 2003/ Windows Server 2003 R2
  http://technet.microsoft.com/en-us/library/cc787087(v=ws.10).aspx
- Windows 8
  http://windows.microsoft.com/en-us/windows-8/system-requirements
- Windows 7
  http://windows.microsoft.com/en-us/windows7/products/system-requirements
- Windows Vista
  http://support.microsoft.com/kb/919183
- Windows XP
  http://support.microsoft.com/kb/314865

Supported guest OS

The following guest OSs have operated properly on Windows Server 2012 Hyper-V and Windows Server 2012 R2 Hyper-V.

- Windows Server 2003, Standard Edition with SP 2
- Windows Server 2003, Enterprise Edition with SP 2
- Windows Server 2003, x64 Standard Edition with SP 2
- Windows Server 2003, x64 Enterprise Edition with SP 2
- Windows Server 2003 R2, Standard Edition with SP 2
- Windows Server 2003 R2, Enterprise Edition with SP 2
- Windows Server 2003 R2, x64 Standard Edition with SP 2
- Windows Server 2003 R2, x64 Enterprise Edition with SP 2
- Windows Server 2008 Standard 32-bit with SP 2
- Windows Server 2008 Enterprise 32-bit with SP 2
- Windows Server 2008 Datacenter 32-bit with SP 2
- Windows Server 2008 Standard 64-bit with SP 2
- Windows Server 2008 Enterprise 64-bit with SP 2

- Windows Server 2008 Datacenter 64-bit with SP 2
- Windows Server 2008 R2 Standard without SP/with SP 1
- Windows Server 2008 R2 Enterprise without SP/with SP 1
- Windows Server 2008 R2 Datacenter without SP/with SP 1
- Windows Server 2012 Standard without SP
- Windows Server 2012 Datacenter without SP
- Windows Server 2012 R2 Standard without SP
- Windows Server 2012 R2 Datacenter without SP
- Windows XP Professional with SP 3
- Windows Vista Business 32-bit Edition with SP 2
- Windows Vista Enterprise 32-bit Edition with SP 2
- Windows Vista Ultimate 32-bit Edition without SP 2
- Windows 7 Enterprise 32-bit Edition without SP/with SP
- Windows 7 Ultimate 32-bit Edition without SP/with SP 1
- Windows 7 Enterprise 64-bit Edition without SP/with SP
- Windows 7 Ultimate 64-bit Edition without SP/with SP
- Windows 8 Enterprise32-bit Edition without SP
- Windows 8 Pro 32-bit Edition without SP
- Windows 8 Enterprise 64-bit Edition without SP
- Windows 8 Pro 64-bit Edition without SP
- Windows 8.1 Enterprise32-bit Edition without SP
- Windows 8.1 Pro 32-bit Edition without SP
- Windows 8.1 Enterprise 64-bit Edition without SP
- Windows 8.1 Pro 64-bit Edition without SP

OSs supported by Microsoft other than those above can be installed. However, installation and behavior of them are not supported. They 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: Generation 2 virtual machines are supported only by Windows Server 2012/ Windows 8 or higher.

Maintenance

As advancing the integration using the virtual environment, multiple tasks and environments run on a single machine. Therefore, it is important to plan the machine operation including time for maintenance work. Maintenance tasks include applying security patches, updating application and drivers, and installing service packs. Make a plan for the system in advance taking into

account the time required for maintenance including the guest OS, and use it accordingly.

Number of processors available with Windows Server 2012 R2 Hyper-V and Windows Server 2012 Hyper-V

The following table shows the number of processors available with Windows Server 2012 R2 Hyper-V and Windows Server 2012 Hyper-V.

Edition	Max number of sockets: Total number of physical processors	Max number of logical processors: Total of multi-core hyper-threading
Windows Server 2012 R2 Standard	64	320
Windows Server 2012 R2 Datacenter	64	320
Windows Server 2012 Standard	64	320
Windows Server 2012 Datacenter	64	320

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

Note:

- If with 64 or less physical processors on a physical machine, you cannot assign them to logical processors more than the maximum number of logical processors defined by the number of physical processors.
- The maximum number of processors depends on the type of a guest OS. See the following URL for details.
  http://technet.microsoft.com/en-us/library/hh831531

Those limits are for Windows Server and different from the number supported by the system unit.

Memory available in Windows Server 2012 R2 Hyper-V and Windows Server 2012 Hyper-V

The following table shows available memory in Windows Server 2012 Hyper-V.

Edition	Max memory size
Windows Server 2012 R2 Standard	4 TB
Windows Server 2012 R2 Datacenter	4 TB
Windows Server 2012 Standard	4 TB
Windows Server 2012 Datacenter	4 TB

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

Note:

- When using Windows Server 2008 or lower OS, or Windows Server 2008 R2 without SP as a guest OS, you can assign up to 1000 GB memory to the OS. If assigning greater memory than 1000 GB, the OS may hang up at startup.
- If memory to assign is 1 TB or less, you cannot assign more than the memory size on the physical machine.
- The maximum memory size supported depends on the type of a guest OS.

Those limits are for Windows Server 2012 and Windows Server 2012 R2, and different from the size supported by the system unit.

Applications

Some applications and middleware have restrictions on Windows Server 2012 R2 Hyper-V and Windows Server 2012 Hyper-V. Consult your reseller of applications for details.

VHDX (Virtual hard disk) format

The VHDX format can be available only with Windows Server 2012 or Windows 8 as a guest OS.

Virtual fibre channel adapter

Virtual fibre channel adapters are not supported.

Cluster

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

Cluster failover occurs when the connection between the management OS and a shared disk fails due to an FC cable break, for example. Cluster failover service itself may fail down, however, when the guest OS access adds so much high load to the shared disk that the quorum fails during failover.

Live migration

When a series of live migrations are performed for a short period, they may fail. Perform a series of live migrations at the intervals of a few minutes.

Events for physical hardware

You need to monitor events for the physical hardware on the management OS, not on a guest OS.

OS re-startup and shutdown

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 puts high load on CPU. This can cause trouble such as taking too much time, or improper shutdown.

RemoteFX

RemoteFX 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/VLAN

For NIC teaming/VLAN with Windows Server 2012 or Windows Server 2012 R2 as a guest OS, configure a NIC teaming/VNIC on the management OS except that the NIC teaming uses SR-IOV. If configuring a NIC teaming/VLAN on a guest OS, you may not communicate properly.

NIC teaming load balancing mode

When adding a network adapter, which you have checked by the following steps, to a team on NIC Teaming window, do not select Hyper-V port for Load balancing mode.

1. Right-click a target adapter to add in **ADAPTER AND INTERFACE on NIC Teaming** window, and select **Properties**.
2. When "Emulex OneConnect xxxxxx" (XXXXXX: an alphanumeric string) is displayed in **Description** on **Network Adapter Properties**, you can add the adapter to the team.

If you select **Hyper-V port**, the following event is registered, which may result in improper behavior.

- Event ID: 106
- Source: Microsoft-Windows-Hyper-V-VmSwitch
- Event level: Error
- Description: 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 a physical network adapter shown as Broadcom NetXtremeGigabit Ethernet #x (#x is not shown or a numeric), or a virtual network adapter in the team to which a physical network adapter shown as Broadcom NetXtremeGigabit Ethernet #x on Hyper-V virtual network, perform the following steps to disable Virtual Machine Queues. With Enable, communication may slow down.

1. Right-click the target Broadcom NetXtremeGigabit Ethernet #x on Device Manager, and select **Properties** to open.
2. Select **Advanced** tab, and select **Disable** for Virtual Machine Queues.

Other restrictions

Visit the following Microsoft website and search it with Hyper-V as a keyword.

http://support.microsoft.com/

Information and Restrictions on the Management OS

Software on the management OS

It is recommended that task application (middleware) such as a database or application server should not be installed on the management OS with Hyper-V enabled.

Role

It is recommended that any role except Hyper-V in Windows Server 2012 and Windows Server 2012 R2 should be disabled on the management OS with Hyper-V enabled.

Information and Restrictions on Guest OSs

Integrated service

Make sure to install a guest OS using the OS media, not using the Server installation and monitoring tool DVD. Make sure to install the integrated service after installing the OS.

Server Core

Server Core option for Windows Server 2008 R2/Windows Server 2008 is not supported.

Saving VM

When selecting **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, select **Action** > **Start**.

This operation, however, is different from the guest OS shutdown and re-startup. Applications communicating with the outside may register an error.

Notes for Active Directory on the guest OS

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

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

OS installation media

When using Windows Server 2003 (32-bit/64-bit) with SP2 or Windows Server 2003 R2 (32-bit/64-bit) with SP2 as a guest OS, use the OS medium to which SP 2 has been applied. If you install the OS with SP1 or without SP, the guest OS may show the "STOP" error and halt during installation.

When using Windows Vista as a guest OS, use the OS medium to which SP1 or SP2 has been applied. If you install the OS medium without SP applied, installation may not be properly completed.

Snapshot

It is recommended that the snapshot should not be used in the actual environment. If using the snapshot, performance overhead may occur, or consistency may be destroyed in the system where multiple servers combine.

It is also recommended that snapshot should not be used on the guest OS where Active Directory is configured. If using the snapshot, inconsistency in the database may occur.

Virtual Hard Disk File (.vhd)

When multiple virtual hard disk files (.vhd) are on a single physical hard disk, IO bottlenecks may occur depending on the processing on the guest OS. This may affect the entire OS processing.

When using multiple guest OSs in the actual environment, perform careful test runs in advance. You might as well deploy virtual hard disk files (.vhd) on a separate physical disk if necessary.

Virtual SCSI controller

For generation 1 virtual machines, a guest OS cannot be installed in a virtual hard disk connected to a virtual SCSI controller.

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.

Note: When no physical sound device is installed in a terminal or a remote application that cannot replay a sound, you cannot play a sound even though using remote connection. See your application manual for details.

Notes and Restrictions on Hyper-V 2.0

This section describes notes and restrictions when you use Windows Server 2008 R2 Hyper-V 2.0.

Tip: Terms and definitions in this section

- Physical hardware: physical hardware
- Virtual machine: virtual hardware running on the physical hardware
- Management OS: OS installed on the physical hardware to manage Hyper-V 2.0
- Guest OS: OS installed on a virtual machine

General Information and Restrictions

Recommended physical hardware configuration

It is recommended that the system unit be configured with the following requirements satisfied, or greater.

- CPU cores: the total number of CPUs assigned to guest OSs that you operate simultaneously and one CPU for the management OS
- Memory: the total memory of memory size recommended by Microsoft for guest OSs that you operate simultaneously and 2 GB for the management OS, or greater
- Virtual hard disk file must be stored in the partition of a virtual machine different from that on which the management OS is installed.

Note: Recommended configuration above is a guideline, which does not guarantee correct behavior in any situations. It may not be enough depending on applications running on the guest OS. Check that there is no problem by performing tests in advance.

Tip: Since recommended configuration above is a guideline, it may not be required when the system is used for a specific purpose, such as a test. Configure the system for your purpose.

Recommended virtual machine configuration

It is recommended that a virtual machine be configured with greater than system requirements recommended by Microsoft depending on your guest OS.

Note:

- Recommended configuration above is a guideline, which does not guarantee correct behavior in any situations. It may not be enough depending on applications running on the guest OS. Check that there is no problem by performing tests in advance.
- The virtual hard disk file (.vhd) has 3 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 amount that the virtual machine is using. If the size cannot be expanded due to the capacity shortage of the physical disk, the virtual machine will halt. Always make sure that the capacity of the physical disk is sufficient in the actual operation. If not, the virtual machine may stop unexpectedly. Therefore, it is recommended that the virtual hard disk should be configured with the fixed-size in the actual operation.
- There are 2 types of virtual network adapters such as the network adapter and the legacy network adapter. Select the network adapter for the blade server. If you select the legacy network adapter, various problems with communication may occur.

Tip:

- Visit the following URLs for the system requirements for each OS recommended by Microsoft.
  - Windows Server 2008 R2
    http://technet.microsoft.com/en-us/evalcenter/dd459137.aspx
  - Windows Server 2008
    http://technet.microsoft.com/en-us/windowsserver/bb414778
  - Windows Server 2003/Windows Server 2003 R2
    http://technet.microsoft.com/en-us/windowsserver/bb430827
  - Windows 2000 server
    http://technet.microsoft.com/en-us/library/bb742525.aspx
  - Windows 2000 Advanced Server
    http://technet.microsoft.com/en-us/library/bb727072.aspx
  - Windows 7
    http://windows.microsoft.com/en-us/windows7/products/system-requirements
  - Windows Vista
    http://support.microsoft.com/kb/919183
  - Windows XP
    http://support.microsoft.com/kb/314865
- The maximum number of processors that can be assigned varies depending on a guest OS as shown below:
  - Windows Server 2000:
    Up to 1

- Windows Server 2003 R2/Windows Server 2003/Windows Vista / Windows XP + SP3:
  Up to 2
- Windows Server 2008 R2/Windows Server 2008/Windows7:
  Up to 4

Supported guest OS

The following guest OSs have operated properly on Windows Server 2008R2 Hyper-V 2.0.

- Windows 2000 Server with Service Pack 4
- Windows 2000 Advanced Server with Service Pack 4
- 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 XP Professional with Service Pack 3
- 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: The Microsoft support services for Windows 2000 Server with SP4 / Windows 2000 Advanced Server with SP4 have ended on July 13, 2010. After finishing the support services, Microsoft will no longer provide any updates on the integration services for these operating systems and any incident supports for all the problems caused by using these operating systems on the virtual machines.

OSs supported by Microsoft other than those above can be installed. However, installation and behavior of them are not supported. They may not operate properly.

Maintenance

As advancing the integration using the virtual environment, multiple tasks and environments run on a single machine. Therefore, it is important to plan the machine operation including time for maintenance work. Maintenance tasks include applying security patches, updating application and drivers, and installing service packs. Make a plan for the system in advance taking into account the time required for maintenance including the guest OS, and use it accordingly.

Number of processors available with Hyper-V 2.0

The following table shows the number of processors available with Windows Server 2008 R2 Hyper-V 2.0.

Edition	Max number of sockets: Total number of physical processors	Max number of logical processors: Total of multi-core hyper-threading
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.

Note:

- If with 4 or less physical processors on a physical machine, you cannot assign them to logical processors more than the maximum number of logical processors defined by the number of physical processors.
- The maximum number of processors depends on the type of a guest OS.

Those limits are for Windows Server 2008 R2 and different from the number supported by the system unit.

Memory available in Hyper-V 2.0

The following table shows available memory in Windows Server 2008 R2 Hyper-V 2.0.

Edition	Max memory size
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.

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.

Those limits are for Windows Server 2008 R2 and different from the size supported by the system unit.

Applications

Some applications and middleware have restrictions on Hyper-V 2.0. Consult your reseller of applications for details.

Cluster

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

Cluster failover occurs when the connection between the management OS and a shared disk fails due to an FC cable break, for example. Cluster failover service itself may fail down, however, when the guest OS access adds so much high load to the shared disk that the quorum fails during failover.

Live migration

When a series of live migrations are performed for a short period, they may fail. Perform a series of live migrations at the intervals of a few minutes.

Events for physical hardware

You need to monitor events for the physical hardware on the management OS, not on a guest OS.

OS re-startup and shutdown

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 puts high load on CPU. This can cause trouble such as taking too much time, or improper shutdown.

RemoteFX

RemoteFX is not supported.

Other restrictions

Visit the following Microsoft website and search it with Hyper-V as a keyword.

http://support.microsoft.com/

Information and Restrictions on the Management OS

Software on the management OS

It is recommended that task application (middleware) such as a database or application server should not be installed on the management OS with Hyper-V enabled.

Role

It is recommended that any role except Hyper-V in Windows Server 2008 R2 should be disabled on the management OS with Hyper-V enabled.

Information and Restrictions on Guest OSs

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 Modification Program when using Windows 2000 on page 2-66 for details.

Server Core

Server Core option for Windows Server 2008 R2/Windows Server 2008 is not supported.

Saving VM

When selecting **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, select **Action** > **Start**. This operation, however, is different from the guest OS shutdown and re-startup. Applications communicating with the outside may register an error.

Notes for Active Directory on the guest OS

Microsoft Help and Support provides "Things to consider when you host Active Directory domain controllers in virtual hosting environments" in the following URL. Visit 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 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.

Snapshot

It is recommended that the snapshot should not be used in the actual environment. If using the snapshot, performance overhead may occur, or consistency may be destroyed in the system where multiple servers combine.

It is also recommended that snapshot should not be used on the guest OS where Active Directory is configured. If using the snapshot, inconsistency in the database may occur.

Virtual Hard Disk File (.vhd)

When multiple virtual hard disk files (.vhd) are on a single physical hard disk, IO bottlenecks may occur depending on the processing on the guest OS. This may affect the entire OS processing.

When using multiple guest OSs in the actual environment, perform careful test runs in advance. You might as well deploy virtual hard disk files (.vhd) on a separate physical disk if necessary.

Virtual SCSI controller

A guest OS cannot be installed in a virtual hard disk connected to a virtual SCSI controller.

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.

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.

Note: When no physical sound device is installed in a terminal or a remote application that cannot replay a sound, you cannot play a sound even though using remote connection. See your application manual for details.

Notes and Restrictions on Hyper-V

This section describes notes and restrictions when you use Windows Server 2008 Hyper-V.

Tip: Terms and definitions in this section

- Physical hardware: physical hardware
- Virtual machine: virtual hardware running on the physical hardware
- Management OS: OS installed on the physical hardware to manage Hyper-V
- Guest OS: OS installed on a virtual machine

General Information and Restrictions

Recommended physical hardware configuration

It is recommended that the system unit be configured with the following requirements satisfied, or greater.

- CPU cores: the total number of CPUs assigned to guest OSs that you operate simultaneously and one CPU for the management OS
- Memory: the total memory of memory size recommended by Microsoft for guest OSs that you operate simultaneously and 2 GB for the management OS, or greater
- Virtual hard disk file must be stored in the partition of a virtual machine different from that on which the management OS is installed.

Note: Recommended configuration above is a guideline, which does not guarantee correct behavior in any situations. It may not be enough depending on applications running on the guest OS. Check that there is no problem by performing tests in advance.

Tip: Since recommended configuration above is a guideline, it may not be required when the system is used for a specific purpose, such as a test. Configure the system for your purpose.

Recommended virtual machine configuration

It is recommended that a virtual machine be configured with greater than system requirements recommended by Microsoft depending on your guest OS.

Note:

- Recommended configuration above is a guideline, which does not guarantee correct behavior in any situations. It may not be enough depending on applications running on the guest OS. Check that there is no problem by performing tests in advance.
- The virtual hard disk file (.vhd) has 3 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 amount that the virtual machine is using. If the size cannot be expanded due to the capacity shortage of the physical disk, the virtual machine will halt. Always make sure that the capacity of the physical disk is sufficient in the actual operation. If not, the virtual machine may stop unexpectedly. Therefore, it is recommended that the virtual hard disk should be configured with the fixed-size in the actual operation.
- There are 2 types of virtual network adapters such as the network adapter and the legacy network adapter. Select the network adapter for the blade server. If you select the legacy network adapter, various problems with communication may occur.

Tip:

- Visit the following URLs for the system requirements for each OS recommended by Microsoft.
  - Windows Server 2008
    http://technet.microsoft.com/en-us/windowsserver/bb414778
  - Windows Server 2003/Windows Server 2003 R2
    http://technet.microsoft.com/en-us/windowsserver/bb430827
  - Windows 2000 server
    http://technet.microsoft.com/en-us/library/bb742525.aspx
  - Windows 2000 Advanced Server
    http://technet.microsoft.com/en-us/library/bb727072.aspx
- The maximum number of processors that can be assigned varies depending on a guest OS as shown below:
  - 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

The following guest OSs have operated properly on Windows Server 2008 Hyper-V.

- Windows 2000 Server with Service Pack 4
- Windows 2000 Advanced Server with Service Pack 4
- 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: The Microsoft support services for Windows 2000 Server with SP4 / Windows 2000 Advanced Server with SP4 have ended on July 13, 2010. After finishing the support services, Microsoft will no longer provide any updates on the integration services for these operating systems and any incident supports for all the problems caused by using these operating systems on the virtual machines.

OSs supported by Microsoft other than those above can be installed. However, installation and behavior of them are not supported. They may not operate properly.

Maintenance

As advancing the integration using the virtual environment, multiple tasks and environments run on a single machine. Therefore, it is important to plan the machine operation including time for maintenance work. Maintenance tasks include applying security patches, updating application and drivers, and installing service packs. Make a plan for the system in advance taking into account the time required for maintenance including the guest OS, and use it accordingly.

Number of processors available with Hyper-V

The following table shows the number of processors available with Windows Server 2008 Hyper-V.

Edition	Max number of sockets: Total number of physical processors	Max number of logical processors: Total of multi-core hyper-threading
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.

Note:

- If with 4 or less physical processors on a physical machine, you cannot assign them to logical processors more than the maximum number of logical processors defined by the number of physical processors.
- The maximum number of processors depends on the type of a guest OS.

Those limits are for Windows Server 2008 and different from the number supported by the system unit.

Memory available in Hyper-V

The following table shows available memory in Windows Server 2008 Hyper-V.

Edition	Max memory size
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

Up to 64 GB memory can be assigned to each virtual machine.

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.

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.

Those limits are for Windows Server 2008 and different from the size supported by the system unit.

Applications

Some applications and middleware have restrictions on Hyper-V. Consult your reseller of applications for details.

Cluster

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

Cluster failover occurs when the connection between the management OS and a shared disk fails due to an FC cable break, for example. Cluster failover service itself may fail down, however, when the guest OS access adds so much high load to the shared disk that the quorum fails during failover.

Events for physical hardware

You need to monitor events for the physical hardware on the management OS, not on a guest OS.

OS re-startup and shutdown

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 puts high load on CPU. This can cause trouble such as taking too much time, or improper shutdown.

Other restrictions

Visit the following Microsoft website and search it with Hyper-V as a keyword.

http://support.microsoft.com/

Information and Restrictions on the Management OS

Software on the management OS

It is recommended that task application (middleware) such as a database or application server should not be installed on the management OS with Hyper-V enabled.

Role

It is recommended that any role except Hyper-V in Windows Server 2008 should be disabled on the management OS with Hyper-V enabled.

Information and Restrictions on Guest OSs

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

Server Core option for Windows Server 2008 is not supported.

Saving VM

When selecting **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, select **Action** > **Start**. This operation, however, is different from the guest OS shutdown and re-startup. Applications communicating with the outside may register an error.

Notes for Active Directory on the guest OS

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

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.

Snapshot

It is recommended that the snapshot should not be used in the actual environment. If using the snapshot, performance overhead may occur, or consistency may be destroyed in the system where multiple servers combine.

It is also recommended that snapshot should not be used on the guest OS where Active Directory is configured. If using the snapshot, inconsistency in the database may occur.

Virtual Hard Disk File (.vhd)

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Virtual SCSI controller

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A

Memory Dump for Emulex 10 Gbps CNA

This appendix describes the procedure for a setting required when Emulex 10 Gbps CNA (Converged Network Adapter) is used as an FCoE boot device.

Memory dump settings

When using Emulex 10 Gbps CNA as an FCoE device, make sure to configure a setting to produce a page file, DedicatedDumpFile.sys, to the internal HDD. If not, the memory dump cannot be collected.

Configuring the memory dump

This section describes how to set the memory dump when Emulex 10 Gbps CNA is used as an FCoE device.

To configure the memory dump

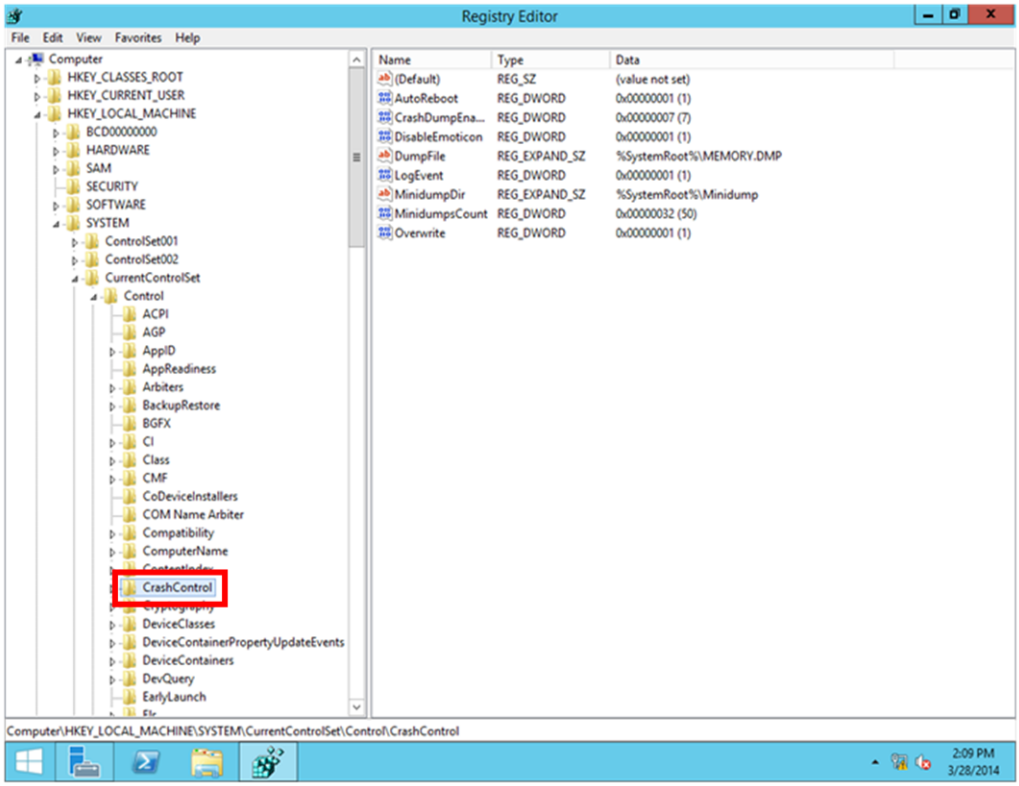
1. Log on to the system as a user with administrative privilege such as administrator.

   On Windows Server 2008 R2, click **Start** > **Run**, type **regedit** in the dialog box, and click **OK** to start **Registry Editor**.

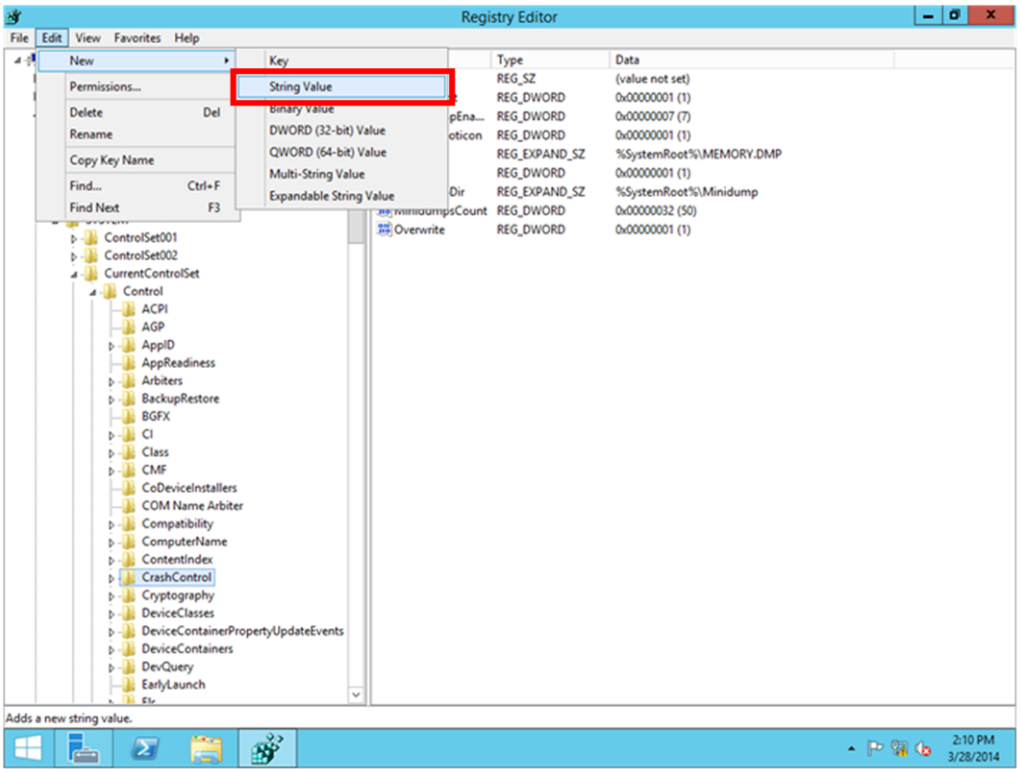
   On Windows Server2012 or 2012 R2, click **Search** in the Charms Bar, type **regedit**, and click **OK** to start **Registry Editor**.

2. Go to the following registry sub key.

   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\CrashControl

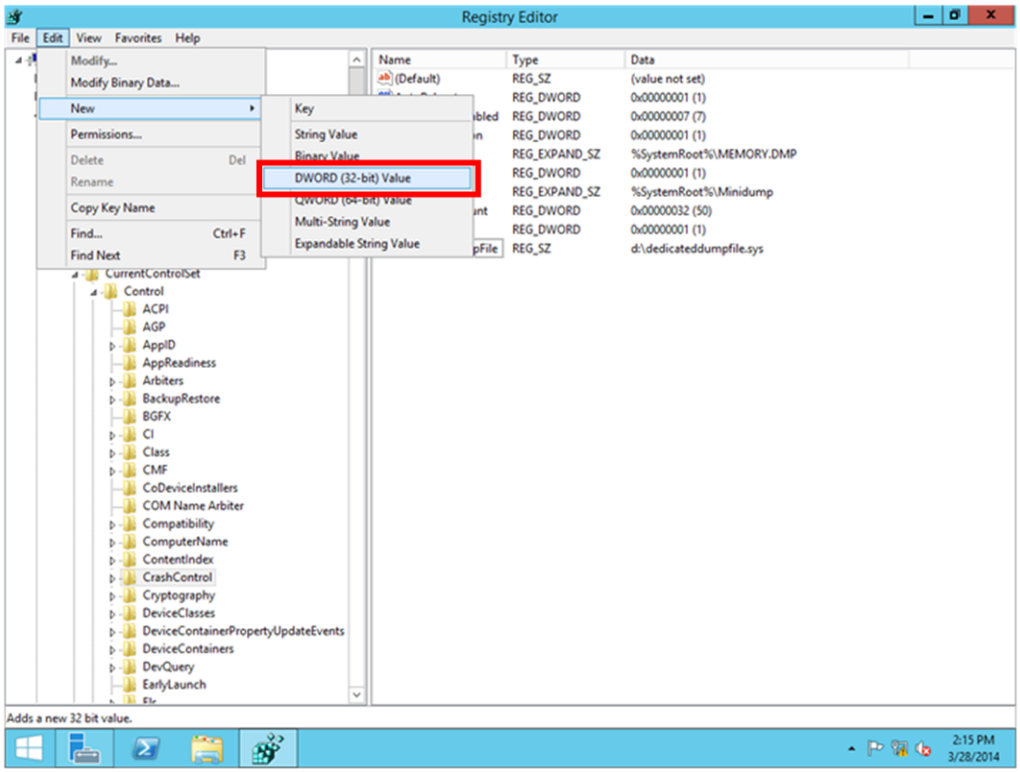


3. From the menu on the top of the window, click **Edit** > **New** > **String Value**, and create a registry.

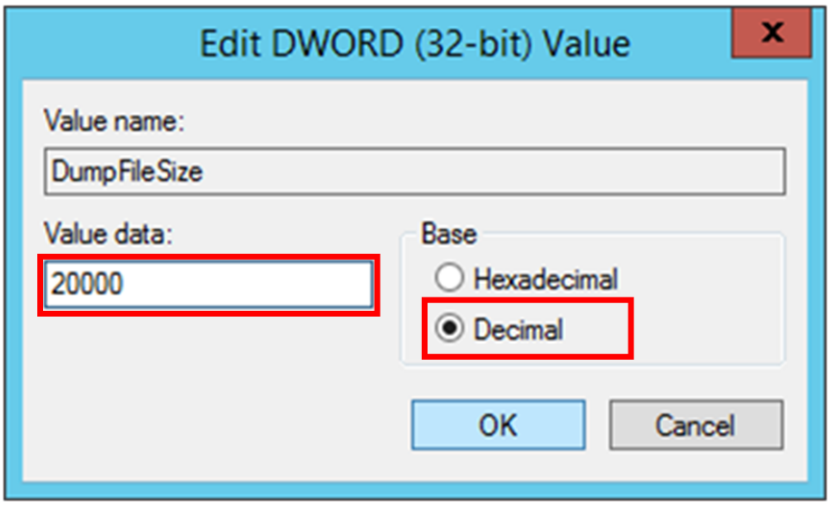


4. Type **DedicatedDumpFile** as a name of the created registry, and press **Enter**.
5. Right-click **DedicatedDumpFile**, and click **Modify**. Type Internal disk path: **\<path>\dedicateddumpfile.sys** in Value data, and click **OK**.
6. Set a dump file size.

   From the menu on the top of the window, click **Edit** > **New** > **DWORD (32-bit) Value**.

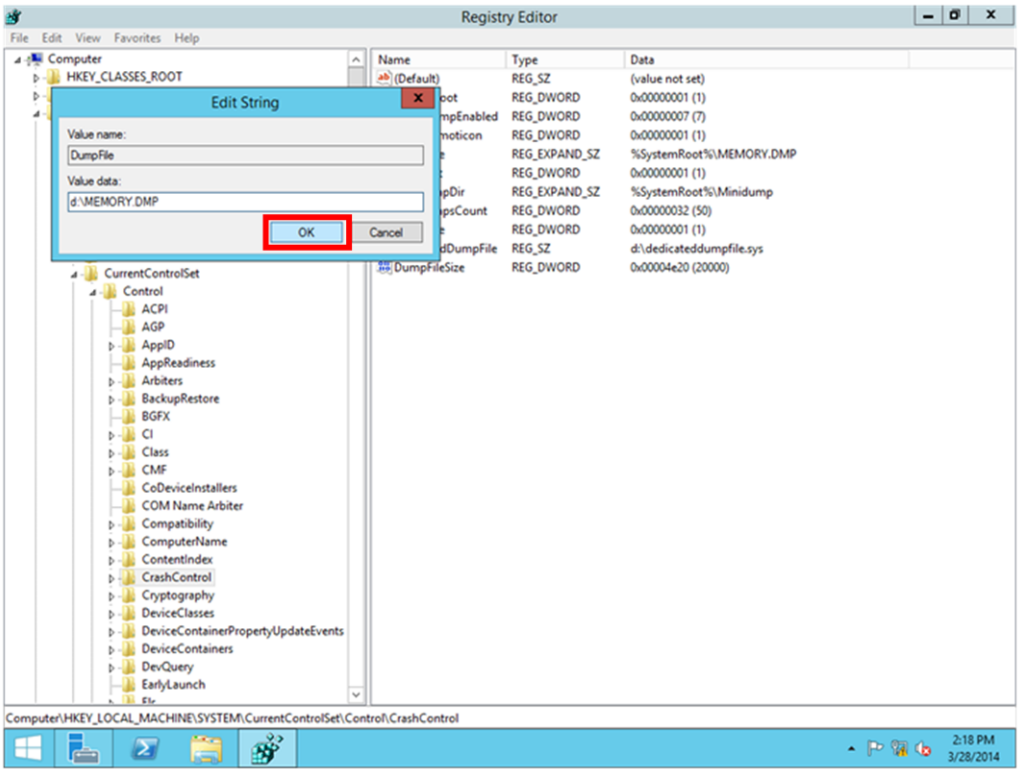


7. Type **DumpFileSize** as a name of the created registry, and press **Enter**.
8. Right-click **DumpFileSize**, and click **Modify**. In the Edit DWORD(32-bit) Value dialog box, select **Decimal** under Base. Specify a memory size more than that on board, the page file size set in step 5 in MB, in the Value data field, and click **OK**.



9. Right-click **DumpFile**, and click **Modify**. Type Internal disk path: **\<path>\Memory.dmp** in the Value data field, and click **OK**.

   When the system crashes, memory dump files are created in the directory specified here using the file specified in step 5 without using pagefile.sys.



10. Close the Registry Editor and restart Windows.

Troubleshooting

Hard disk with memory of 2 TB or over

Data corruption

If memory dump is performed when a page file is set in a partition on a hard disk with memory of 2 TB or over, the partition to which the page file is dumped will be corrupted.

- Windows Server 2008 R2

  To avoid this error, apply SP1 or KB2249857. See the following for details.

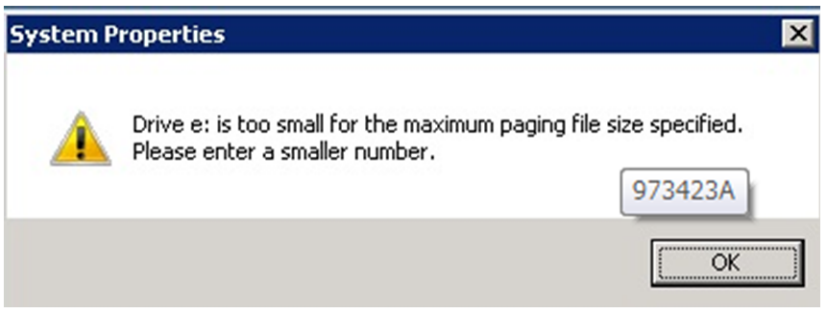
  http://support.microsoft.com/kb/2249857

  One or more volumes are corrupted on a hard disk when a dump file is saved on a computer that is running Windows 7 or Windows Server 2008 R2 if the hard disk space is larger than 2terabytes
- Windows Server 2012 or 2012 R2

  This error does not occur.

Error message

When you try to set a page file in a partition with memory of 2 TB or over, the following error message will appear.



- Windows Server 2008 R2,Windows Server 2012, or 2012 R2

  To avoid this error, set a page file using wmic.exe. When executing it from Powershell, type cmd.exe once and then execute the wmic.exe command.

  Restart the OS after creating a page file and changing the file size. See the following for details.

  http://support.microsoft.com/kb/973423

  You cannot set page files on a partition that is larger than 2 terabytes.

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