Red Hat Enterprise Linux AS
(v.4 for Itanium)

Software Guide for PRIMEQUEST

- Basic -

FUJITSU
Preface

This book is a manual to use Red Hat Enterprise Linux AS (v.4 for Itanium) on PRIMEQUEST. It describes important information and reference information for using Red Hat Enterprise Linux AS (v.4 for Itanium) on PRIMEQUEST.

- Target machine and software

<table>
<thead>
<tr>
<th>Model</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIMEQUEST 580/540/520</td>
<td>Red Hat Enterprise Linux AS (v.4 for Itanium) Update 2</td>
</tr>
<tr>
<td></td>
<td>Red Hat Enterprise Linux AS (v.4 for Itanium) Update 4 or later</td>
</tr>
<tr>
<td>PRIMEQUEST 580A*/540A*/520A*/510A*</td>
<td>Red Hat Enterprise Linux AS (v.4 for Itanium) Update 6 or later</td>
</tr>
<tr>
<td>PRIMEQUEST 480/440</td>
<td>Red Hat Enterprise Linux AS (v.4 for Itanium)</td>
</tr>
<tr>
<td>PRIMEQUEST 420</td>
<td>Red Hat Enterprise Linux AS (v.4 for Itanium) Update2 or later</td>
</tr>
</tbody>
</table>

*: PRIMEQUEST model(s) not supported by Fujitsu Technology Solutions

- Red Hat Enterprise Linux AS (v.4 for Itanium) Update 1 is not supported by Fujitsu.

- Manual structure

<table>
<thead>
<tr>
<th>Chapter 1 Outline</th>
<th>This chapter explains the outline, new functions, and restrictions of Red Hat Enterprise Linux AS (v.4 for Itanium). It also contains information to be confirmed before using PRIMEQUEST.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 2 Introduction</td>
<td>This chapter explains the introduction of Red Hat Enterprise Linux AS (v.4 for Itanium) onto the PRIMEQUEST system. It contains information related to installation, such as preparation, workflow, and points to note. (For more details, confirm the manuals for the respective models.)</td>
</tr>
<tr>
<td>Chapter 3 Software Update Procedures</td>
<td>This chapter explains the procedures for updating the Red Hat Enterprise Linux AS (v.4 for Itanium) on PRIMEQUEST systems.</td>
</tr>
<tr>
<td>Chapter 4 Setting and Collecting Dump</td>
<td>This chapter explains settings for coredump, and important points related to dump.</td>
</tr>
<tr>
<td>Chapter 5 Notes on Usage</td>
<td>This chapter explains points you should note when using Red Hat Enterprise Linux AS (v.4 for Itanium). (Confirm this information depending on your needs.)</td>
</tr>
<tr>
<td>Appendix</td>
<td>This chapter explains the composition of Red Hat Enterprise Linux AS (v.4 for Itanium), and reference information for setting on PRIMEQUEST.</td>
</tr>
</tbody>
</table>
- **Product names**

  Product names in the manual are abbreviated as follows.

<table>
<thead>
<tr>
<th>Product name</th>
<th>As written in the manual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Hat Enterprise Linux AS (v.4 for Itanium)</td>
<td>RHEL-AS4(IPF)</td>
</tr>
<tr>
<td>Red Hat Enterprise Linux AS (v.4 for Itanium) Update n</td>
<td>RHEL-AS4(IPF) U_n [*1]</td>
</tr>
<tr>
<td>Red Hat Enterprise Linux AS (4.(n) for Itanium)</td>
<td>RHEL-AS4.(n)(IPF) [*1]</td>
</tr>
<tr>
<td>Red Hat Enterprise Linux 5 (for Intel Itanium)</td>
<td>RHEL5(IPF)</td>
</tr>
</tbody>
</table>

  *1: The number of Update version enters for "n".
  Update release of RHEL-AS4.5(IPF) or later describes RHEL-AS4.\(n\)(IPF).

- **Symbols in the manual**

  The following symbols are used in this manual.

  | ![Important](image) | This symbol indicates important points that should be noted. Make sure you read these or the system might not work normally. |
  | ![Point](image) | This symbol indicates reference information. |
  | ![Reference](image) | This symbol indicates a reference page or reference manual. |

  The following symbol indicates the version of RHEL-AS4(IPF). This symbol is listed as the version information.

  | ![Version](image) | This symbol indicates the RHEL-AS4(IPF) GM (General Master). |
  | ![Update](image) | This symbol indicates the RHEL-AS4(IPF) U2. |
  | ![Update](image) | This symbol indicates the RHEL-AS4(IPF) U3. |
  | ![Update](image) | This symbol indicates the RHEL-AS4(IPF) U4. |
  | ![Version](image) | This symbol indicates the RHEL-AS4.5(IPF). |
  | ![Version](image) | This symbol indicates the RHEL-AS4.6(IPF). |
  | ![Version](image) | This symbol indicates the RHEL-AS4.7(IPF). |
  | ![Version](image) | This symbol indicates the RHEL-AS4.8(IPF). |

  The variable alphanumeric characters are indicated as follows.

  | A | Variable alphabetic characters. |
  | \(n\) | Variable numeric characters (0-9). |
Components of RHEL-AS4(IPF)

RHEL-AS4(IPF) is a product of the Red Hat Enterprise Linux family.
Each product in the Red Hat Enterprise Linux family shares core components of the software such as the
kernel, libraries, development tools chain and utilities.
It is shipped with the package product named "RED HAT ENTERPRISE LINUX Version 4".
See "Appendix A Product Components" (→ pg.61) to confirm the contents of the component table.

Manuals for RHEL-AS4(IPF)

Red Hat, Inc. offers the following two manuals.
  Stored in the "RED HAT ENTERPRISE LINUX AS VERSION 4 for Intel Itanium INSTALLATION
  DISC" DVD bundled with the product. If you cannot use the DVD, try the following URL.
  http://www.redhat.com/docs/manuals/enterprise/
- On-line Manual (man)
  This is an on-line manual on each command. Use the command man(1) to display.

Reference documents

Explanations in this manual refer to the following documents.

- PRIMEQUEST bundled manual
  
<table>
<thead>
<tr>
<th>Manual Name</th>
<th>Manual Code</th>
<th>Book Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIMEQUEST Bundled-Software Package Installer</td>
<td>C122-E006-nnEN [*2]</td>
<td>&quot;PRIMEQUEST Bundled-Software Package Installer&quot;</td>
</tr>
</tbody>
</table>

* : PRIMEQUEST model(s) not supported by Fujitsu Technology Solutions.
*1: These manuals are available at
*2: These manuals are available at
  (download “Driver for RHEL4” which contain the manuals)
Reference information

Reference URLs

- Technical support and the Red Hat Network registration procedure
  https://www.redhat.com/apps/support/
- RHEL-AS4(IPF) manual
  http://www.redhat.com/docs/manuals/enterprise/

Information regarding PRIMEQUEST

Fujitsu Technology Solutions’ support websites provide information about supported kernel versions on PRIMEQUEST systems. Also, Fujitsu drivers for each supported kernel are available from the websites.

Fujitsu Technology Solutions’ support websites can be found at:

http://support.ts.fujitsu.com/com/support/downloads.html
(select “Mission Critical IA Server” as product)

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# Contents

1 Outline ................................................................. 9  
   1.1 Features of RHEL-AS4(IPF) ......................................... 9  
      1.1.1 Typical Package ............................................. 9  
      1.1.2 RHEL-AS4(IPF) New Features ................................. 10  
   1.2 System Requirements ................................................ 11  
   1.3 kernel and Driver Integrity Information ............................ 11  
   1.4 RHEL-AS4(IPF) Restrictions ........................................ 12  
   1.5 PRIMEQUEST Usage Restrictions ..................................... 13  
      1.5.1 Common Restrictions ......................................... 13  
      1.5.2 PRIMEQUEST 500 series Restrictions ......................... 19  

2 Introduction ............................................................ 23  
   2.1 Pre-Installation Task .............................................. 23  
   2.2 Initial Installation ................................................ 23  
      2.2.1 Local Installation (with a KVM and Installation Support Tool) ................................................. 24  
      2.2.2 Remote Installation (with SystemcastWizard Lite) ................................................................. 25  
   2.3 Post Installation Tasks ............................................. 26  
   2.4 Maintaining the Operating System .................................. 28  

3 Software Update Procedures ............................................ 29  
   3.1 Updating Packages Using the Tool .................................. 29  
      3.1.1 Registering for Software Updates .............................. 29  
      3.1.2 Update ia32el Package Using The up2date Tool ............... 35  
      3.1.3 Updating Packages Using The up2date Tool ................. 39  
   3.2 Updating the kernels on a PRIMEQUEST System ..................... 44  
      3.2.1 Confirming Supported kernel Versions for PRIMEQUEST ........ 44  
      3.2.2 Downloading the Supported kernels from the Red Hat Network .... 44  
      3.2.3 Installing a New kernel and Fujitsu Drivers ............... 45  
      3.2.4 Installing Fujitsu Tools .................................... 47  

4 Setting and Collecting Dump ........................................... 49  
   4.1 Core Dump Settings ............................................... 49  

5 Notes on Usage .......................................................... 51  
   5.1 Notes Concerning the Disk ......................................... 51  
   5.2 Notes Concerning the Device ...................................... 53  
   5.3 Notes on the Hyper-Threading Function ............................ 56  
   5.4 Notes Concerning Maintenance .................................... 56  
   5.5 Notes Concerning Messages ....................................... 57
5.6 Notes Concerning Command ................................................. 59

Appendix A Product Components ........................................... 61

Appendix B Confirming Network Device Settings for PRIMEQUEST ...... 62
B.1 For PRIMEQUEST 580A/540A*/580/540/480/440 ............................. 63
B.1.1 Identification of Two NICs for Management LAN ..................... 63
B.1.2 Changing Network Device Name (Order) ................................. 64
B.1.3 Confirming Network Device Name Modification ............................ 66
B.2 For PRIMEQUEST 520A*/510A*/520/420 .................................... 67
B.2.1 Identification of NIC for management LAN ................................. 67
B.2.2 Changing Network Device Name (Order) ................................. 68
B.2.3 Confirming Network Device Name Modification ............................ 70

Appendix C OS Installation Using USB Flash Memory .................... 71
C.1 Copying the Configuration File to a USB Flash Memory Device ......... 71
C.2 Accessing Configuration File from a USB Flash Memory Device ........ 71
# Outline

This chapter provides an outline of RHEL-AS4(IPF).

- "1.1 Features of RHEL-AS4(IPF)" (→pg.9)
- "1.2 System Requirements" (→pg.11)
- "1.3 kernel and Driver Integrity Information" (→pg.11)
- "1.4 RHEL-AS4(IPF) Restrictions" (→pg.12)
- "1.5 PRIMEQUEST Usage Restrictions" (→pg.13)

## 1.1 Features of RHEL-AS4(IPF)

RHEL-AS4(IPF) contains various technical enhancements from the v.3 release. These enhancements include improved security functions and so on. While maintaining high compatibility with previous versions, server performance and scalability are improved. RHEL-AS4(IPF) is the latest enterprise Linux that is widely compatible with other hardware and software.

### 1.1.1 Typical Package

The following shows the typical package for RHEL-AS4(IPF).

<table>
<thead>
<tr>
<th>Usage (Package Name)</th>
<th>Outline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux kernel (kernel)</td>
<td>Nucleus of the Linux operating system</td>
</tr>
<tr>
<td>Boot Loader (elilo)</td>
<td>ELILO linux boot loader for EFI-based systems</td>
</tr>
<tr>
<td>Standard C (glibc)</td>
<td>GNU libc libraries</td>
</tr>
<tr>
<td>X Window (xorg)</td>
<td>Basic fonts, programs and documents for the X workstation</td>
</tr>
<tr>
<td>Super Server (xinetd)</td>
<td>A secure replacement for inetd</td>
</tr>
<tr>
<td>NFS Server (nfs-utils)</td>
<td>NFS utilities and supporting clients and daemons for the kernel NFS server</td>
</tr>
<tr>
<td>Remote Login (telnet)</td>
<td>Client program for telnet remote login protocol</td>
</tr>
<tr>
<td>File Transfer (vsftpd)</td>
<td>Very Secure Ftp Daemon</td>
</tr>
<tr>
<td>Secure Shell (openssh)</td>
<td>OpenSSH server daemon</td>
</tr>
<tr>
<td>Standard Time Server (ntp)</td>
<td>Synchronizes system time by using Network Time Protocol (NTP)</td>
</tr>
<tr>
<td>Firewall (iptables)</td>
<td>Tools for managing Linux kernel packet filtering capabilities</td>
</tr>
<tr>
<td>Network Monitoring (net-snmp)</td>
<td>A collection of SNMP protocol tools and libraries</td>
</tr>
<tr>
<td>Logical Volume Manager (lvm2)</td>
<td>Userland logical volume management tools</td>
</tr>
<tr>
<td>Log Analysis System (logwatch, logrotate)</td>
<td>logwatch: A log file analysis program logrotate: Rotates, compresses, removes and mails system log files</td>
</tr>
<tr>
<td>Memory dump collection function when system crashes (diskdump)</td>
<td>The diskdump utility</td>
</tr>
</tbody>
</table>
1.1.2 RHEL-AS4(IPF) New Features

The following functions were either added or improved in RHEL-AS4(IPF).
In addition, the functions besides the following functions were added or improved, too. See the documents provided from the Red Hat, Inc. for details.

- diskdump
  A diskdump is composed of the memory dump collection function and the dump analysis function, and is used when the system crashes.
  By using diskdump, it is possible to extract the memory image of the whole system when anything abnormal occurs and quickly identify the root cause of the problem. This allows you to take measures to prevent a similar problem occurring in the future. As a result, a high reliability enterprise system can be constructed.

- udev
  You may not be able to boot the system when unexpected changes are made to device names.
  Device names can be locked by using udev.
  Linux allocates device names in order for various devices such as hard disks having recognized them when the system boots. Because of this, when the system is rebooted after a hard disk or controller crashes, if it does not recognize a particular hard disk, it may be that the device name has been changed.

- Locking network device names
  When LAN cards (NIC: Network Interface Controller) are added or fail in a network system device, a network device name (ethn) may be changed.
  In this situation, there is a chance that enterprise applications, middleware or the entire system (network environment) could be influenced.
  Locking the network device names prevents any unexpected changes to network device names.
1.2 System Requirements

The following table shows the system requirements for RHEL4-AS4 (IPF) in PRIMEQUEST.

<table>
<thead>
<tr>
<th>Model</th>
<th>CPU [*1]</th>
<th>Memory</th>
<th>Maximum available size for a block device</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum</td>
<td>Maximum</td>
<td>Minimum [*2]</td>
</tr>
<tr>
<td>PRIMEQUEST 580A/580</td>
<td>1 CPU</td>
<td>32 CPU</td>
<td>1 GB</td>
</tr>
<tr>
<td>PRIMEQUEST 540A*/540</td>
<td>1 CPU</td>
<td>16 CPU</td>
<td>1 GB</td>
</tr>
<tr>
<td>PRIMEQUEST 520A*/520</td>
<td>1 CPU</td>
<td>8 CPU</td>
<td>1 GB</td>
</tr>
<tr>
<td>PRIMEQUEST 510A*</td>
<td>1 CPU</td>
<td>4 CPU</td>
<td>1 GB</td>
</tr>
<tr>
<td>PRIMEQUEST 480</td>
<td>1 CPU</td>
<td>32 CPU</td>
<td>1 GB</td>
</tr>
<tr>
<td>PRIMEQUEST 440</td>
<td>1 CPU</td>
<td>16 CPU</td>
<td>1 GB</td>
</tr>
<tr>
<td>PRIMEQUEST 420</td>
<td>1 CPU</td>
<td>8 CPU</td>
<td>1 GB</td>
</tr>
</tbody>
</table>

* : PRIMEQUEST model(s) not supported by Fujitsu Technology Solutions.
*1: In the case of PRIMEQUEST 500 Series, the numbers of CPU core are as many again as one of CPU shown in "table Operating environments" because those CPU type is dual core type.
*2: The minimum memory size depends on the middleware and other programs used in the system, since they require a certain amount of memory to run.
*3: Before mounting memory exceeding 256 GB in one partition by connecting PRIMEQUEST system boards, consult the contact of the sites.

1.3 kernel and Driver Integrity Information

The following gives the integrity information for kernel and drivers.

- **kernel information**

  The kernel versions supported with PRIMEQUEST differs depending on the models. Please confirm the latest kernel information at the following URL.

  **Fujitsu Technology Solutions' Site:**
  
  
  (select “Mission Critical IA Server” as product)

- **Driver information**

  The driver used differs for each kernel version and each model. Please confirm the latest driver information at the following URL.

  **Fujitsu Drivers in the following Site:**
  
  
  (select “Mission Critical IA Server” as product)
1.4 RHEL-AS4(IPF) Restrictions

A few functions are restricted in RHEL-AS4(IPF). Make sure to confirm these before use.

- "sysreport command" (→pg.12)

**sysreport command**

(U4)

- Restrictions

When sysreport command or the System Data Output Tool (fjsnap) is executed with the DNS service used on RHEL-AS4(IPF) U4, their processes are not completed.

- Detailed information

The following problems occur due to the trouble of sysreport command included in RHEL-AS4(IPF) U4.

When you execute sysreport command or fjsnap on the following condition, their processes are not completed by deadlock of sysreport command.

- On the system where RHEL-AS4(IPF) U4 has been installed, and
- The DNS service (bind package) is installed, and
- The DNS service is used. (The named service is started.)

- Action to be taken

Please correct the file of sysreport command as follows.

The 48th line of /usr/share/sysreport/functions file:

[Before change]

```
/bin/cp --parents -R $1 $ROOT 2>>$ROOT/$log
```

[After change]

```
/bin/cp --parents -R $1 $ROOT 2>>$ROOT/$log
```

- Restriction release date

Released the restriction in RHEL-AS4.5(IPF).
1.5 PRIMEQUEST Usage Restrictions

This section explains restricted function in using PRIMEQUEST.

1.5.1 Common Restrictions

For all models of PRIMEQUEST, the following functions are restricted.

- "Using Wake up On LAN (WOL)" (→pg.13)
- "Serial console or console redirection" (→pg.14)
- "kernel boot option settings "mem=\"" (→pg.14)
- "Communication settings for hosts.allow and hosts.deny files" (→pg.14)
- "How to exit runlevel 1" (→pg.16)
- "PCI hotplug function" (→pg.17)
- "When starts the PSA service" (→pg.18)
- "Hotplugging 10Gigabit LAN Card" (→pg.18)
- "Hotplugging PCI Express cards" (→pg.18)

Using Wake up On LAN (WOL)

GM U2 U3 U4 4.5 4.6 4.7 4.8

- Restrictions

RHEL-AS4(IPF) is not compatible with the remote power control function Wake up On LAN (WOL).

- Detailed information

Functions of software products (Systemwalker, etc.) compatible with WOL can not be used.

- Restriction release date

To be determined.
Serial console or console redirection

- Restrictions
  Please do not use serial console or console redirection, use VGA console instead.

- Detailed information
  When using serial console, boot or shutdown process sometimes sleeps because there is lack of
  consideration for exclusive access control in serial driver’s console process.
  In this case, the status display on MMB Web-UI does not change and displays [OS Shutdown] or
  [Panic].

- Restriction release date
  Released the restriction in RHEL-AS4.5(IFP).

Kernel boot option settings "mem="

- Restrictions
  In PRIMEQUEST, the kernel boot option "mem=" is not supported. Do not use it.

- Detailed information
  In PRIMEQUEST, the kernel boot option "mem=" is not supported.
  If the kernel boot option "mem=" is specified in the partition configured with multiple system boards
  (SB), boot may fail depending on specified value of "mem=".

- Restriction release date
  To be determined.

Communication settings for hosts.allow and hosts.deny files

- Restrictions
  When setting communication permission only for localhost in the /etc/hosts.allow file and the /etc/
  hosts.deny file, use "127.0.0.1" instead of "localhost".
Detailed information

When the /etc/hosts.allow file and the /etc/hosts.deny file are set to only communicate, the communication using "localhost" can not be done.

Example:
The PRIMEQUEST Server Agent (PSA) can not obtain the correct information from snmpd if "localhost" is used. As a result, MMB Web-UI can not display information referenced from PSA correctly.

Action to be taken

When setting communication permission only for localhost in the /etc/hosts.allow file and the /etc/hosts.deny file, use "127.0.0.1" instead of "localhost" as shown below.

Setting example

- **hosts.allow**
  ```
  ALL:127.0.0.1
  ```

- **hosts.deny**
  ```
  ALL:ALL
  ```

Restriction release date

To be determined.
How to exit runlevel 1

Restrictions
In the case of the system that is installed OS with Installation Support Tool which is older than V1.0L21, when exiting runlevel 1, do not use the "exit" command.

Detailed information
If you execute "exit" command when exiting runlevel 1, you cannot login again with exiting login shell and execute command operation. Therefore, do not use the exit command when exiting runlevel 1.

Action to be taken
When explains how to change the setting to use the exit command and how to exiting runlevel 1 without using the exit command.

**Using exit command at runlevel 1**
Edit /etc/inittab file to change the following settings.

[Before change]

```
S0:1Ss:respawn:/sbin/agetty ttyS0 19200
```

[After change] (Delete "1Ss")

```
S0:2345:respawn:/sbin/agetty ttyS0 19200
```

In addition, the change is executed as the below example, confirm that the difference of pre-change and post-change is the above modification only.

```
# cp /etc/inittab <backup file name>
# vi /etc/inittab
# diff -u <backup file name> /etc/inittab
```

**Exiting runlevel 1 without using exit command**
Execute either of the following procedure.

- When reboot, "shutdown -r now" or "reboot" command.
- When changing to runlevel 3, execute "init 3"

---

**What to do when you finishing runlevel 1 by using the exit command, and then enter into an operations disabled status.**

- When finishing runlevel 1, if you wrongly execute "exit" command and turn into the command disabled condition, press the following keys on the keyboard at the same time and boot the system. <Ctrl>+<Alt>+<Delete> Key (If it is flat display, press <Fn> Key with them at the same time.)
- If you cannot operate with command, do not execute MMB Web-UI operation that is [Partition] -> [Power Control] except for the last operation.
Restriction release date

In the system which is installed OS with Installation Support Tool V1.0L21 or newer, the restriction is released. The latest Installation Support Tool is released available from FTP Server. Installation Support Tool V1.0L21 is includes in "PRIMEQUEST 480/440/420 Drivers CD for Red Hat Enterprise Linux AS v.4" (RH-V06), "PRIMEQUEST Drivers CD for Red Hat Enterprise Linux AS v.4" (RH-V07) or newer.

PCI hotplug function

Restrictions

Do not use PCI Hotplug function.

Detailed information

Do not use PCI Hotplug function since PCI Hotplug (adding/removing/swapping) can cause system panic due to a bug of sysfs filesystem.

Restriction release date

Released the restriction in RHEL-AS4(IPF) U4 by Fujitsu Driver (shpchp-RHEL4-U4-1.4.0-8.ia64.rpm) of December 2006. Please refer to "1.3 kernel and Driver Integrity Information"(pg.11) to download driver.
When starts the PSA service

- Restrictions
  Do not start the PSA service until OS is rebooted when you update the kernel.

- Detailed information
  Do not start the PSA service until OS is rebooted when you update the kernel. The PSA service starts by way of the old kernel and PSA can not be started.

- Action to be taken
  Do not start the PSA service until OS is rebooted when you update the kernel.

- Restriction release date
  Released the restriction in RHEL-AS4.7(IPF).

Hotplugging 10Gigabit LAN Card

- Restrictions
  Do not hotplug 10Gigabit LAN card.

- Detailed information
  You can not hotplug 10Gigabit LAN card. When hotplugging 10Gigabit LAN card, the initialization of 10Gigabit LAN card fails because the plugged card is not recognized.

- Action to be taken
  You should add/delete/change a 10Gigabit LAN card, after turning off power to the target partition.

- Restriction release date
  Released the restriction in RHEL-AS4.6(IPF).

Hotplugging PCI Express cards

- Restrictions
  Do not hotplug any PCI Express cards.
Detailed information

There is a possibility that the hardware error occurs when you hotplugging a PCI Express card. Especially, when this hard error occurs on a slot in a PEXU (PCI Express Unit), there is a possibility that this PEXU is disconnected from the system at the next system reboot. In the case of PCI-X cards, this problem does not happen.

Restriction release date

Released the restriction in RHEL-AS4.6(IPF).

1.5.2 PRIMEQUEST 500 series Restrictions

For all models of PRIMEQUEST, the following functions are restricted.

- "JRE (Java Runtime Environment)” (pg.19)
- "Hyper-Threading function (RHEL-AS4(IPF) U2 / RHEL-AS4(IPF) U3 )” (pg.20)
- "Hyper-Threading function (RHEL-AS4(IPF) U4 or later)” (pg.20)
- "irqbalance service” (pg.21)
- "Available PCI Slots For 10Gigabit LAN Card” (pg.22)

JRE (Java Runtime Environment)

Restrictions

Do not use JRE (Java Runtime Environments) included in RHEL Extra CD used for OS installation on PRIMEQUEST 500 series.

Detailed information

On PRIMEQUEST 500 series, do not use the following JREs included in RHEL Extra CD used for OS installation because these JREs do not support the CPU on PRIMEQUEST 500 series.

- java-1.4.2-ibm-1.4.2.2-1jpp_10rh.ia64.rpm
- java-1.4.2-bea-1.4.2.05-1jpp_13rh.ia64.rpm

POINT

RHEL Extra CD is labeled as followis.

Restriction release date

Released the restriction in RHEL-AS4(IPF) U4.
Hyper-Threading function (RHEL-AS4(IPF) U2 / RHEL-AS4(IPF) U3)

- Restrictions
  Do not enable Hyper-Threading function.

- Detailed information
  Do not enable Hyper-Threading function.
  In RHEL-AS4(IPF) U2 or earlier, when Hyper-Threading is set enabled and the multiplicity of processing is increased, it is likely to tend to allocate logical CPU task in the same core. Therefore, the performance might not improve in proportion to the multiplicity.
  In addition, Hyper-Threading function is not available on PRIMEQUEST 400 series.

Hyper-Threading function (RHEL-AS4(IPF) U4 or later)

- Restrictions
  When Hyper-Threading is set enabled, the number of logical CPU that can be recognized is limited to 64.

- Detailed information
  When Hyper-Threading is set enabled, the number of logical CPU that can be recognized is limited to 64 because the largesmp kernel is not supported.
  When Hyper-Threading is set enabled, twice the number of mounting CPU cores is recognized from OS as logical CPU usually. However, when logical CPU is more than 64 for this restriction, logical CPU since the 65th is not recognized.
  In addition, Hyper-Threading function is not available on PRIMEQUEST 400 series.
● Restriction release date

To be determined.
However, Hyper-Thread function is strongly recommended not to be used when the restriction will
be released in the future.
For details, see “■ Hyper-Thread function setting (Only
PRIMEQUEST 500 Series)” (~pg.56).

■ irqbalance service

Restrictions

The irqbalance service does not work on the system with 33 or more CPUs.

POINT
→ The number of CPU means the number of logical CPU.

Detailed information

The irqbalance service supports only 32 or less CPUs.
On the system with 33 or more CPUs, in the case of setting which starts irqbalance service at the system
boot, the irqbalance service will be terminated abnormally and the following message may be displayed
on console.

```
Starting irqbalance: [FAILED]
```

Moreover, in the case of setting the core file is exported to the / (root) directory generally. So delete the
core file.

Action to be taken

• How to change

Change the setting of the irqbalance service to the setting to stop it.

```
# /sbin/chkconfig irqbalance off
```

• How to confirm

Confirm that the service is off in the service of all runlevel.

```
# /sbin/chkconfig --list irqbalance
irqbalance 0:off 1:off 2:off 3:off 4:off 5:off 6:off
```

● Restriction release date

Released the restriction in RHEL-AS4(IPF) U3.
Available PCI Slots For 10Gigabit LAN Card

4.5

Restrictions

When you use 10Gigabit LAN card with PCI_Box, please use it at slot 0 (Slot#0:133MHz) on the PCI Unit.

Detailed information

When you use 10Gigabit LAN card with PCI_Box, the following problems might occur if it uses slots other than PCI slot 0 (Slot#0:133 MHz) on the PCI Unit. Therefore, when you use 10Gigabit LAN card with PCI_Box, please use it at slot 0 (Slot#0:133MHz) on the PCI Unit.

The hot plug processing fails in other PCI slots (Slot#1:100MHz or Slot#2:100MHz) on the PCI Unit.

Please refer to "Table: In the case of PRIMEQUEST 580/540" and "Table: In the case of PRIMEQUEST 520" for the PCI slot which can not be used. Please refer to "2.3 IO Unit" in "PRIMEQUEST System Design Guide" for the position of slots on the PCI Unit.

<table>
<thead>
<tr>
<th>Slot#</th>
<th>PCI slot on PCI Unit</th>
<th>PCI slot on PCI Unit on PCI_Box</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 1 2 3</td>
<td>1 2 0</td>
</tr>
<tr>
<td>PCI Clock[MHz]</td>
<td>100 133 100 133</td>
<td>100 100 133</td>
</tr>
<tr>
<td>10GBase-SR LAN Card (Single channel)</td>
<td>○ ○ ○ ○</td>
<td>unusable unusable ○</td>
</tr>
</tbody>
</table>

○ : usable

<table>
<thead>
<tr>
<th>Slot#</th>
<th>PCI slot on PCI Unit</th>
<th>PCI slot on PCI Unit on PCI_Box</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>1 2 0</td>
</tr>
<tr>
<td>PCI Clock[MHz]</td>
<td>133 133 133 133</td>
<td>100 100 133</td>
</tr>
<tr>
<td>10GBase-SR LAN Card (Single channel)</td>
<td>○ ○ ○ ○</td>
<td>unusable unusable ○</td>
</tr>
</tbody>
</table>

○ : usable

Restriction release date

Released the restriction in RHEL-AS4.6(IPF).
2 Introduction

This chapter explains how to install RHEL-AS4(IPF) on PRIMEQUEST.

2.1 Pre-Installation Task

The CD-ROMs bundled with the RHEL-AS4(IPF) product are the initial version. If you install RHEL-AS4(IPF) U2 or later, get the ISO image from RHN (Red Hat Network) and write it in CD-Rs and use it.

2.2 Initial Installation

RHEL-AS4(IPF) can be installed on a PRIMEQUEST system using either of the following methods:

- "2.2.1 Local Installation (with a KVM and Installation Support Tool)" (→pg.24)
- "2.2.2 Remote Installation (with SystemcastWizard Lite)" (→pg.25)

Confirm the status of the network devices after completing the OS installation, and modify the setting if necessary. See also "B Confirming Network Device Settings for PRIMEQUEST" (→pg.62).

- The specification that the order of recognizing disk in RHEL-AS4(IPF) U2 or earlier is different from RHEL-AS4(IPF) U3 or later. Refer to "Order Of Recognizing Disk (PRIMEQUEST 520/420)" (→pg.51) for details.
2.2.1 Local Installation (with a KVM and Installation Support Tool)

Local installation is the normal method used to install the OS using the Red Hat CD-ROMs. The KVM unit must be connected to the partition where the OS is to be installed. The Installation Support Tool can be used to create a configuration file (Kickstart file), which can reduce the number of manual operations during the OS setup.

The following tasks need to be executed to install the OS using the KVM and the Installation Support Tool:

1. Start the Installation Support Tool on a Windows PC.
   - See the following chapter in the "PRIMEQUEST Installation Support Tool User's Guide".
     - "Chapter 2 Starting the Installation Support Tool"

2. Create or modify a configuration file for PRIMEQUEST systems with the Installation Support Tool.
   - See the following chapter in the "PRIMEQUEST Installation Support Tool User's Guide".
     - "Chapter 3 Creating a Configuration File"
     - "Chapter 4 Modifying a Configuration File"

3. Start OS installation with the KVM and the configuration file.
   - See the following section in the "PRIMEQUEST 500A/500/400 Series Installation Manual".
     - "3.2.1 Linux Installation using the KVM (PRIMEQUEST 580A/540A*/580/540/480/440)"

4. Install additional Red Hat software and PRIMEQUEST bundled software.
   - See the following chapter in the "PRIMEQUEST Bundled-Software Package Installer".
     - "Chapter 2 Installing the Bundled Software"

* : PRIMEQUEST model(s) not supported by Fujitsu Technology Solutions

- When installing the RHEL-AS4(IPF) GM or RHEL-AS4(IPF) U2 using CD-ROM, it outputs the error message as following packages are not opened.
  - CD-ROM 2nd: hwdata package
  - CD-ROM 3rd: xscreensaver package

Example:

```
The package hwdata-0.146.1.EL-1 cannot be opened. The cause is probably the missing files or the damage of packages. If you install from CDROM, this usually means that the CD-ROM is broken or CD-ROM drive cannot read the media. Please retry by pressing <return>.
```

In the 3rd CD-ROM, the similar message appears regarding the package xscreensaver package. Press [Enter] key that reply OK in the message dialog and continue the installation. There is no impact because the package installation retries and succeeds.

- After the system reboot, if the /media/cdrom directory does not exist, and, CD or DVD devices are not found, see "Regarding mount of CD-ROM" (→pg.53) to deal with the problem.
2.2.2 Remote Installation (with SystemcastWizard Lite)

SystemcastWizard Lite provides a network installation environment (PXE boot server and deployment server) for RHEL-AS4(IPF) on PRIMEQUEST. OS installation can be started from SystemcastWizard Lite, and no manual installation setup procedures are involved in the installation. Bundled software is automatically installed as well. Using this method, OS installation can be started simultaneously on multiple partitions.

The following tasks must be executed to install the OS using SystemcastWizard Lite:

1. **Install SystemcastWizard Lite on a Windows PC.**
   See the following chapter in the "PRIMEQUEST SystemcastWizard Lite User's Guide".
   - "Chapter 2 Installation and Basic Operation"

2. **Register PRIMEQUEST partition information into SystemcastWizard Lite.**
   See the following chapter in the "PRIMEQUEST SystemcastWizard Lite User's Guide".
   - "Chapter 3 Preparing the Target Environment"

3. **Configure the network installation environment with SystemcastWizard Lite.**
   See the following sections in the "PRIMEQUEST SystemcastWizard Lite User's Guide".
   - "4.2 Setting up the FTP server"
   - "4.3 Creating the Remote OS Setup Resources"
   - "4.5 Registering / Removing a CD-ROM Image"

4. **Start OS Installation from SystemcastWizard Lite.**
   See the following section in the "PRIMEQUEST SystemcastWizard Lite User's Guide".
   - "4.6 Executing Remote OS Setup"
2.3 Post Installation Tasks

After OS installation is completed, various functions provided by the OS and PRIMEQUEST bundled software must be configured. Furthermore, the kernel must be updated if the kernel initially installed on the system is not supported on PRIMEQUEST.

The following tasks must be executed after the OS installation.

1 Post Installation Tasks.
   • PSA Installation and Setup
     If the Installation Support Tool or SystemcastWizard Lite is used to install RHEL-AS4(IPF), PSA is automatically installed during the OS installation. It is not necessary to reinstall PSA.

     > When using PSA on RHEL-AS4.5(IPF), depending on snmpd setting, the error messages may be displayed in PSA display of MMB Web-UI. Refer to "Message displayed on system boot" (→pg.57) for action to be taken.

     • Dump Environment Setup
     • NTP Client Setup
     • OS Backup Setup

     See "Chapter 4 Work Required After Operating System Installation" in the "PRIMEQUEST 500A/500/400 Series Installation Manual".

2 Update the kernel and drivers for PRIMEQUEST.

This step is required if the kernel initially installed on the system is not supported on PRIMEQUEST. The system must be updated to a supported kernel version.

See "3 Software Update Procedures" (→pg.29).

> In setting up a 32-bit execution environment, if the "/usr" and "/" directories are in different partitions when the 32-bit version of the glibc package is installed, an installation post process outputs an error message as follows and installation ends abnormally.

```
Installing Compatibility Layer CD package.
Preparing....  ###################################################################
[100%]
1:glibc  ################################################################### [100%]

/usr/sbin/glibc_post_upgrde: While trying to execute /usr/sbin/convconfig.i686
child exited with exit code 1
```
Re-setup the 32-bit execution environment by following the procedure below.

1. Install the 32-bit version of the glibc again.
   
   Example: RHEL-AS4(IPF) GM
   
   ```
   # rpm -Uvh --force --noprofile glibc-2.3.4-2.i686.rpm
   ```

2. Copy gconv-modules.cache.
   
   ```
   #/bin/cp /usr/lib/gconv/gconv-modules.cache /emul/ia32-linux/usr/lib/gconv/gconv-modules.cache
   ```

■ Setting up the serial console (If it is used)
   
   If the serial console is used, configure the boot loader and the getty.

- Configuring the boot loader
   
   Edit /boot/efi/efi/redhat/elilo.conf file and add the following kernel boot options to the "append" line.
   
   ```
   console=ttyS0,19200n8r
   ```

   • Setting example
   
   ```
   image=vmlinuz-2.6.9-22.EL
   label=linux
   initrd=initrd-2.6.9-22.EL.img
   read-only
   append="rhgb root=LABEL=/ console=ttyS0,19200n8r"
   ```

- Configuring the getty
   
   When logging in to the system via serial port, add the following setting to the /etc/inittab file.
   
   ```
   S0:2345:respawn:/sbin/agetty ttyS0 19200
   ```

   • Setting example
   
   ```
   # Run gettys in standard runlevels
   1:2345:respawn:/sbin/mingetty tty1
   2:2345:respawn:/sbin/mingetty tty2
   3:2345:respawn:/sbin/mingetty tty3
   4:2345:respawn:/sbin/mingetty tty4
   5:2345:respawn:/sbin/mingetty tty5
   6:2345:respawn:/sbin/mingetty tty6
   S0:2345:respawn:/sbin/agetty ttyS0 19200
   ```

   To login as a root user, add the serial port "ttyS0" to the entry list of the /etc/securetty file.

   • Setting example
   
   ```
   tty7
   tty8
   tty9
   tty10
   tty11
   ttyS0
   ```
2.4 Maintaining the Operating System

Red Hat releases Errata packages which contain bug fixes and/or fixes for security issues. Use the update tool to update Red Hat OS packages.

The following process shows the tasks that are related to maintaining the RHEL-AS4(IPF).

1. Update other Red Hat OS packages.
   See the manuals provided by Red Hat for updating packages using Red Hat Network (RHN) and the update tool.

2. Update the kernel and drivers for PRIMEQUEST.
   See "3.2 Updating the kernels on a PRIMEQUEST System" (→pg.44).
3 Software Update Procedures

This chapter provides procedures for updating the RHEL-AS4(IPF) on PRIMEQUEST systems.

Perform the software update as shown below.

1 Update the Packages Using the Tool

2 Update the Kernels on a PRIMEQUEST System

- The specification that the order of recognizing disk in RHEL-AS4(IPF) U2 or earlier is different from RHEL-AS4(IPF) U3 or later. Refer to "Order Of Recognizing Disk (PRIMEQUEST 520/420)" (pg.51) for details.
- To obtain Red Hat packages, a login account on Red Hat Network (RHN) is required. Refer to the documents provided by Red Hat for generic procedures for using RHN.

3.1 Updating Packages Using the Tool

Packages can be downloaded from Red Hat Network (RHN) and updated by using the tool. To obtain Red Hat packages, a login account on RHN is required. Refer to the documents provided by Red Hat for generic procedures for using RHN. Please login as a root user and change the runlevel to 5. Confirm network settings to connect RHN.

Red Hat Network Website:
https://rhn.redhat.com/

3.1.1 Registering for Software Updates

Use the following procedure to set the configuration.

- "Red Hat Network Alert Notification Tool Configuration" (pg.30)
- "up2date Configuration" (pg.32)
- "up2date Activation" (pg.33)
Red Hat Network Alert Notification Tool Configuration

1  Start Red Hat Network Alert Notification Tool Configuration by right-clicking following icon which is at the right side of the panel and select [Configuration...].

- POINT
  - Select [Activate later at www.redhat.com/activate] or close the window when the [Subscription Alert] window displayed. Activate and setting in "up2date Activation" (pg.33).

2  Click [Forward].

3  Click [Forward].
4 Enter the necessary information and click [Forward].

![Proxy Configuration](image1)

5 Click [Apply].

![Configuration Complete](image2)

**POINT**
- When you click [Apply], the following icon which is at the right side of the panel is changed. This shows that it is checked whether it communicates with RHN and there is an update.

  ![Icon](image3)

  When the communication is completed, it changes from the above-mentioned icon into the following icon.

  ![Icon](image4)
up2date Configuration

By default, kernel related packages would not be automatically updated by the up2date tool. Execute the following command to verify the current configuration:

1. Start Red Hat Network Configuration by following command.

   `up2date --configure`

2. Check that [kernel*] is at the [Package Names to Skip] section in the [Package Exceptions] tab.

   - Do not remove or modify this line to prevent the kernel from being automatically updated to a possibly unsupported version.

![Red Hat Network Configuration](image)

Installing GPG key

- When the Red Hat Network setting is finished, warning about installing the GPG key is displayed. The GPG key is used for the digital authentication. You can apply a correction more safely by installing the GPG key. Click [Yes].

![GPG Key Installation Warning](image)
up2date Activation

1. Start Red Hat Update Agent by right-click the following icon which is at the right side of the panel and select [Launch up2date].

2. Click [Forward]

3. Enter your login account and password on RHN, and click [Forward].
4 If you login for the first time, select [I have a subscription number to activate]. If you login for the second time or more, select [Use one of my existing, active subscriptions].

> Uncheck [Send hardware information]. Otherwise, the registration will fail with an error. This is a known issue, and not specific to PRIMEQUEST. Regarding to the issue, see Red Hat bug 144704 on Bugzilla.

5 Click [Cancel] to finish up2date activation.
3.1.2 Update ia32el Package Using The up2date Tool

- "Register Extras on RHN" (pg.35)
- "Update ia32el Package" (pg.37)

Register Extras on RHN


2. Click [Systems], and click the system where you want to update in the [Systems] page. And then, click the [Alter Channel Subscriptions] of [Subscribed Channels] in the page.
3 Select [RHEL AS (v.4 for Itanium) Extras] and click [Change Subscriptions].

4 Check that [RHEL AS (v.4 for Itanium) Extras] shows on [Subscribed Channels].
Update ia32el Package

1. Bring up [Red Hat Update Agent] by right-clicking the following icon and selecting [Launch up2date].

2. Click [Forward].

3. Select only [RHEL AS (v.4 for Itanium) Extras] and click [Forward]
4 Select ia32el packages and click [Forward].

Example:

![Available Package Updates]

Total size of selected packages to download: 2115 kB

5 When update finishes, the following window is displayed. Click [Finish] and finish [Red Hat Update Agent].

![All Finished]

6 Execute the following command to restart ia32el.

```bash
# /sbin/service ia32el restart
```
You need to restart ia32el before you update the i386 packages, because installation of some i386 packages depend on ia32el.

3.1.3 Updating Packages Using The up2date Tool

1 Bring up [Red Hat Update Agent] by right-clicking the following icon and selecting [Launch up2date].

2 Click [Forward].
3 Select only [Red Hat Enterprise Linux AS (v.4 ...)], and click [Forward].

- Do not select [RHEL AS (v.4 for Itanium) Extras]

4 If the following window is displayed, click [Yes].
   If not, [Packages Flagged to be Skipped] will be displayed. In that case, go to step 8.
5 Select [Select all packages] and click [Forward].

6 Click [Forward].
7 When update finishes, [All Finished] window is displayed. Click [Finish] and finish [Red Hat Update Agent]. The following window is displayed. Click [OK].

![Information window](image)

8 If [Packages Flagged to be Skipped] is displayed, click [Forward].

![Packages Flagged to be Skipped window](image)

- kernel related packages are not automatically updated based on the up2date configuration. Do not select any kernel related packages so that they are skipped during the up2date process. Regarding to updating kernel related packages, refer to "3.2 Updating the kernels on a PRIMEQUEST System" (→pg.44)
9 Select packages to be updated. If you update all package, select [Select All Packages].

Example:

```
Even if you select [All Packages], kernel related packages will still be skipped.
After this step, [Packages Required to Solve Dependencies] may be displayed by having dependency issue. Modify your package selections or click [Forward].
```

10 When update finishes, [All Finished] window is displayed. Click [Finish] and finish [Red Hat Update Agent].

**Important**

If the up2date process fails with dependency errors, use the up2date Command Line Interface (CLI) method.

1. List all available packages to be updated with "up2date -l".
2. Install each package with "up2date -i <package name>".
3.2 Updating the kernels on a PRIMEQUEST System

The kernel initially installed on the system may not be one that is supported by Fujitsu/Fujitsu Technology Solutions. If the initial kernel is not supported, the system must be updated to a supported kernel version.

In addition, specific Fujitsu drivers are required for each supported kernel version, and must be installed after the kernel packages are installed.

Fujitsu's support websites provide information about supported kernel versions on PRIMEQUEST systems. Fujitsu drivers for each supported kernel are also available from the websites.

Fujitsu Technology Solutions support websites can be found at:

http://support.ts.fujitsu.com/com/support/downloads.html
(select “Mission Critical IA Server” as product)

Perform the kernel update for a PRIMEQUEST system as shown below:

1. Confirm Supported Kernel Versions for PRIMEQUEST
2. Download the Supported Kernels from Red Hat Network
3. Install a New Kernel and Fujitsu Drivers
4. Install Fujitsu Tools

3.2.1 Confirming Supported kernel Versions for PRIMEQUEST

The Fujitsu Technology Solutions’ support websites provide information about supported kernel versions, and should be reviewed prior to installing a new kernel. All PRIMEQUEST systems must be running a supported kernel version. Do not install kernels that are not supported on PRIMEQUEST systems.

Fujitsu Technology Solutions’ Site:
http://support.ts.fujitsu.com/com/support/downloads.html
(select “Mission Critical IA Server” as product)

3.2.2 Downloading the Supported kernels from the Red Hat Network

The kernel RPMs are available from the Red Hat Network.
Download the kernel RPMs that are supported for PRIMEQUEST.
3.2.3 Installing a New kernel and Fujitsu Drivers

Follow the procedure below to install the new kernel packages downloaded in the previous section and the Fujitsu drivers.

In the case of RHEL4.7 and RHEL4.8:

1. Execute the work in single user mode (runlevel 1).
2. Access the following site to get FJSVdup package.
   http://support.ts.fujitsu.com/com/support/downloads.html
3. Install the package, referring to the README included in the download file.
4. Execute the following commands to install the new kernel packages.

   Example: In the case of kernel-2.6.9-78.EL
   
   ```bash
   # rpm -ivh kernel-2.6.9-78.EL.ia64.rpm
   # rpm -ivh kernel-devel-2.6.9-78.EL.ia64.rpm
   # rpm -ivh kernel-doc-2.6.9-78.EL.noarch.rpm
   ```

5. Access the following site to get Fujitsu drivers.
   http://support.ts.fujitsu.com/com/support/downloads.html
6. Install the drivers, referring to the README included in the specific driver file.
7. Execute fjmkinitrd command to create RAM disk image. Use appropriate parameters depending on your environment. fjmkinitrd's parameters are same as mkinitrd command.

   Example: In the case of kernel-2.6.9-78.EL
   
   ```bash
   # cd /boot/efi/efi/redhat
   # /etc/opt/fjsvdrivers/fjmkinitrd -f initrd-2.6.9-78.0.1.EL.img 2.6.9-78.EL
   ```

8. Access the following site provided by Red Hat, Inc. to get kernel-debuginfo package corresponding to the installed kernel.
8 Execute the following commands to install the kernel-debuginfo package.

Example: In the case of kernel-2.6.9-78.EL

```
$ rpm -ivh kernel-debuginfo-2.6.9-78.EL.ia64.rpm
```

In the case of RHEL4.6 or before that:

- Execute the work in single user mode (runlevel 1).

Follow the procedure below to install the new kernel packages downloaded in the previous section and the Fujitsu drivers.

1 Execute the following commands to install the new kernel packages.

Example: In the case of kernel-2.6.9-22.0.1.EL

```
$ rpm -ivh kernel-2.6.9-22.0.1.EL.ia64.rpm
$ rpm -ivh kernel-devel-2.6.9-22.0.1.EL.ia64.rpm
$ rpm -ivh kernel-doc-2.6.9-22.0.1.EL.noarch.rpm
```

2 Access the following site to get Fujitsu drivers.

http://support.ts.fujitsu.com/com/support/downloads.html

3 Install the drivers, referring to the README included in the specific driver file. In addition, execute the following work because of mkinitrd package's bugs.

4 If your the system is RHEL-AS4(IPF) U2 or earlier, please execute the following command after installing a new kernel and the corresponding Fujitsu drivers.

```
$ depmod -a [New kernel version]
```

- You do not need the above operation if you apply Fujitsu drivers for RHEL-AS4(IPF) U3 or later.

5 Access the following site provided by Red Hat, Inc. to get kernel-debuginfo package corresponding to the installed kernel.

6 Execute the following commands to install the kernel-debuginfo package.

Example: In the case of kernel-2.6.9-22.0.1.EL

```
$ rpm -ivh kernel-debuginfo-2.6.9-22.0.1.EL.ia64.rpm
```

3.2.4 Installing Fujitsu Tools

Follow the procedure below to install the Fujitsu tools.

1 Access the following site to get Fujitsu Tools.
http://support.ts.fujitsu.com/com/support/downloads.html

2 Install the tools, referring to the README included in the specific tool file.
3 Software Update Procedures
4 Setting and Collecting Dump

If an abnormality occurs in the system, you can investigate the cause of the problem by collecting a dump file. It is useful to solving problem early. This chapter explains about dump collection, in particular dump collection settings and points to note during setup.

- "4.1 Core Dump Settings" (pg.49)

4.1 Core Dump Settings

- "Core dump collection at application abnormality" (pg.49)

Core dump collection at application abnormality

On a system where RHEL-AS4(IPF) has been installed using the Installation Support Tool, abnormal termination of any application will by default cause a coredump to be taken.

- Setting contents by using the Installation Support Tool
- If an application or middleware ends abnormally, an examination of a core file may be needed for a smooth investigation of the problem to find its cause. Therefore, on a system where RHEL-AS4(IPF) has been installed using the Installation Support Tool, a core file is output by default in the event of an abnormal end (abort) of an application.

- /etc/profile file settings
  
  ```bash
  ulimit -S -c unlimited > /dev/null 2>&1
  ```

- Setting a core file name (addition to /etc/sysctl.conf file as follows)
  (Outputting core file example: core-abort.1053)
  
  ```bash
  kernel.core_pattern = core-%e.%p
  ```

- Addition to /etc/limits.conf file
  
  ```bash
  ulimit -S -c unlimited
  ```

- Addition to /etc/security/limits.conf file
  
  ```bash
  * soft core unlimited
  ```
Deleting the core file

The default coredump output configuration has the following disadvantage. Running programs that frequently end abnormally (abort) may cause the core files to occupy a lot of disk space. On a system where the Installation Support Tool was used for installation, core file names are in the "core-program-name.process-id" format (Note that the names of programs executed in 32-bit emulation are "core.process-id"). In addition, core files are placed in the respective directories of the running programs. Thus, for any problem that does not need to be examined or investigated to find the cause, find the corresponding core file and delete it.

Example: Finding core file in the /home directory.

```
# find /home -name core-*
```

Preventing core files from being created

- **System Wide**
  Modify /etc/profile file as follows:

  ```
  ulimit -S -c 0 > /dev/null 2>&1
  #ulimit -S -c unlimited > /dev/null 2>&1
  ```

- **For a specific user**
  Add the following line to ~/.bash_profile file for the user.

  ```
  ulimit -S -c 0
  ```

  Add the following line to /etc/security/limits.conf file.

  ```
  User name soft core 0
  ```

- **For an application**
  Specify "0" as the maximum size of a core file by using the setrlimit() system call in the program. For details on how to use the setrlimit() system call, see the respective on-line manual page (man).
5 Notes on Usage

This chapter explains important points that you should note while using RHEL-AS4(IPF).

- "5.1 Notes Concerning the Disk" (→pg.51)
- "5.2 Notes Concerning the Device" (→pg.53)
- "5.3 Notes on the Hyper-Threading Function" (→pg.56)
- "5.4 Notes Concerning Maintenance" (→pg.56)
- "5.5 Notes Concerning Messages" (→pg.57)
- "5.6 Notes Concerning Command" (→pg.59)

5.1 Notes Concerning the Disk

- "Order Of Recognizing Disk (PRIMEQUEST 520/420)" (→pg.51)

Order Of Recognizing Disk (PRIMEQUEST 520/420)

U3  U4  4.5  4.6  4.7  4.8

Outline

The specification of the order of recognizing disk in RHEL-AS4(IPF) U2 or earlier is different from RHEL-AS4(IPF) U3 or later.

Detailed information

The orders of recognizing disk in RHEL-AS4(IPF) U2 or earlier and RHEL-AS4(IPF) U3 or later are following.

The order of recognizing disk in RHEL-AS4(IPF) is as following, but RHEL-AS4(IPF) U2 or earlier and RHEL-AS4(IPF) U3 or later are different.

1. The Order of driver which described in /etc/modprobe.conf file.

2. The Order of device is retrieved from PCI tree on each driver.
5 Notes on Usage

- In the case of RHEL-AS4(IPF) U2 or earlier.
  SCSI/SAS disk use a common driver named mptscsih.
  The device is retrieved in no relations to SCSI/SAS disk from PCI tree when mptscsih is loaded in
  the order of the description of /etc/modprobe.conf file and the device name is allocated by found
  order.

  **POINT**
  - The SAS disk is the standard of 2.5-inch disk built into PRIMEQUEST 520/420.

- In the case of RHEL-AS4(IPF) U3 or later.
  The 2 types of drivers are prepared for mptspi (SCSI) and mptsas (SAS).
  Each driver is loaded in the order of the description of /etc/modprobe.conf file.
  Therefore, the retrieval of the device from PCI tree and allocation of the device name are individually
  done as for SCSI/SAS disk.

  **IMPORTANT**
  - The disk is recognized in the order of SAS, SCSI in RHEL-AS4(IPF) U2 or earlier. However, the
    specification was changed as stated above. Therefore, the disk is recognized in the order of SCSI,
    SAS during RHEL-AS4/IPF U3 or later. Therefore, the device name (EX: /dev/sda) allotted to each
    disk might be different from RHEL-AS4(IPF) U2 or earlier. Please note that the device name may
    change when you make the disk partition. It is also the same as when installing RHEL-AS4(IPF) U4
    using Installation Support Tool.

    - In the case of RHEL-AS4(IPF) U2 or earlier

      | SAS (2.5-inch disk)       | SCSI (3.5-inch disk)      |
      | /dev/sdb                   | /dev/sdb                   |

    - In the case of RHEL-AS4(IPF) U3 or later

      | SAS (2.5-inch disk)       | SCSI (3.5-inch disk)      |
      | /dev/sdb                   | /dev/sda                   |

  - Action to be taken

    Please use the by-path name and by-id name to avoid the influence of above specification change. Please
    see the "1.9.1 Disk system devices" of “PRIMEQUEST Reference Manual” for use of the by-path name
    and by-id name.

  **IMPORTANT**
  - The specification of the by-path name is recommended so that the by-path name may find the disk
    failure etc. easily.
5.2 Notes Concerning the Device

• "Regarding mount of CD-ROM" (+pg.53)
• "FC card hotplug on the system installed HBAnyware" (+pg.54)
• "The number of PCI cards that can be accommodated" (+pg.55)

**Regarding mount of CD-ROM**

- **Outline**

  Sometimes fails to mount /media/cdrom directory in the CD-ROM mount point.

- **Detailed information**

  The CD/DVD device is connected as USB device. Due to the USB controller, OS may not be able to recognize the USB device. In this situation, OS can not recognize the CD/DVD device because it does not make the mount point.

- **Action to be taken**

  Execute the following operations.


  2. Switch [DVD] in [USB/Video/DVD Switch] window to target partition to be installed.

  3. Confirm that /media/cdrom directory exists.

     If it does not exist, create it.

  4. If you created /media/cdrom directory in step 3, delete it after using.

**POINT**

- In the case of PRIMEQUEST 520A*/520/420, [USB/Video/DVD Switch] window is [DVD Switch] window.

- For details on this step, see "5.3.3 [USB/Video/DVD Switch] window (PRIMEQUEST 580A/540A*/580/540/480/440)" or "5.3.4 [DVD Switch] window (PRIMEQUEST 520A*/520/420)" of "PRIMEQUEST Reference Manual".

* : PRIMEQUEST model(s) not supported by Fujitsu Technology Solutions
**FC card hotplug on the system installed HBAnyware**

**Outline**

The system installed HBAnyware can cause system panic if FC Card (Fibre Channel Card) Hotplug is executed.

*POINT*

- "HBAnyware" is the Utility for the FC Cards of Emulex.

**Detailed information**

On the system that HBAnyware is installed, if FC Card Hotplug is done while "ElxRMSrv" service of HBAnyware is active, system panic can be occurred at the next time the system is rebooted or shutdowned.

**Action to be taken**

Execute FC Card Hotplug with following procedure.

1. **Stop ElxRMSrv service.**
   ```
   # service ElxRMSrv stop
   ```

2. **Execute FC Card Hotplug.**

3. **Restart ElxRMSrv service.**
   ```
   # service ElxRMSrv start
   ```
The number of PCI cards that can be accommodated

Outline

A single PRIMEQUEST server can accommodate up to 128 PCI cards (32 internally and 96 in PCI_Boxes). However, due to RHEL-AS4(IPF) specifications, the number of PCI cards that can be accommodated may be restricted depending on the combination of PCI cards used.

Detailed information

To connect PCI cards to the system, I/O interrupt control pins must be used. RHEL-AS4(IPF) limits the number of interrupt pins to a maximum of 184. If PCI cards are mounted in a way that this limit is exceeded, RHEL-AS4(IPF) cannot start.

Action to be taken

Adjust the total number of interrupt pins used for PCI cards mounted in the system (partitions) to 184 or less. If this total number of interrupt pins exceeds 184, reduce the number of PCI cards until the number of interrupt pins is 184 or less.

1 Estimate the number of usable pins.

Interrupt pins are used for devices in IOUs, PCIU and PEXU in PCI_Boxes. Estimate the number of interrupt pins available for added PCI cards by using the following expression:

\[
\text{Number of available interrupt pins} = 184 - (6 + 12 \times \text{Number of IOUs} + 2 \times \text{Number of PCIU in PCI_Boxes} + 2 \times \text{Number of PEXU in PCI_Boxes})
\]

As more IOUs and PCI_Boxes are mounted, fewer interrupt pins are available. Therefore, consider 4 IOUs and 4 PCI_Boxes to be the maximum in a normal configuration.

2 Number of PCI cards that can be accommodated.

Adjust the number of PCI cards so that the total number of pins available for added PCI cards does not exceed the estimated number of available interrupt pins in step 1. The numbers of interrupt pins required for a PCI card depends on the card type.

The following table lists PCI card types and the required numbers of interrupt pins by PCI card.

<table>
<thead>
<tr>
<th>PCI card type</th>
<th>Required number of interrupt pins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fibre Channel card (single type)</td>
<td>1</td>
</tr>
<tr>
<td>Fibre Channel card (dual type)</td>
<td>2</td>
</tr>
<tr>
<td>SCSI controller card</td>
<td>2</td>
</tr>
<tr>
<td>Network card (single type)</td>
<td>1</td>
</tr>
<tr>
<td>Network card (dual type)</td>
<td>2</td>
</tr>
</tbody>
</table>
5.3 Notes on the Hyper-Threading Function

- Hyper-Threading (or Simultaneous Multi Threading) function setting (Only PRIMEQUEST 500 Series)" (→pg.56)

Hyper-Threading function is strongly recommended to disable. (You can refer to and change the settings in BIOS setup utility.)

- CPU utilization can not be understood exactly when Hyper-Threading is enabled.
- When Hyper-Threading is enabled, the performance might be degraded than being disabled.

POINT
Hyper-Threading function is not available on PRIMEQUEST 400 series.

5.4 Notes Concerning Maintenance

- "Watchdog of PSA" (→pg.56)

Watchdog of PSA

OUTLINE
If the system is booted with CD-ROM boot (rescue mode) or runlevel 1, the timeout of Boot Watchdog observation is occurred. And after system reboots as many as user sets in the setting of [ASR Control] window in MMB Web-UI, the action specified in Boot Watchdog function is executed.

POINT
Boot Watchdog function is the function which executes the specified action if the system boot is not completed within the specified time. Regarding Boot Watchdog function of PSA, refer to "7.15.1 [Watchdog] window" of "PRIMEQUEST Reference Manual".

ACTION TO BE TAKEN
When CD-ROM boot (rescue mode) or boot with runlevel 1 is executed, disable watchdog function of PSA with using MMB Web-UI on PRIMEQUEST.
5.5 Notes Concerning Messages

- "Message displayed on system boot" (→pg.57)
- "Message displayed when the KVM switch changed" (→pg.57)
- "Messages displayed during system operation" (→pg.58)
- "Message displayed when a PCI card is hot-plugged" (→pg.59)

■ Message displayed on system boot

- message (Controller)

```c
i8042.c: i8042 controller self test timeout.
```

**Contents**
A message stating that a controller could not be found when the system boots.

**Explanation**
The i8042 is a dedicated controller for a PS/2 keyboard or mouse. The message is output because the PRIMEQUEST does not have hardware for PS/2-compatible keyboard and mouse. No action needs to be taken.

■ Message displayed when the KVM switch changed

- message

```c
drivers/usb/input/hid-core.c: input irq status-84 received
```

**Contents**
When using the KVM switch to switch the mouse or keyboard, the message may be displayed.

**Explanation**
The message may be output when the KVM switch is used for switching the keyboard or mouse or when the mouse or keyboard is unplugged or reconnected. No action needs to be taken.
■ Messages displayed during system operation

- message (snmpd)

4.5

The snmpd outputs a large amount of messages to log file (/var/log/messages). By that, the log file size grows and it may take more time to acquire MIB by snmpwalk command.

Explaination

The snmpd outputs the INFO-Level (and higher) messages as default operation. In RHEL-AS4.5(IPF), the following messages are output on INFO-Level to show the snmpd connect to the monitoring target object when acquiring MIB.

This message is output every time the snmpd connects to the monitoring target object.

Therefore, a large amount of messages are output in the case of the system that acquires multiple MIB information. [*1] The log file size grows and it takes more time to acquire MIB by snmpwalk command.

*1: For example, in basic system management application PSA (PRIMEQUEST Server Agent) for PRIMEQUEST server systems acquires multiple MIB information.

Reference

The following shows the difference of MIB acquisition time between RHEL-AS4(IPF) U4 and RHEL-AS4.5(IPF). [*2]

Example: In the case of RHEL-AS4.5(IPF)

```bash
# time snmpwalk -v 1 -c psaprivate localhost

SNMPv2-SMI::enterprises.211.1.31.1.2.100.1.2.1.1.1.3.0 = INTEGER: 3
...
real 0m44.139s
user 0m0.084s
sys 0m0.040s
```
Example: In the case of RHEL-AS4(IPF) U4

```
# time snmpwalk -v 1 -c psaprivate localhost
.1.3.6.1.4.1.211.1.31.1.2.100.1.2
SNMPv2-SMI::enterprises.211.1.31.1.2.100.1.2.1.1.1.3.0 = INTEGER: 3
...
real 0m6.643s
user 0m0.091s
sys 0m0.021s
```

*2: The numerical value is an only reference value, the performance value is not guaranteed

To avoid outputting the INFO-Level messages, please disable the INFO-Level messages including the above-mentioned, change the snmp log-output level to NOTICE with following steps

1. **Edit the /etc/init.d/snmpd file.**
   ```
   OPTIONS="-LS 5 d -Lf /dev/null -p /var/run/snmpd.pid -a"
   ```

   **IMPORTANT**

   When the `/etc/sysconfig/snmpd.options` file exists, the priority is given to the `snmpd.options` file. Please edit the `snmpd.options` file instead of `snmpd` file.

2. **Restart the snmpd.**
   ```
   # service snmpd restart
   ```

- **Message displayed when a PCI card is hot-plugged**

  - message (Slot number information)

    ![U2 U3 U4 4.5 4.6 4.7 4.8]

    ```
    acpi_pciehprm: Slot sun(3ff) at s:b:d:f=0x00:13:01:00
    ```

**Contents**

When the shpchp/pciehp driver is loaded on the system, messages about slot number which does not exist are sometimes recorded in `/var/log/messages` file.

**Explanation**

When the shpchp/pciehp driver is loaded on the system, following messages about slot number which does not exist are sometimes recorded in `/var/log/messages` file, but there is no problem in shpchp/pciehp driver.

### 5.6 Notes Concerning Command

- "mknitrd command" (→pg.60)
■ mkinitrd command

Outline

When RAM disk image is created by mkinitrd command, Fujitsu driver for PRIMEQUEST is not built into RAM disk image.

Action to be taken

Create RAM disk image by using fjmkinitrd command. fjmkinitrd's parameters are same as mkinitrd command.

Example: In the case of kernel-2.6.9-78.0.1.EL

```bash
# cd /boot/efi/efi/redhat
#/etc/opt/fjsvdrivers/fjmkinitrd -f initrd-2.6.9-78.0.1.EL.img 2.6.9-78.0.1.EL
```
Appendix A Product Components

This section explains the product components for RHEL-AS4(IPF).

POINT

- These discs are not used in system installation. Use the installation disc downloaded from RHN (Red Hat Network) for the installation. After installation, you may need to use these discs for parts of package installation.

- **CD-ROM**

<table>
<thead>
<tr>
<th>Disc name</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>RED HAT ENTERPRISE LINUX Version 4 Intel Itanium INSTALLATION CD 1/5</td>
<td>An installation disc. Contains programs and the main applications needed to install RHEL-AS4(IPF).</td>
</tr>
<tr>
<td>RED HAT ENTERPRISE LINUX Version 4 Intel Itanium INSTALLATION CD 2/5</td>
<td></td>
</tr>
<tr>
<td>RED HAT ENTERPRISE LINUX Version 4 Intel Itanium INSTALLATION CD 3/5</td>
<td></td>
</tr>
<tr>
<td>RED HAT ENTERPRISE LINUX Version 4 Intel Itanium INSTALLATION CD 4/5</td>
<td></td>
</tr>
<tr>
<td>RED HAT ENTERPRISE LINUX Version 4 Intel Itanium INSTALLATION CD 5/5</td>
<td></td>
</tr>
<tr>
<td>RED HAT ENTERPRISE LINUX Version 4 INTEL ITANIUM EXTRAS DISC</td>
<td>A extras disc. Contains Java, RealPlayer, etc.</td>
</tr>
<tr>
<td>RED HAT ENTERPRISE LINUX Version 4 32-BIT COMPATIBILITY LAYER INSTALLATION DISC</td>
<td>32-BIT COMPATIBILITY LAYER installation disc.</td>
</tr>
</tbody>
</table>

- **DVD-ROM**

<table>
<thead>
<tr>
<th>Disc name</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIDE-A RED HAT ENTERPRISE LINUX AS VERSION 4 for Intel Itanium SOURCE DISC</td>
<td>An installation disc. Contains programs and the main applications needed to install RHEL-AS4(IPF)</td>
</tr>
<tr>
<td>SIDE-B RED HAT ENTERPRISE LINUX AS VERSION 4 for Intel Itanium INSTALLATION DISC</td>
<td></td>
</tr>
<tr>
<td>RED HAT ENTERPRISE LINUX Version 4 DVD DOCUMENTATION DISC</td>
<td>A manual offered by the Red Hat, Inc.</td>
</tr>
</tbody>
</table>

- **Paper**

- Subscription Agreement: Subscription contract manual
Appendix B Confirming Network Device Settings for PRIMEQUEST

This section explains how to confirm the network device settings for PRIMEQUEST.

During OS installation, the network devices are named as eth0, eth1, ...ethn, in the order in which the Network Interface Controllers (NIC) are detected. In PRIMEQUEST, the order of these names may not be as intended, and the IP address set previously by the Installation Support Tool may not be allocated to the intended network device.

Confirm the status of the network devices after completing the OS installation, and modify the setting if necessary.

• "B.1 For PRIMEQUEST 580A/540A*/580/540/480/440" (→pg.63)
• "B.2 For PRIMEQUEST 520A*/510A*/520/420" (→pg.67)
Appendix B  Confirming Network Device Settings for PRIMEQUEST

B.1  For PRIMEQUEST 580A/540A*/580/540/480/440

This section explains an example of confirming network device settings with the system configuration of 1 partition: ISB-1IOU.

B.1.1  Identification of Two NICs for Management LAN

The two NICs for management LAN have the number "0000:01:08.0" and "0000:01:00.0" as their bus-info (SEG:BUS:DEV:FUNC number). Identify as follows.

1  Display the list of network devices recognized by the system using the ifconfig command, and confirm the device name.

   # /sbin/ifconfig -a

2  Search for two NICs for the management LAN by using the ethtool command.

   Execute the following commands for each network device name listed by step 1, and confirm the NICs.

   # /sbin/ethtool -i <device name>

   Example: As a result of running this command for eth4 and eth5, we see that the NICs are compatible for that of the management LAN

   # ethtool -i eth4
   driver: e100
   version: 3.0.27-k2-NAPI
   firmware-version: N/A
   bus-info: 0000:01:00.0 (Correspond to the NIC for management LAN)

   # ethtool -i eth5
   driver: e100
   version: 3.0.27-k2-NAPI
   firmware-version: N/A
   bus-info: 0000:01:08.0 (Correspond to the NIC for management LAN)

   POINT

   - Among two NICs for management LAN, NIC#1 (0000:01:00.0) connected with MMB#1 is detected earlier than NIC#0 (0000:01:08.0) connected with MMB#0. Therefore, the allocation of the network device name is different from the allocation order as shown in the search results above from the MMB order in the status (default setting) after the OS is installed.

When the network device name order is not as intended, you can modify the network device name.
For example, if you want the NICs for the management LAN to be eth0 and eth1, but they were set to eth4 and eth5, you can modify them to eth0 and eth1.

*  : PRIMEQUEST model(s) not supported by Fujitsu Technology Solutions.
Appendix B  Confirming Network Device Settings for PRIMEQUEST

B.1.2 Changing Network Device Name (Order)

■ Modification to modprobe.conf file

Because the network device order recognized by the system is stated in the /etc/modprobe.conf file, this order needs to be modified to the intended order.

Example: Description of the network devices for the /etc/modprobe.conf file

<table>
<thead>
<tr>
<th>Before Modification</th>
<th>After Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>alias eth0 bcm5700</td>
<td>alias eth0 e100</td>
</tr>
<tr>
<td>alias eth1 bcm5700</td>
<td>alias eth1 e100</td>
</tr>
<tr>
<td>alias eth2 bcm5700</td>
<td>alias eth2 bcm5700</td>
</tr>
<tr>
<td>alias eth3 bcm5700</td>
<td>alias eth3 bcm5700</td>
</tr>
<tr>
<td>alias eth4 e100</td>
<td>alias eth4 bcm5700</td>
</tr>
<tr>
<td>alias eth5 e100</td>
<td>alias eth5 bcm5700</td>
</tr>
</tbody>
</table>

■ Modification to ifcfg-ethn file

Modify the /etc/sysconfig/network-scripts/ifcfg-ethn configuration file for each network device according to the modification above. The network device name can be modified by rewriting the HWADDR MAC address defined in the ifcfg-ethn file.

The following explains the procedure for changing the NIC from eth2 to eth4 in the ifcfg-eth4 file.

1 Confirm the network card’s MAC address.

```
# /sbin/ifconfig eth4
eth4   Link encap:Ethernet  HWaddr XX:XX:XX:XX:XX:XX
       BROADCAST MULTICAST  MTU:1500  Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 b) TX bytes:0 (0.0 b)

# /sbin/ifconfig eth2
       BROADCAST MULTICAST  MTU:1500  Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 b) TX bytes:0 (0.0 b)
```
2 Modify the `/etc/sysconfig/network-scripts/ifcfg-eth4` file.

**[Before modification] Example: When not making network settings**

```
# cat /etc/sysconfig/network-scripts/ifcfg-eth4
DEVICE=eth4
BOOTPROTO=static
HWADDR=XX:XX:XX:XX:XX:XX
ONBOOT=no
TYPE=Ethernet
```

**[After modification] Example: When making network settings**

```
# vi /etc/sysconfig/network-scripts/ifcfg-eth4
DEVICE=eth4
BOOTPROTO=static
BROADCAST=192.168.10.255 ← Addition
IPADDR=192.168.10.35 ← Addition
NETWORK=192.168.10.0 ← Addition
NETMASK=255.255.255.0 ← Addition
ONBOOT=yes ← Modification
TYPE=Ethernet
```

3 Modify other network devices in the same way.

Make sure to set MAC address in "HWADDR" and set "ONBOOT" to "yes".

**IMPORTANT**

- Do not set "ONBOOT" to "No". Otherwise, the naming can not be performed correctly.

4 Reboot the system.
B.1.3  Confirming Network Device Name Modification

Confirm that the network device names are modified correctly by using the following procedure.

1  Confirm that the management LAN has been changed to the intended network device name by using the method in "B.1.1 Identification of Two NICs for Management LAN" (→pg.63).

2  Execute the following command to confirm that the network device name is changed as intended.

   # /sbin/ethtool -i eth0
   "input the device order for n"

   According to the modification example in "Modification to modprobe.conf file" (→pg.64), the following are displayed.

   # /sbin/ethtool -i eth0  $n = 0 to 1
   driver: e100
   (omitted)

   # /sbin/ethtool -i eth0  $n = 2 to 5
   driver: bcm5700
   (omitted)

3  Execute the following command to confirm that the IP address is changed as intended.

   # /sbin/ifconfig -a
B.2 For PRIMEQUEST 520A*/510A*/520/420

This section explains an example of confirming network device settings with the system configuration of 1 partition: 1SB-1IOU.

B.2.1 Identification of NIC for management LAN

The NIC for management LAN's bus-info (SEG:BUS:DEV:FUNC number) is "0000:01:08.0". It is identified with the following procedure.

1. Display the list of network devices recognized by the system using the `ifconfig` command, and confirm the device name.

   ```bash
   # /sbin/ifconfig -a
   ```

2. Search for the NIC for the management LAN by using the `ethtool` command. Execute the following commands in order and confirm that the network device name is confirmed according to the instructions.

   ```bash
   # /sbin/ethtool -i <device name>
   ```

   Example: As a result of running the command for eth4, we see that the NIC is compatible for the management LAN

   ```bash
   # ethtool -i eth4
   driver: e100
   version: 3.4.8-k2-NAPI
   firmware-version: N/A
   bus-info: 0000:01:08.0 (NIC is compatible for management LAN)
   ```

When the network device name order is not as intended, you can modify the network device name. For example, if the NIC for the management LAN was supposed to be eth0, but it was set to eth4, you can modify it to eth0.

* : PRIMEQUEST model(s) not supported by Fujitsu Technology Solutions
B.2.2 Changing Network Device Name (Order)

■ Modification to modprobe.conf file

Because the network device order recognized by the system is stated in the /etc/modprobe.conf file, this order needs to be modified to the intended order.

Example: Description of the network device for the /etc/modprobe.conf file

<table>
<thead>
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<td>alias eth1 bcm5700</td>
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<tr>
<td>alias eth2 bcm5700</td>
<td>alias eth2 bcm5700</td>
</tr>
<tr>
<td>alias eth3 bcm5700</td>
<td>alias eth3 bcm5700</td>
</tr>
<tr>
<td>alias eth4 e100</td>
<td>alias eth4 bcm5700</td>
</tr>
</tbody>
</table>

■ Modification to ifcfg-ethn file

Modify the /etc/sysconfig/network-scripts/ifcfg-ethn configuration file for each network device according to the modification above. The network device name can be modified by rewriting the HWADDR MAC address defined in the ifcfg-ethn file.

The following explains the procedure for changing the NIC from eth3 to eth4 in the ifcfg-eth4 file.

1 Confirm the network card's MAC address.

```
# /sbin/ifconfig eth4
eth4 Link encap:Ethernet  HWaddr XX:XX:XX:XX:XX:XX
   BROADCAST MULTICAST MTU:1500  Metric:1
   RX packets:0 errors:0 dropped:0 overruns:0 frame:0
   TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
   collisions:0 txqueuelen:1000
   RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)

# /sbin/ifconfig eth3
   BROADCAST MULTICAST MTU:1500  Metric:1
   RX packets:0 errors:0 dropped:0 overruns:0 frame:0
   TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
   collisions:0 txqueuelen:1000
   RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)
```
2 Modify `/etc/sysconfig/network-scripts/ifcfg-eth4` file.

**[Before modification] Example: When not making network settings**

```
# cat /etc/sysconfig/network-scripts/ifcfg-eth4
DEVICE=eth4
BOOTPROTO=static
HWADDR=XX:XX:XX:XX:XX:XX
ONBOOT=no
TYPE=Ethernet
```

**[After modification] Example: When making network settings**

```
# vi /etc/sysconfig/network-scripts/ifcfg-eth4
DEVICE=eth4
BOOTPROTO=static
BROADCAST=192.168.10.255 ← Addition
IPADDR=192.168.10.35 ← Addition
NETWORK=192.168.10.0 ← Addition
NETMASK=255.255.255.0 ← Addition
ONBOOT=yes ← Modification
TYPE=Ethernet
```

3 Modify other network devices in the same way.

Make sure to set MAC address in "HWADDR" and set "ONBOOT" to "yes".

**IMPORTANT**

- Do not set "ONBOOT" to "No". Otherwise, the naming can not be performed correctly.

4 Reboot the system.
B.2.3 Confirming Network Device Name Modification

Confirm that the network device names are modified correctly by using the following procedure.

1 Confirm that management LAN has been changed to the intended network device name by the method in "B.2.1 Identification of NIC for management LAN" (pg.67).

2 Execute the following command to confirm that the network device name is changed as intended.

   `# /sbin/ethtool -i ethn  # input the device order for n`

   According to the modification example in "Modification to modprobe.conf file" (pg.68), the following are displayed.

   `# /sbin/ethtool -i eth0
   driver: e100
   (omitted)
   # /sbin/ethtool -i ethn  # n = 1 to 4
   driver: bcm5700
   (omitted)`

3 Execute the following command to confirm that the IP address is changed as intended.

   `# /sbin/ifconfig -a`
Appendix C  OS Installation Using USB Flash Memory

When installing the OS with the Installation Support Tool (IST), USB flash memory can be used instead of a USB floppy disk drive to store the configuration file. The procedure below provides instructions and recommendations for copying the configuration file to the USB flash memory, and for accessing the configuration file during installation.

C.1 Copying the Configuration File to a USB Flash Memory Device

Fujitsu and Fujitsu Technology Solutions do not recommend storing the configuration file created using IST directly on a USB flash memory device. Instead, the configuration file should be exported to a Hard Disk Drive (HDD), copied to the USB flash memory device, and then the configuration file integrity should be confirmed with the following procedure.

Example of comparing the configuration file (ks.cfg) on C:\ (HDD) with the same file on D:\ (USB flash memory):

Execute the following procedure at the Command Prompt.

```
C:\> comp C:\ks.cfg D:\ks.cfg
Comparing C:\ks.cfg and D:\ks.cfg ...
Files compare OK
Compare more file (Y/N) ? N
```

Confirm that "Files compare OK" is displayed. If the files compare differently, rewrite the configuration file to the USB flash memory device, or use a different USB flash memory device.

- Some USB flash memory devices may not be readable to Linux. Please confirm that the USB flash memory device is recognized as a valid file system to Linux before using the device for configuration file storage.
- Do not use the following USB flash memory device functions. These functions are not supported in Linux:
  - Password lock function
  - Encryption function
  - Partition division function

C.2 Accessing Configuration File from a USB Flash Memory Device

To access the configuration file stored on a USB flash memory device during OS installation, the correct path to the configuration file must be specified at the ELILO boot prompt. The following shows an example of the boot parameters.
Specify the following boot parameters at the boot prompt:

```
ELILO boot: linux ks=hd:sd<n>/ks.cfg
```

"<n>" varies with the number of the disk drives connected to the target system (see below).

"<n>" indicates the partition number where the configuration file is stored on the USB flash memory device (usually "1").

Refer to the following table to select the device name that corresponds to the USB flash memory device.

<table>
<thead>
<tr>
<th>Quantity of connected disk drives</th>
<th>Device name (assuming the partition number is 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>sdb1</td>
</tr>
<tr>
<td>2</td>
<td>sdc1</td>
</tr>
<tr>
<td>25</td>
<td>sdz1</td>
</tr>
<tr>
<td>26</td>
<td>sdac1</td>
</tr>
<tr>
<td>27</td>
<td>sdab1</td>
</tr>
</tbody>
</table>
### History

<table>
<thead>
<tr>
<th>No</th>
<th>Release Date</th>
<th>Changed</th>
<th>Summary of Fix</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan. 30, 2008</td>
<td>All chapter</td>
<td>First edition</td>
</tr>
<tr>
<td>2</td>
<td>Apr. 11, 2008</td>
<td>All chapter</td>
<td>Added 500A series</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Preface</td>
<td>Modify 500A series target machine, and PRIMEQUEST bundled manual</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.2.3</td>
<td>Modify debug-info command</td>
</tr>
<tr>
<td>3</td>
<td>Sep. 24, 2008</td>
<td>All chapter</td>
<td>Added RHEL4.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.2.3</td>
<td>Modify DUP process</td>
</tr>
<tr>
<td>4</td>
<td>Jun. 11, 2009</td>
<td>All chapter</td>
<td>Added RHEL4.8</td>
</tr>
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<td></td>
<td></td>
<td>1.5.1</td>
<td>Added &quot;Hotplugging PCI Express cards&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.2.3</td>
<td>Modify &quot;Installing a New kernel and Fujitsu Drivers&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.3</td>
<td>Modify title: &quot;Hyper-Threading (or Simultaneous Multi Threading) function setting(Only PRIMEQUEST 500 Series)&quot;</td>
</tr>
</tbody>
</table>

Fujitsu Technology Solutions adapts the text to its corporate requirements by substituting the company logo and URLs for downloads, including own order numbers in manual references, and adding a comment form to the end of the manual.
Red Hat Enterprise Linux AS (v.4 for Itanium)

Software Guide for PRIMEQUEST
-Basic-
J2UZ-9980-04ENZ0(00)

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Submitted by