

HITACHI

Gigabit Fibre Channel Adapter

USER'S GUIDE

(SUSE Linux Enterprise Server driver Edition)

Revision 1

Mar 2015

HITACHI

Read this manual well and keep it near the system so that you can refer to it as needed.

Before starting operation, familiarize yourself with the safety instructions.

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Information

- The BladeSymphony server name has been changed to Hitachi Compute Blade. If you are using BladeSymphony based server products, substitute references to Hitachi Compute Blade with BladeSymphony.
- 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.

Important Notes

- It is strictly forbidden to reprint or duplicate part or all of this manual without the permission of the publisher.
- The contents of this manual are subject to change without notice.
- Despite our meticulous care to ensure the accuracy of the contents, should you find any errors or questionable issues, or if you have opinions to share with us, please contact your dealer.
- Note that we shall not be liable for the consequences of operating this product in ways not stated in this manual.

Reliability of the System Equipment

The system equipment you purchased is designed for general office work. Avoid using it for applications requiring high reliability that may seriously affect human life or property. We shall not assume any responsibility for any accidents resulting from such use of the product.

Examples of inappropriate applications of system equipment intended for general office work are:

- Control of a chemical plant, control of medical devices, and control of emergency communications, all of which require high reliability.

You need a different system for such high reliability applications. Please consult our sales department for the appropriate system.

Regulatory Compliance Notices

Federal Communications Commission (FCC) Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at personal expense.

The user is cautioned that changes or modifications not expressly approved by the manufacturer could void the user's right to operate the equipment.

☐ EN55022 Compliance

Warning: This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

☐ Class A Emission Statement (Korea)

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☐ Canadian Compliance Statement

This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

**☐ Product recycling and disposal (EU and Norway)
(Waste Electrical and Electronic Equipment Directive 2002/96/EC [WEEE])**

The following mark on Products indicates that these Products are to be collected separately and to be recycled or discarded according to applicable local and national regulations. For further information regarding return, collection, recycle or disposal, please contact your sales company where you purchased the Products.



The above mark is not printed on the following Products but these Products are also subject to electrical and electronic equipment (EEE). These un-marked Products are, as well as marked Products, to be collected separately and to be recycled or discarded according to applicable local and national regulations. For further information, please contact your sales company where you purchased the Products.

| No. | Products code | Products name |
|-----|--------------------------------|------------------------------|
| 1 | GVX-CC64G*BX, GVX-CC64G* | Fibre Channel Board |
| 2 | GVX-CC9FCCMB2BX, GVX-CC9FCCMB2 | Combo Card For FCSW module |
| 3 | GVX-CC9IOCOMBBX, GVX-9IOCOMB | Combo Card For I/O module T3 |
| 4 | GGX-CC9M4G2X1EX, GGX-CC9M4G2X1 | FC mezzanine card |

Note: The above regulation/markings applies only to countries within the European Union (EU) and Norway.

❑ **Export control**

To export this product, check the export control-related regulations and follow the necessary procedures. If you have any questions, contact our sales representative.

Note that the same handling is required for peripheral equipment and pre-installed software shipped with this product.

Notes on Deleting Data when Disposing of or Transferring the System Equipment

Personal computers and system equipment are used for various purposes at the office and home. Important data of customers are recorded in the hard disks in these computers and system equipment.

You must erase these important data contents when transferring or disposing of the system equipment.

However, it is not easy to erase data written on the hard disk.

When you “erase data”, you generally do one or more of the following:

- Discard data in the “Recycle Bin”.
- “Delete” data.
- Erase data using the “Empty Recycle Bin” command.
- Perform initialization (formatting) of the hard disk using software utilities.
- Recover the factory defaults using a recovery CD.

The above operations only change the file management information of data recorded on the hard disk; actually the data is just blocked from view.

That is, although the data appears to have been erased, it was just made unavailable under an operating system such as Windows. The actual data remains on the hard disk and may be read using special data recovery software. Consequently, important data on the hard disk of the system equipment can be read and used for unexpected applications by malicious people.

To avoid unauthorized access to important data on the hard disk when disposing of or transferring the system equipment, it is extremely important for you to erase all data recorded on the hard disk at your own risk. When you erase the data, we recommend that you purchase and use a dedicated software or service, or corrupt the data on the hard disk physically or magnetically using a hammer or strong magnet to make it unreadable.

Transferring the system equipment without deleting software on the hard disk (operating system, applications, etc.) may be against software licensing agreements. Check your software licensing agreements carefully.





Introduction

Thank you for purchasing Hitachi Gigabit Fibre Channel Adapter. This manual describes procedures for the use of Hitachi Gigabit Fibre Channel Adapter such as installation, connection, and handling.

Notation

□ Symbols

Meanings of symbols used in this manual are as follows:

| | |
|--|---|
|  WARNING | This indicates the presence of a potential risk that might cause death or severe injury. |
|  CAUTION | This indicates the presence of a potential risk that might cause relatively mild or moderate injury. |
| NOTICE | This indicates the presence of a potential risk that might cause damage to the equipment and/or damage to surrounding properties. |
|  Note | This indicates notes not directly related to injury or severe damage to the equipment. |
|  Tip | This indicates advice on how to make the best use of the equipment. |

Abbreviations for Operating Systems (OS)

In this manual, the following abbreviations are used for OS name:

- Red Hat Enterprise Linux 6 Server
(Hereinafter, referred to as Red Hat Enterprise Linux 6 or RHEL6)
- Red Hat Enterprise Linux Advanced Platform
Red Hat Enterprise Linux 5 Server
(Hereinafter, referred to as Red Hat Enterprise Linux 5 or RHEL5)
- Red Hat Enterprise Linux AS 4
Red Hat Enterprise Linux ES 4
(Hereinafter, referred to as Red Hat Enterprise Linux 4 or RHEL4)
- Red Hat Enterprise Linux AS 3
(Hereinafter, referred to as Red Hat Enterprise Linux 3 or RHEL3)
- SUSE Linux Enterprise Server 11
(Hereinafter, referred to as SLES11)

Information on Support and Service

Missing Parts on Delivery

The product is checked by local support personnel when it is delivered.

In some cases, no checkout work is performed or no local support personnel visit you when the product is delivered. If you find any missing part or if you have any questions on the delivered product in such cases, contact your sales.

When You Need Help

- 1 Refer to the manual.**
Refer to manuals. Also refer to other printed manuals provided with the product.
- 2 Contact us by phone.**
Contact the reseller where you have purchased the product.

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Precautions for Safe Use

Notes related to safety issues are marked as shown below.



This is a safety alert symbol. It calls attention to a potential safety hazard to humans. In order to avoid possible injury or death, follow the message provided after this symbol.



This symbol indicates the presence of a potential risk that might cause death or severe injury.



This symbol indicates the presence of a potential risk that might cause relatively mild or moderate injury.

NOTICE

This symbol indicates the presence of a potential risk that might cause severe damage to the equipment and/or damage to surrounding properties.



This pictogram (Δ) indicates a precaution. The figure inside the triangle (Δ) indicates the type of hazard.

The example on the left indicates a shock hazard.



This pictogram (\ominus) indicates an action that you must not take. The pictogram (\ominus) is placed over a figure that depicts the “must-not” item involved.

The example on the left indicates “Do not disassemble”.



This pictogram (\bullet) indicates an action to take. The figure inside the circle (\bullet) shows the action to take.

The example on the left tells you to “Unplug the power cord from the outlet”.

Common precautions concerning safety

Please follow these safety instructions:

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

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

Failure to follow those instructions may lead to injury, fire or damage to the equipment.

Operations and actions to perform

Do not perform operations or actions other than those described in the manual.

Should you find any problem with the equipment, turn off the power, unplug the power cord from the electrical outlet, and then contact your dealer or call for maintenance personnel.

Pay attention

The equipment and the manual carry notes, cautionary statements and advice that have been fully examined and reviewed. However, unforeseeable situations may occur.

When operating the equipment, always stay alert.

WARNING



Abnormal heat, smoke, abnormal noise, or abnormal smell

Should you find anything abnormal occurring, turn off the power and unplug all the power cords of the equipment (maximum of 5) from the electrical outlets. Using the power cord after such occurrences may lead to electric shock or fire.

Do not place any objects around the electrical outlet to allow users to unplug the power cord immediately.



Do not repair, remodel or disassemble

Do not attempt to repair, remodel or disassemble the equipment on your own, except for expansion work to be performed in accordance with the instructions in this manual. Work performed by unqualified persons may lead to electric shock, fire, or burns. There are many high-voltage areas inside the power unit. It might be hazardous if you touch these areas.



Insertion of foreign objects into the equipment

Do not allow clips, pins or any other metal items or flammable items to enter the equipment through a vent or by any other means. Continuing to operate the equipment with foreign objects may lead to electric shock or fire.



Removal of cover or bracket

Unless otherwise instructed, turn off the power, unplug all power cords of the equipment from the electrical outlets, and disconnect all cables from the equipment before removing covers or brackets. Even if you turn off the power to the equipment, some circuits are live and unexpected contact may cause a fire.

Do not use the equipment with the cover removed. It may also result in electric shock or equipment failure.



Handling of the power outlet

Use a grounding 2-pole plug-in power outlet. Outlets of any other types would cause electric shock or fire.

In order to prevent electric shock, use a ground wire to connect the outlet's grounding electrode to a ground terminal installed by a qualified electrician. Omission of this connecting step may cause electric shock in the event of a power failure.



Do not place objects on the equipment

Do not place a vase, potted plant or any other container with water in it or small metal items like pins and clips on the equipment. Operating the equipment with conductive objects such those mentioned above may lead to electric shock, smoke, or fire.



Handling of heavy loads

The equipment is heavy. Be careful when moving it. Otherwise, handling of this equipment may hurt your arms or lumbar.

To move or lift heavy loads such as this product, use tools or perform the task with the help of at least one other person. Otherwise handling of heavy loads could cause injury.

WARNING



Handling of the power cables

Always use the power cables shipped with the equipment, and follow the instructions below: Failure to follow the correct handling practices may lead to damage to the power cables to expose the copper wires, or overheating due to short-circuiting or partial disconnection, which may cause electric shock or fire.

Do not place any object on the power cables.

Do not pull the cables.

Do not apply pressure on the power cables.

Do not fold the power cables.

Do not work upon the power cables.

Do not use the power cables near heat-generating appliances.

Do not bundle the power cables.

Do not subject the power cables to ultraviolet or strong visible light continuously.

Do not use the power cables past their service life.

Do not expose the power cables to alkali, acid, fat and oil, or humidity.

Do not use the power cables in a high-temperature environment.

Do not use the power cables above their specified rating.

Do not use the power cables for other devices



Not designed to operate near volatile liquid

Do not use volatile liquids such as nail polish remover near the equipment. Such volatile liquids could cause a fire if they enter inside the equipment and are ignited.



Handling of the power plug

When inserting the power plug into the electrical outlet or removing it, be sure to hold the plug section. Do not pull the cable; it may partially break the wire, heat the broken part and lead to a fire.

If a long downtime is planned, remove the power plug from the outlet. The equipment is live even when not in use, and any damaged components may cause a fire.

Be sure to handle the power plug with dry hands when inserting or removing it from the outlet. Handling it with wet hands may cause an electric shock.



Impact from falling

Do not let the plug fall or hit it against another object. It may cause internal deformation and deterioration. Operating the equipment under such defective conditions may lead to electric shock or fire.



Applicable power source

The equipment uses 200 VAC. Do not operate the equipment with a voltage other than that specified. It may lead to internal breakage or electric shock or fire due to overheating and deterioration (depending on the voltage magnitude).

WARNING



Contact failure and tracking of the power plug

Comply with the following instructions for handling of the power plug. Otherwise, tracking or contact failure may cause a fire.

Make sure that the power plug is fully and securely inserted into the electrical outlet.

Before inserting the power plug, check that there is no dust or water on the plug. If any dust or water is found, wipe it off with a dry cloth and then insert it.

Check that the outlet can firmly hold the plug.



Handling of batteries

The following actions must be avoided. Inappropriate handling may cause the battery to overheat, burst, and leak, resulting in injury, smoke or fire.

Disassembling the battery

Heating beyond 100°C

Incinerating

Wetting

Using batteries other than those specified



Storage location for batteries

Keep batteries out of the reach of young children. There is a danger that they might swallow them. Should a battery ever be swallowed, take care to secure a breathing path for the child and immediately call for medical assistance.



Disposal of batteries

To dispose of batteries, consult your dealer or follow the relevant regulations and rules of your country.



Storing batteries

When storing batteries, apply adhesive tape on the terminals for insulation. If the batteries are stored without insulation, the terminals can contact each other to cause a short-circuit and overheat or burst, leading to injury or fire.



Multiple connections to a single outlet not allowed

Do not connect multiple power cables to a single electrical outlet. Overheating of the power cables or outlet may cause fire and trip the circuit breaker, stopping the operation of other devices on the same circuit.

WARNING



Not designed to operate in a humid or dusty environment

Do not use the equipment near a place where water is used such as sink, in a humid basement, or in a dusty place. Such conditions may lower electric insulation, leading to electric shock or fire.



Not designed to operate in a high-temperature environment

Do not install the equipment in a place subject to high temperatures and do not cover it with insulating material. It may cause a fire.



Moving between two locations with a significant temperature gap

When you move the equipment from one location to another, a significant temperature gap between the two locations may cause condensation on the surface or inside the equipment. Using the equipment when condensation is present may lead to electric shock or fire. Leave the equipment at the new location for several hours before you start using it.



Addition and connection of peripheral devices or optional components

To add or connect peripheral devices or optional components to the equipment, remove the power plug from the outlet and disconnect all cables from the equipment unless otherwise instructed. Use only peripheral devices and optional components which are explicitly listed as supported devices in the manual, and always follow the instructions in the manual.

Using devices other than those mentioned above would cause a failure of the peripheral devices or optional components, smoke, or fire due to the difference in connection specifications.



Vents

Vents on the equipment aim to prevent internal temperature rise. Do not block the vents by placing any objects in front of or against them. Otherwise the internal temperature may rise, leading to smoke, fire or failure.

Keep vents clear of dust by periodically checking and cleaning them.



Plastic bags for packaging

To avoid the risk of suffocation, do not leave plastic bags (such as air bubble cushioning for packaging) within the reach of young children.



Handling the power supply module

The power supply module has a high-voltage area in it. Do not open the cover. It may result in electric shock or equipment failure.



Handling of the product

Install the product on a fixed rack. Do not lean against the product or stand on it. Do not install the product in a place with weak floors and walls. Do not subject the product to excessive vibration. It could fall and cause a failure.

CAUTION



Contact with contact pins

Do not touch the contact pins of connectors with your hand or any metal item. Do not place any objects such as wire among the pins. Do not place the equipment in a place where there are metal pieces. Otherwise, contact failure may cause a malfunction.

When you have to touch the card, take care not to hurt yourself. You can wear cotton gloves.



Addition and replacement of parts in the equipment

Increasing the number of built-in options for a system device or replacing them must be entirely conducted by maintenance personnel. Avoid removing the cover from the device and avoid installing or removing built-in options. The system device contains parts mounted at high density, which suggests that unskilled work will lead to injury or device failure. If you need to add or replace options, you should contact your dealer or call the maintenance personnel.



Contact with metal edges

When moving the equipment or adding parts, take care not to hurt yourself on the metal or plastic edges. You can wear cotton gloves.



Using at an unstable place

Do not place the equipment on an inclined ground or at a narrow or unstable place. The equipment may fall and cause an injury.



Use for purposes other than the stated purpose

Do not use the equipment for any other purpose other than its intended use. It may malfunction or fall and cause an injury.



Consumables

Only use specified consumables. Using consumables other than those specified may not only reduce reliability of the product but also cause malfunction, electric shock or fire.



Eye fatigue

Provide luminance of 300 to 1000 lux for viewing the display. Take a break of 10 to 15 minute every hour. Viewing the display for a long time results in eye fatigue.



Cover for the power supply module

The power supply module, and its cover and handle are heated while that module is run. Take care when replacing a failed module or in other cases. You might get burned.



Laser beam

On this product, a Class 1 laser product is installed. Do not look directly at the laser beam. Do not look at the laser beam using an optical device.

Under the laser module cover, a laser beam is being emitted. Do not remove the cover of an unused board.

CAUTION



Signal cables

When wiring cables, take care not to trip over the cables. It could cause injury or failure of devices connected to the equipment. It could also cause loss of valuable data.

Do not place heavy items on the cables. Avoid wiring cables close to a thermal appliance. It may cause damage to cable sheaths, resulting in failure of the connected devices.



Improper battery type

Improper type of battery used can cause explosion.

Replace the battery with a proper one as recommended by the manufacturer.

Dispose of the worn-out battery according to the manufacturer's instructions.



Aluminum electrolytic capacitors

An aluminum electrolytic capacitor has a limited service life. Do not use it past its service life. Otherwise, leakage or depletion of the electrolyte may cause smoke or electric shock. To avoid such hazardous situations, replace limited-life parts once they are past their designated service life.



Handling of the system equipment

Addition or replacement of optional components must be performed by maintenance personnel.

Do not attempt to remove the cover of the equipment. Do not attempt to install or remove optional components. Parts implemented in the system equipment are high-density, and highly complex. Operation or maintenance by inexperienced persons may lead to injury or equipment failure.

When you need to add or replace optional components, contact your dealer or call maintenance personnel.



Installing the equipment onto a rack

To mount or remove the system equipment onto or from the rack cabinet, do not strain yourself to do so alone. Instead, always get help from at least one other person or use tools. If the system equipment has to be mounted on 31U and above of the rack cabinet or it is already mounted there, do not attempt to mount or remove it. Call maintenance personnel.

Defective mounting may cause the system equipment to fall, resulting in an injury or equipment failure.

To perform any operation with the equipment pulled out from the rack cabinet, be sure to mount a stabilizer to the rack cabinet. Applying excessive force could cause the rack cabinet to fall, resulting in an injury or equipment failure.

If a stabilizer is not mounted, call maintenance personnel.



High Temperature at the 10GBASE-R Transceiver

The 10GBASE-R transceiver in the 10Gbps LAN switch module increases in temperature during operation. To remove the transceiver, therefore, allow at least approximately 5 minutes after the power supply for the 10Gbps LAN switch module is stopped from the management module. Failure to do so may cause you to get burned.

NOTICE



Backing up data

Always create backup copies of important data on the hard disk to auxiliary storage. If the hard disk fails, all data stored on it will be lost.



Not designed to operate outdoors

Do not operate the equipment outdoors. It could cause a failure.



Disposal of the equipment

For disposal by a business operator

Check the industrial waste disposal regulations for your country and follow the necessary procedures.

For disposal by an individual

To dispose of this equipment, consult your dealer or follow the relevant regulations.



Radio interference

When installed next to other electronic equipment, the equipment may interfere with each other. In particular, with a television set or a radio in the vicinity, some noise may occur on the equipment. If this happens, do the following:

Place the equipment as far away as possible from the TV or radio.

Change the orientation of the antenna of the TV or radio.

Plug the electronic equipment into separate electrical outlets.



Anti-earthquake measures

Strong vibration such as that generated by an earthquake could cause the equipment to move and fall, resulting in serious accidents.

In order to prevent disastrous outcomes, consult a maintenance company or an expert business for developing counter-seismic measures and implement them accordingly.



Handling the hard disk

The hard disk is a precision instrument. Handle it carefully when you use it. Inappropriate handling may result in hard disk failure.

When carrying the system equipment or hard disk, handle it carefully and do not vibrate or hit it. Before handling the hard disk, remove static electricity or wear cotton gloves.

Before moving the system equipment, turn off the power, remove the power plug from the electrical outlet, and wait at least 30 seconds.



Rat control

Rats can cause the following damage to a computer system:

Breakage of cable sheaths

Corrosion, contact failure, or soiled parts inside the equipment

In order to prevent the above damage, consult a maintenance company or an expert business for developing rat control measures and implement them accordingly.

NOTICE



Implementing a disk array

You must not change the disk array during system operations. Otherwise, the system would lose all data.

If you select [New Configuration], the hard disk will lose all data.



Power operation

Follow the prescribed procedure for power operation. Power input or output not according to the prescribed procedure may cause problems to the system equipment.



Faulty disk

If you attempt to replace a faulty disk using an incorrect procedure, data on the disk may be corrupted. Before starting disk replacement work, back up the data.

Replacing a hard disk without failure will corrupt the data on it. Do not remove any hard disk other than the faulty disk.



Connecting a cable to the management module

When you connect the management module over a network, the system will incur an error if a device assigned with the same IP address as for the BMC on the management module or server blade exists on the network.

After the end of a network configuration, connect a cable to the management module.



N + M cold standby function

When the N+M cold standby function is enabled, Pre-configuration is automatically executed and the status LED (CND) on the server blade lights solid green after the POWER LED on the front panel lights solid orange. Confirm that the POWER LED of the front panel lights solid orange to show Pre-configuration is completed before executing step 3 described above.

Make sure to use the same LPAR manager firmware version as the active partition for the standby partition. Otherwise, N+M failover may fail.

Do not move the EFI Shell to the highest booting priority in the EFI Setup menu. If the EFI Shell is on the top of the boot option, the OS will not successfully boot after N+M switching and failback.

For a Xeon server blade, executing the Pre-configure automatically changes the SAN booting priority to the lowest of the priority settings.

If you change the LPAR configuration (processors, memory, or device assignment), make sure to implement [F9]: "Save Configuration" on the LPAR manager Menu screen. For details, refer to "Saving Settings on the LPAR manager Screen".

When a switching alert is issued by the BSM command execution, the active partition is forcibly powered off.

First Aid for Electric Shock

First aid is the help you can provide before you can get professional medical help. For serious conditions, it is vitally important to take the victim to a doctor as soon as possible. Have someone call an ambulance at once while you apply first aid.

Break the victim's contact with the source of electricity in the quickest safe way possible. Turn off the main switch of the power distribution panel immediately and ground the circuits. Remove the victim from contact with the current, using a dry wooden pole, a dry rope or dry clothing. Do not touch the victim before contact with the current is broken.

Warning labels

Warning labels can be found at the following locations on the system equipment.

<Hitachi Compute Blade system equipment>

1

Install driver on Linux

This chapter describes how to install, update and roll back the driver on Linux.

Install driver to SAN with Hitachi Gigabit Fibre Channel Adapter

In order to install OS to SAN, it is necessary to perform "(1) prepare the driver CD media" of the following procedure.

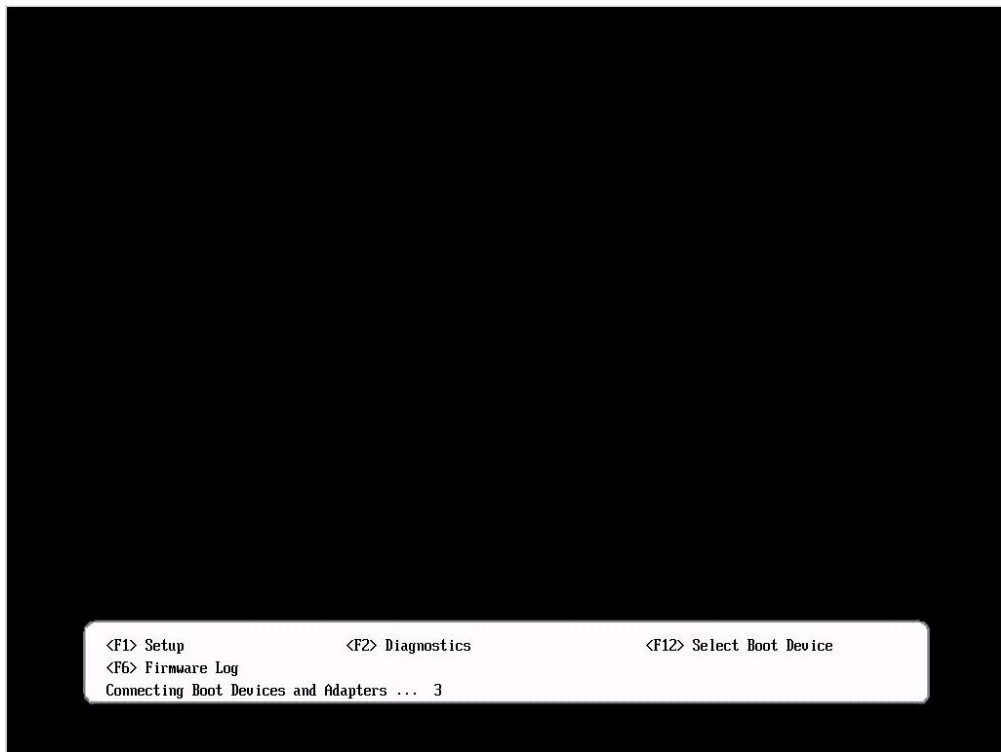
1. SUSE Linux Enterprise Server

(1) Prepare the driver CD media

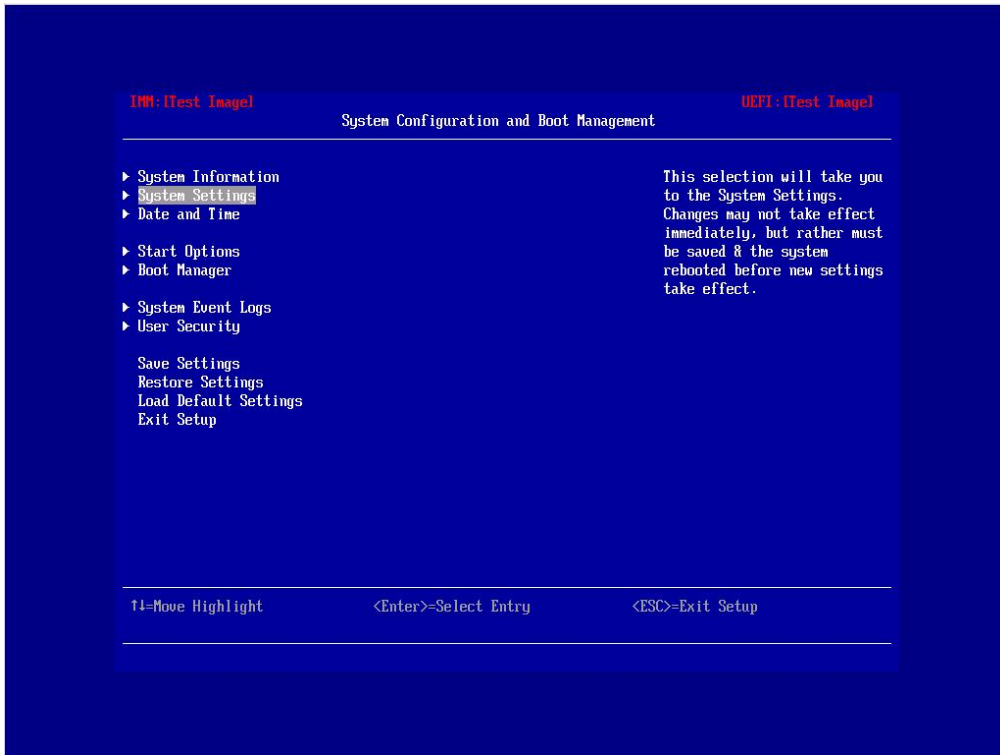
Please prepare the driver CD-ROM media (Driver & Utility CD for SuSE Linux) appended to this product.

(2) Please insert SUSE Linux Enterprise Server installation media in a USB DVD-ROM drive, and turn on the server.

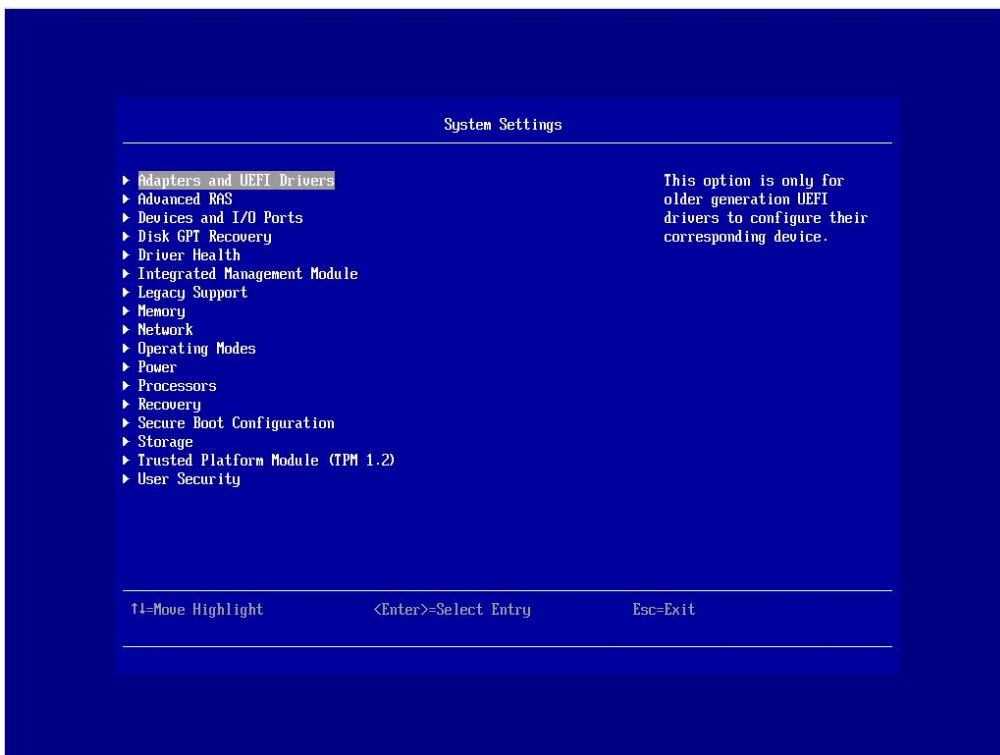
(3) Since the message, "Connecting Boot Devices and Adapters --" is displayed, press F1 key.



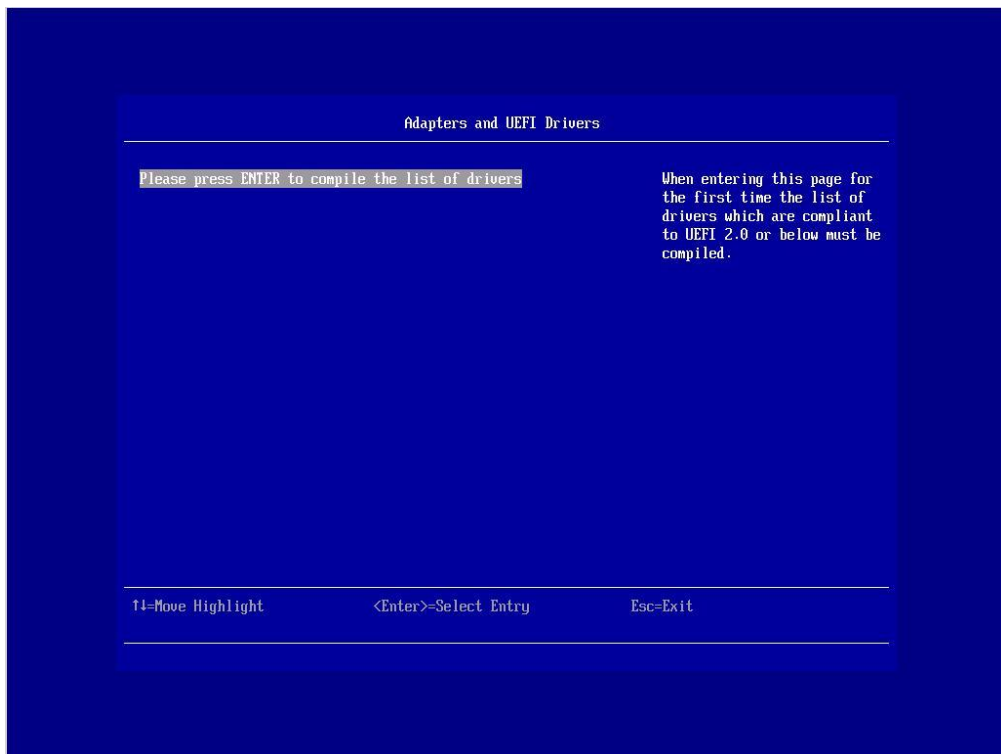
- (4) When the screen, "System Configuration and Boot Management" is displayed, choose "System Settings" and press the Enter key.



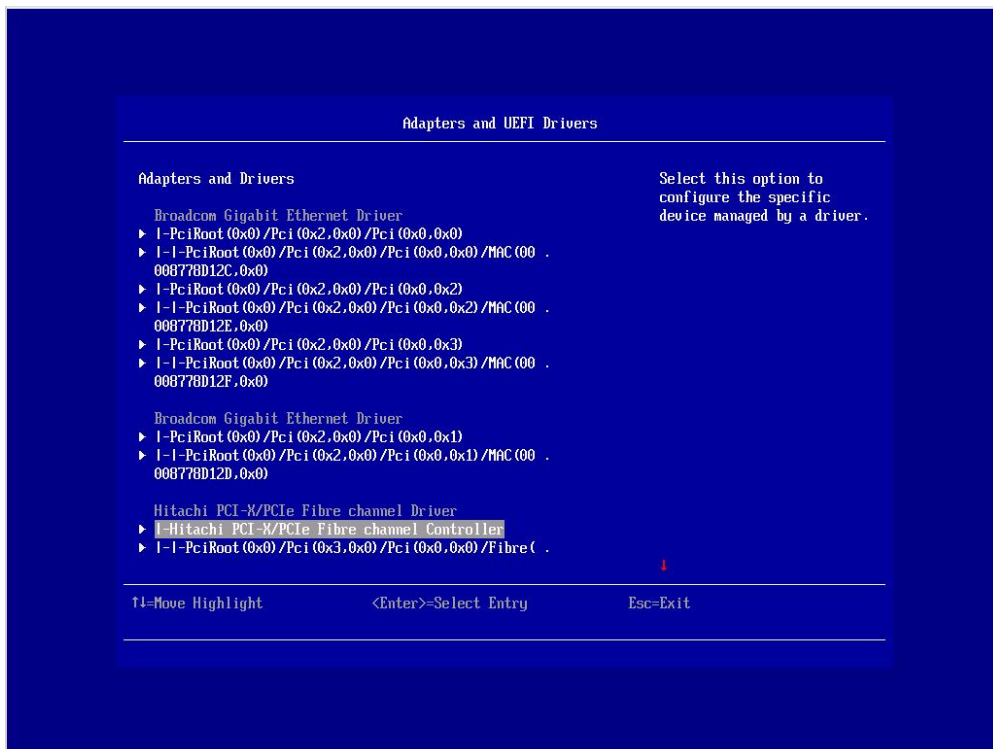
- (5) When "System Settings" screen is displayed, please choose "Adapters and UEFI Drivers" and press the Enter key.



(6) When "Adapters and UEFI Drivers" screen is displayed, please press the Enter key.



(7) Please choose "I-Hitachi PCI-X/PCIe Fibre channel Controller" and press the Enter key.



(8) Please refer to "4. EFI driver" -> "Parameters available on EFI driver" -> "Procedure to set option parameters" -> "Procedure to set a Boot Function to Enable" of "HITACHI Gigabit Fibre Channel adapter user's guide (BIOS/EFI Edition)" and do the procedure.

- (9) When the menu screen for boot is displayed, please choose "Installation" and press the e key.

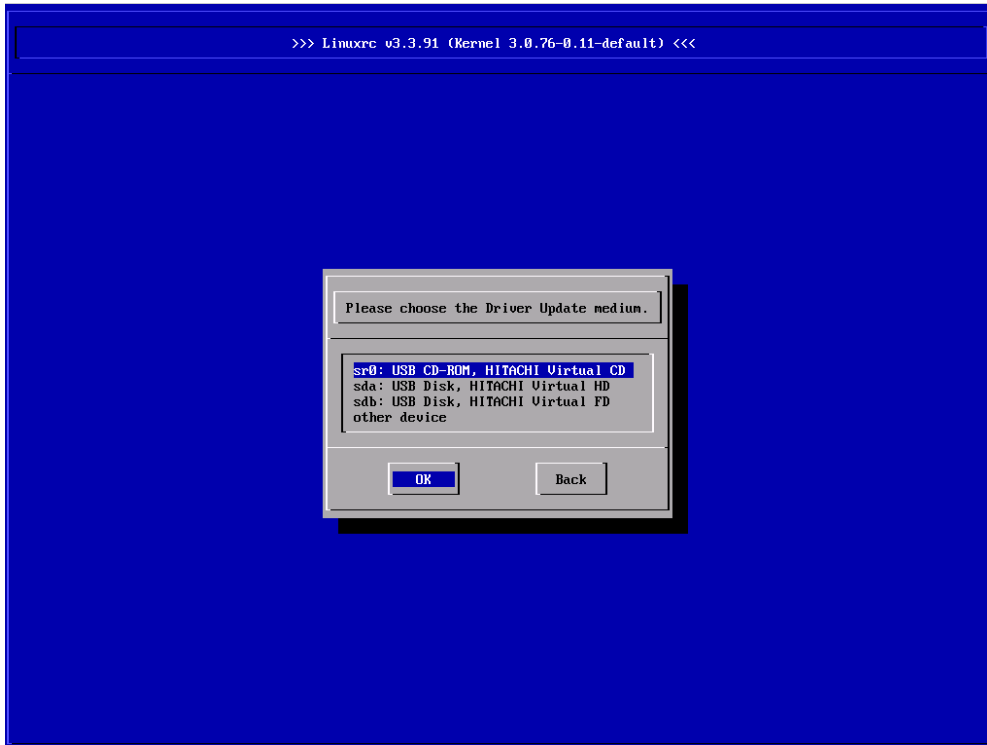


- (10) When the edit display of the "Installation" entry is displayed, please add "dud=1" to the end of the "linuxefi" line, and press the F10 key.

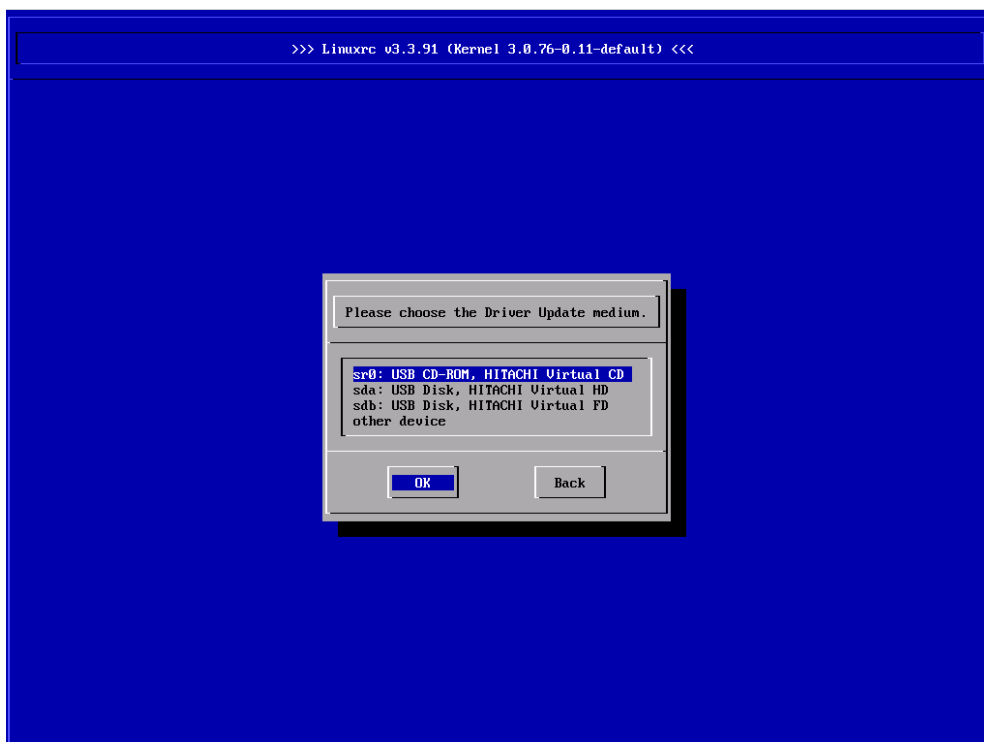


(11) "Please choose the Driver Update medium." message is displayed, then change "Driver & Utility CD for SuSE Linux" to "SUSE Linux Enterprise Server installation" media.

And please choose a USB DVD-ROM drive (example: sr0), and press Enter key.



(12) When "Please choose the Driver Update medium." message is displayed again, please insert DVD-ROM of SUSE Linux Enterprise Server installation media exchanged by (11) in the DVD drive, choose "Back", and press the Enter key.



(13) When the following screen is displayed, please install OS according to the installation manual of SUSE Linux Enterprise Server, and move on to "Install SUSE driver".



Install SUSE driver

Installing SUSE driver

(1) Get the RPM packages

For Hitachi Compute Blade system, the RPM packages are stored in "Driver & Utility CD for SuSE Linux" CD-ROM and its directory is as follows.

```
/Hitachi/
```

| # | RPM package name | Description |
|---|---|-------------|
| 1 | htc-hfcldd-kmp-default-<driver version>_<build kernel version>-<release version>.sles11sp3.<machine type>.rpm | Driver |
| 2 | htc-hfcldd-tools-<driver version>-<release version>.sles11sp3.<machine type>.rpm | Utility |

Copy the RPM packages into /tmp following the procedure below.

```
# mount /media/cdrom  
# cp /media/hfc_media/linux/x86_64/sles11sp3/*.rpm /tmp/
```

(2) Install the RPM packages

Install two RPM packages, driver and utility. You can install the two RPM packages either with one command or one by one. The following is an example of the driver version 4.11.17.2166 to explain the procedure.

Only super user can install RPM packages.

```
# cd /tmp
```

Note 1) If you haven't login as super user, type 'su' to switch to super user before executing the 'cd' command.

To install two packages together with one command :

```
# rpm -ivh --force htc-hfcldd-kmp-default-4.11.17.2166-1.sles11sp3.x86_64.  
rpm htc-hfcldd-tools-4.11.17.2166-1.sles11sp3.x86_64.rpm
```

To install two packages one by one :

```
# rpm -ivh --force htc-hfcldd-kmp-default-4.11.17.2166-1.sles11sp3.  
x86_64.rpm  
# rpm -ivh --force htc-hfcldd-tools-4.11.17.2166-1.sles11sp3.x86_64.rpm
```

Note 2) When you install the RPM packages one by one, the driver has to be installed before the utility. Otherwise the installation will fail.

Note 3) Utility is stored in /opt/hitachi/drivers/hba.

Note 4) Do not specify -U or -F option when executing rpm command.
Specifying these options may cause a system hung-up or a system crash.

Note 5) Be sure to install the both RPM packages, driver and utility. If no utility is installed, the error log required for failure analysis cannot be collected.

(3) Confirm the driver version

Check the version.txt stored in /opt/hitachi/drivers/hba, and confirm that the driver's version is same as the RPM package.

more version.txt

```
* Version 4.11.17.2166      Fri Nov  2 2012
```

(4) Load the driver

Reboot the system to load the new driver.

reboot

Confirm the driver version

Be sure that all of the installed Hitachi FC HBA cards were recognized by linux.

```
# ls /proc/scsi/hfcldd
```

```
0 1 ..... (SCSI host numbers of the recognized HBA cards are displayed)
```

```
# cat /proc/scsi/hfcldd/<scsi host number>
```

```
Hitachi PCI to Fibre Channel Host Bus Adapter
  Driver version 4.11.17.2166 Firmware version 30045d
  Package_ID           = 0x91
  Special file name     = hfcldd0
  .....
```

Please check the version of installed driver and whether the version is in agreement.

Update the driver

Please install driver again according to the procedure of “Install driver”. When the driver version is downgraded, the procedure is the same as the procedure of “Install driver”.

Uninstall driver

Do not uninstall driver when booting from SAN.

Uninstalling driver may cause a system hung-up or a system crash

Otherwise, follow the procedure shown in section below.

Uninstalling SUSE Linux Enterprise Server driver

Uninstall the driver and the utility following the procedures below.

(1) Uninstall the RPM packages

Uninstall the two installed RPM packages, driver and utility. You can uninstall the two RPM packages either with one command or one by one.

The following is an example of the driver version 4.11.17.2166 to explain the procedure.

Only super user can uninstall RPM packages.

```
# cd /tmp
```

Note 1) If you haven't login as super user, type 'su' to switch to super user before executing the 'cd' command.

To uninstall two packages together with one command :

```
# rpm -e htc-hfcldd-kmp-default-4.11.17.2166-1.sles11sp3.x86_64
htc-hfcldd-tools-4.11.17.2166-1.sles11sp3.x86_64
```

To install two packages one by one :

```
# rpm -e htc-hfcldd-tools-4.11.17.2166-1.sles11sp3.x86_64
# rpm -e htc-hfcldd-kmp-default-4.11.17.2166-1.sles11sp3.x86_64
```

Note 2) When you uninstall the RPM packages one by one, the utility has to be uninstalled before the driver. Otherwise the uninstallation will fail.

Note 3) Kernel ramdisk image is updated by uninstalling the RPM packages. See "Notes at the time of renewal of RAMDISK" after uninstallation.

(2) Check the install log

Check the messages in /tmp/hfcldd_install.log, and confirm "Uninstall Success" is recorded.

```
----- Uninstall @Hitachi Fibre Channel Adapter Driver - Tue Nov 6 15:26:55
JST 2012
      Modify /etc/modprobe.d/hfcldd_param.conf
----- Uninstall Success
```

(3) Unload the driver

Reboot the system to unload the driver.

```
# reboot
```

(4) Confirm the driver and utility uninstalled

Confirm /hfcldd directory no more exists in /proc/scsi

```
# ls /proc/scsi
```


Notes at the time of renewal of RAMDISK

Note at the time of installing, updating or uninstalling the driver

You have to update the RAMDISK image when installing, updating or uninstalling the driver. Update appropriate RAMDISK image with reference to the setting file of the boot loader such as grub.conf or elilo.conf.

Update RAMDISK image

Update the RAMDISK image executing the following commands.

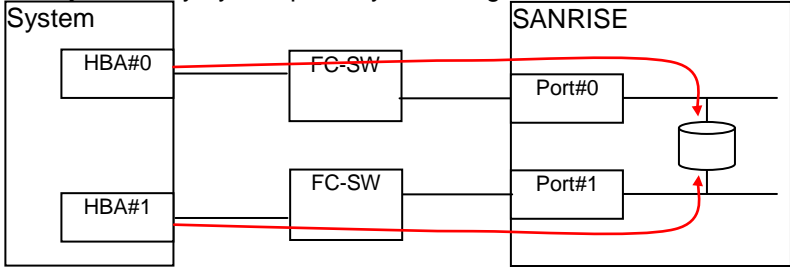
```
# cd /boot
```

```
# /sbin/mkinitrd -k <vmlinuz-file-name> -i <initrd-file-name>
```

2

Restrictions

SLES11

| # | Restrictions |
|---|---|
| 1 | FC HUB is not supported. |
| 2 | <p>Installing OS to the LU which can be identified from one or more path. Use the LUN security function (*1) of the disk device so that the LUN can be referred from the system only by one path if your configuration meets this condition.</p>  |
| 3 | <p>When you replace SFP by Hot-swap, be sure that the target path has redundant path and one or more operational path exist to be switched. If no redundant path exist to be switched, replace the SFP after shutting down the server or confirm that the application program does not use the target path.</p> <p>If it is necessary to replace SFP when it is used as a boot path and no redundant path exist to be switched, you must shutdown the server and replace the SFP.</p> |
| 4 | <p>The PCI passthrough function in KVM is not supported.</p> <p>Please do not set intel_iommu or amd_iommu to kernel start optional in "grub.conf".</p> |
| 5 | <p>In the configuration which linked the adapter port and the disk device directly in connection type "loop", although the logs of ErrNo:0x15 which indicates Link Up interruption and the ErrNo:0x14 which indicates Link Down interruption at the time of OS booting are output, and the event log of ErrNo:0x0e may be further output to syslog, it does not affect on the driver operation.</p> |

(*1) Function to make only logical device (LUN) decided beforehand for system accessible.

3

Link Down time

Link Down Time Parameter

Notes about the waiting time (Link Down Time) which waits for linkup in order that the driver tries resending of the SCSI command after link down occurred at the time of SLES11 use are explained.

In SLES11, in order that a driver tries resending of the SCSI command after link down occurred, When the change of waiting time (Link Down Time) which waits for linkup is needed, the rewriting of the "dev_loss_tmo" parameter can change the waiting time.

The "dev_loss_tmo" parameter is set as the optimal value in the general usage in the state immediately after installation. Usually, it is not necessary to change this value.

Please refer to "a display and setup steps of dev_loss_tmo" for the procedure of displaying or changing the value of the "dev_loss_tmo" parameter.

In other OS's (example: RHEL6), when the change of waiting time (Link Down Time) is needed, it is possible to change waiting time (Link Down Time) by using "-p option of the hfcmgr command", but in SLES11, it is not necessary to use "-p option of the hfcmgr command" at the purpose of specifying waiting time (Link Down Time).

In SLES11, when "-p option of the hfcmgr command" is used, as shown in the following figure, in the default state, the column of Link Down Time is displayed as 0 second.

```
# ./hfcmgr -p hfcldd0
Time: xxxx/xx/xx xx:xx:xx
-----
WWPN:50000870003021e0 Device:hfcldd0 [LinkUp]
-----
Connection Type   : Point to Point[fabric] (Point to Point)
Link Speed        : 1Gbps (1Gbps)
Max Transfer Size : 16 MB (-)
Login Delay Time  : 0 sec (-)
Link Down Time    : 0 sec (-)
Reset Delay Time  : 19 sec (-)
Preferred AL-PA   : 0x01 (-)
Reset Timeout     : 20 sec (-)
Abort Timeout     : 8 sec (-)
Queue Depth       : 32 (-)
Machine Check     : 8 (-)
Allowed           : 5 (-)
Target Reset Mode : off (-)
LUN Reset Delay   : 0 (-)
Interrupt Type    : Legacy Mode (-)
Logging Mode      : default (-)
Login Target Filter : none (-)
```

In the default state, it is set as 0.

Display and setup procedures of dev_loss_tmo

[Function] Display of dev_loss_tmo

[Syntax]

```
<display> cat /sys/class/fc_remote_ports/rport-xxxx/dev_loss_tmo
```

Since dev_loss_tmo exists for every SCSI target, the character string which goes into the portion of "xxxx" with a SCSI target changes.

Please display the dev_loss_tmo parameter of each SCSI target to check dev_loss_tmo to two or more SCSI targets.

[Function] Setup of dev_loss_tmo

[Syntax]

```
<Setup> echo <setup value> > /sys/class/fc_remote_ports/rport-xxxx/dev_loss_tmo
```

Since dev_loss_tmo exists for every SCSI target, the character string which goes into the portion of "xxxx" with a SCSI target changes.

Please set the dev_loss_tmo parameter of each SCSI target to set up dev_loss_tmo to two or more SCSI targets.

The value set up by this method is reset by the initial value (15) after reboot of OS.

Please execute "[Function] Setup of the initial value of dev_loss_tmo" to change an initial value.

[Function] Setup of the initial value of dev_loss_tmo

[Syntax]

```
<Setup> /opt/hitachi/drivers/hba/hfcmgr -E hfc_dev_loss_tmo <setup value>
```

After hfcmgr command execution, in order to reflect the setting, please update a RAMDISK image in the procedure of "updating procedure of a RAMDISK image."

dev_loss_tmo changing by Device mapper multipath

When you use Device mapper multipath in SLES11, Device mapper multipath may update the value of dev_loss_tmo automatically after OS starting.

When the actual display of dev_loss_tmo differs from the value which you set as dev_loss_tmo, please confirm a setup and operation of Device mapper multipath.

The configuration file of Device mapper multipath is /etc/multipath.conf.

The value of dev_loss_tmo may be updated by default operation of Device mapper multipath even if it is a case where /etc/multipath.conf does not exist.

fast_io_fail_tmo changing by Device mapper multipath

When you use Device mapper multipath in SLES11, Device mapper multipath may update the value of fast_io_fail_tmo automatically after OS starting.

When the value is set except "off" to fast_io_fail_tmo, instead of dev_loss_tmo, the value of fast_io_fail_tmo is used on OS as "waiting time which waits for linkup in order that the driver tries resending of the SCSI command after link down occurred".

When the value is set except "off" to fast_io_fail_tmo, please confirm a setup and operation of Device mapper multipath.

The configuration file of Device mapper multipath is /etc/multipath.conf.

The value of fast_io_fail_tmo may be updated by default operation of Device mapper multipath even if it is a case where /etc/multipath.conf does not exist.

[Function] Display of fast_io_fail_tmo

[syntax]

```
<Display> cat /sys/class/fc_remote_ports/rport-xxxx/fast_io_fail_tmo
```

Since fast_io_fail_tmo exists for every SCSI target, the character string "xxxx" varies depending on SCSI target ID.

Please display the fast_io_fail_tmo parameter of each SCSI target to check link down time to two or more SCSI targets.

[Function] Setup of fast_io_fail_tmo

[Syntax]

```
<Setup> echo <setup value> > /sys/class/fc_remote_ports/rport-xxxx/fast_io_fail_tmo
```

Since fast_io_fail_tmo exists for every SCSI target, the character string "xxxx" varies depending on SCSI target ID.

Please set the fast_io_fail_tmo parameter of each SCSI target to set up fast_io_fail to two or more SCSI targets.

The value set up by this method has a case rewritten by other software than a driver (example: Device mapper multipath).

Example: By changing the configuration file (/etc/multipath.conf) of Device mapper multipath, it is possible to change the value set as fast_io_fail_tmo.

For details, please refer to the manual of Device mapper multipath.

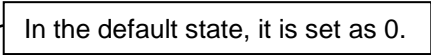
Notes at the time of Login Delay Time parameter change

Notes about "the waiting time (Login Delay Time) for delaying the login processing to a device" at the time of SLES11 use are explained.

In SLES11, when change of "the waiting time (Login Delay Time) for delaying the login processing to a device" is needed, it is possible to change the waiting time by using "-p option of the hfcmgr command". Please refer to a user's guide (utility software edition) for the details of "-p option of the hfcmgr command."

In SLES11, when "-p option of the hfcmgr command" is used, as shown in the following figure, in the default state, the column of Login Delay Time is displayed as 0 second.

```
# ./hfcmgr -p hfcldd0
Time: xxxx/xx/xx xx:xx:xx
-----
WWPN:50000870003021e0 Device:hfcldd0 [LinkUp]
-----
Connection Type   : Point to Point[fabric] (Point to Point)
Link Speed        : 1Gbps (1Gbps)
Max Transfer Size : 16 MB (-)
Login Delay Time : 0 sec (-)
Link Down Time    : 0 sec (-)
Reset Delay Time  : 19 sec (-)
Preferred AL-PA   : 0x01 (-)
Reset Timeout     : 20 sec (-)
Abort Timeout     : 8 sec (-)
Queue Depth      : 32 (-)
Machine Check     : 8 (-)
Allowed           : 5 (-)
Target Reset Mode : off (-)
LUN Reset Delay   : 0 (-)
Interrupt Type    : Legacy Mode (-)
Logging Mode      : default (-)
Login Target Filter : none (-)
```



In SLES11, when "the waiting time (Login Delay Time) for delaying the login processing to a device" is changed, it is necessary to add to the value of dev_loss_tmo/fast_io_fail_tmo. About the method of changing the value of dev_loss_tmo/ fast_io_fail_tmo, Please refer to "Display and setup steps of dev_loss_tmo", and "fast_io_fail_tmo changing by Device mapper multipath".

Example 1: when Login Delay Time is 2 and fast_io_fail_tmo is "off", please set "the value which added 2 to the value of dev_loss_tmo" as dev_loss_tmo.

Example 2: when Login Delay Time is 2 and fast_io_fail_tmo is a value except "off", please set "the value which added 2 to the value of fast_io_fail_tmo" as fast_io_fail_tmo.

HITACHI
Gigabit Fibre Channel Adapter
USER'S GUIDE
(SUSE Linux Enterprise Server driver Edition)

Revision 1

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