C122-E001-10EN

PRIMEQUEST
500A/500/400 SERIES

INSTALLATION MANUAL

FUJITSU

FOR SAFE OPERATION

This manual contains important information regarding the use and handling of this product. Read this manual thoroughly. Pay special attention to the section "NOTE ON SAFETY" Use the product according to the instructions and information available in this manual. Keep this manual handy for further reference.

Fujitsu makes every effort to prevent users and bystanders from being injured or from suffering damage to their property. Use the product according to this manual.

ABOUT THIS PRODUCT

This product is designed and manufactured for use in standard applications such as office work, personal device, household appliance, and general industrial applications. This product is not intended for use in nuclear-reactor control systems, aeronautical and space systems, air traffic control systems, mass transportation control systems, medical devices for life support, missile launch control systems or other specialized uses in which extremely high levels of reliability are required, the required levels of safety cannot be guaranteed, or a failure or operational error could be life-threatening or could cause physical injury (referred to hereafter as "high-risk" use). You shall not use this product without securing the sufficient safety required for high-risk use. If you wish to use this product for high-risk use, please consult with sales representatives in charge before such use.

RADIO FREQUENCY INTERFERENCE STATEMENT

The following notice is for EU users only.

WARNING: This is a product which meets Class A of EN55022. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

The following notice is for USA users only.

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 his own expense.

Laser standards

This equipment includes Class 1 laser products and complies with FDA Radiation Performance Standards, 21 CFR 1040.10 and 1040.11, and the International Laser Safety Standards IEC60825-1: 2001.

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Fujitsu Ltd, April 2006

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C122-E001-10EN

Revision History

Edition	Date	Revised section (Added/ Deleted/ Altered) (Note)	Details
01	2005-07-11	—	—
02	2005-09-16	All chapters (correction) CHAPTER 3 and 4 (correction)	Technical brushup Addition of description for Windows version
03	2005-10-31	All chapters (correction)	Error corrections
04	2006-02-20	All chapters (correction)	Addition of description for PRIMEQUEST 420
05	2006-04-17	CHAPTER 2 (correction) CHAPTER 2 (correction) CHAPTER 4, Appendix E (correction)	Addition of notes for network settings Correction of the procedures for Linux installation Addition of notes for PSA installation
06	2006-08-11	All chapters (correction) CHAPTER 2 (correction) APPENDIX A (correction) APPENDIX D (correction)	Addition of description for PRIMEQUEST 500 series Addition of description for SUSE Addition of description and notes for XPAR setting Addition of description for software programs supplied with the PRIMEQUEST hardware Correction of description for the EFI driver setting Addition of notes on replacing an FC card
07	2007-03-05	CHAPTER 4, APPENDIX E (correction)	Correction of description for Watchdog setting

Edition	Date	Revised section (Added/ Deleted/ Altered) (Note)	Details
08	2007-08-31	Section 4.8 (correction)	Addition of description for Linux dump function kdump
09	2008-03-10	Entire manual (addition)	Addition of description for PRIMEQUEST 580A/540A/ 520A
10	2008-04-10	Entire manual (correction)	Technical brushup

Note: In this table, the revised section is indicated by its section number in the current edition.
An asterisk (*) indicates a section in the previous edition.

Preface

This manual describes the preparation for PRIMEQUEST installation, PRIMEQUEST power-on/off sequences, initialization procedures, and software installation methods. This manual is intended for system administrators.

This section explains

- Structure and Contents of this Manual
- Other Reference Manuals
- Abbreviations
- Text Conventions
- Syntax of the Command Line Interface (CLI)
- Notes Regarding Notations Used in This Manual
- Conventions for Alert Messages
- Environmental Requirements for Using This Product
- Reader Feedback

Structure and Contents of this Manual

This manual is organized as described below:

CHAPTER 1 PRIMEQUEST Overview

Provides an overview of the hardware, software, and network connections and describes the workflow leading up to the initiation of operation.

CHAPTER 2 Setup

Describes how to perform the setup procedures required after installing the main unit.

CHAPTER 3 Operating System Installation

Describes the operating systems that can be installed, types of installation methods, and operating system installation procedures.

CHAPTER 4 Work Required After Operating System Installation

Describes how to install and set up various software programs after installing the operating system.

CHAPTER 5 Security Setup

Describes the SNMP and security settings.

CHAPTER 6 GSWB Initialization

Describes the initial settings required for using the optional GSWB product.

Appendix A Software Programs Supplied with the PRIMEQUEST Hardware

Describes the software programs supplied with PRIMEQUEST.

Appendix B Installation Procedure

Provides instructions applicable to PRIMEQUEST installation.

Appendix C Power Control

Describes power-on and power-off.

Appendix D Installation in the SAN Boot Environment

Describes how to set up the SAN boot environment.

Appendix E Setting Item List

Provides lists of default values for the MMB (server management unit) and PSA (PRIMEQUEST Server Agent).

Appendix F Overall View of Management LAN IP Addresses

Describes the IP addresses used for PRIMEQUEST.

Glossary

Explains the terms used in this manual.

Index

Provides keywords and corresponding reference page numbers so that the reader can easily search for items in this manual as necessary.

Other Reference Manuals

The following manuals are provided for reference:

a) PDF manuals included on the *PRIMEQUEST Manuals* CD-ROM disk (C122-E013-C2)

Title	Description	Manual code
PRIMEQUEST 580A/540A/580/540/480/440 System Design Guide	Explains requirements, considerations, and notes on the system operation design of the PRIMEQUEST 580A/540A/580/540/480/440.	C122-B001EN
PRIMEQUEST 580A/540A/580/540/480/440 Installation Planning Manual	Explains specifications and requirements for installation sites that are applicable to the installation of the PRIMEQUEST 580A/540A/580/540/480/440.	C122-H001EN
PRIMEQUEST 520A/520/420 System Design Guide	Explains requirements, considerations, and notes on the system operation design of the PRIMEQUEST 520A/520/420.	C122-B009EN
PRIMEQUEST 520A/520/420 Installation Planning Manual	Explains specifications and requirements for installation sites that are applicable to the installation of the PRIMEQUEST 520A/520/420.	C122-H002EN
PRIMEQUEST 500A/500/400 Series Installation Manual	Explains the setup of the PRIMEQUEST, including the preparation for the installation, initial settings, and software installation.	C122-E001EN
PRIMEQUEST 580A/540A/520A/500/400 Series Reference Manual: Basic Operation/GUI/Commands	Explains operations, setup methods, and the system management method that are required for the system operation of the PRIMEQUEST. The explanation covers basic operations and functions of the MMB, PSA, and EFI.	C122-E003EN
PRIMEQUEST 500A/500/400 Series Reference Manual: Tools/Operation Information	Explains system maintenance, Hot Plug, REMCS, and LEDs and other information required for system operation. Also, the manual provides supplementary information such as information on the physical locations of components.	C122-E074EN
PRIMEQUEST 500A/500/400 Series Reference Manual: Messages/Logs	Explains measures to be taken against problems that occur during operation and describes various types of messages.	C122-E004EN
PRIMEQUEST GSWB User's Manual	Explains the requirements, points to consider, and notes concerning installing and operating GSWB, an optional product.	C122-E028EN
SPARC Enterprise/PRIMEQUEST Common Installation Planning Manual	Explains basic information and policy on installation planning and facilities planning that are required for the installation of the SPARC Enterprise series and PRIMEQUEST series.	C120-H007EN
PRIMEQUEST 580A/540A Dynamic Partitioning (DP) Manual	Explains the Dynamic Partitioning (DP) function which the PRIMEQUEST 580A/540A supports.	C122-E085EN

Abbreviations

In this manual, the product names are abbreviated as follows:

Title	Description
Red Hat® Enterprise Linux® AS (v.4 for Itanium)	Red Hat (*1)
Red Hat® Enterprise Linux® 5 (for Intel Itanium)	
Red Hat® Enterprise Linux® AS (v.4 for Itanium)	RHEL-AS4 (IPF)
Red Hat® Enterprise Linux® 5 (for Intel Itanium)	RHEL5 (IPF) (*2)
SUSE™ Linux Enterprise Server 9 for Itanium Processor Family	SUSE
SUSE™ Linux Enterprise Server 10 for Itanium Processor Family (*)	
SUSE™ Linux Enterprise Server 9 for Itanium Processor Family	SUSE9
SUSE™ Linux Enterprise Server 10 for Itanium Processor Family	SUSE10
Microsoft® Windows® XP Professional	Windows XP
Microsoft® Windows® XP Home Edition	
Microsoft® Windows Server® 2003, Enterprise Edition for Itanium-based Systems	Windows Windows Server 2003
Microsoft® Windows Server® 2003, Datacenter Edition for Itanium-based Systems	
Microsoft® Windows Server® 2008 for Itanium-Based Systems	Windows Windows Server 2008

*1: Version-independent abbreviation

*2: A description in the form of "RHEL5.x (IPF)" indicates an updated version.

Text Conventions

This manual uses the following fonts and symbols to express specific types of information.

Fonts/symbols	Meaning	Example
Italic	Indicates names of manuals.	See the *PRIMEQUEST 580A/540A/580/540/480/440 System Design Guide.*
" "	Indicates names of manuals, chapters, sections, items, buttons, or menus.	See Chapter 5, "System Maintenance."
[]	Indicates window names, window button names, tab names, and dropdown menu selections.	Click the [OK] button.

Syntax of the Command Line Interface (CLI)

The command syntax is described below.

Command syntax

The command syntax is as follows:

- A variable that requires input of a value must be enclosed in < >.
- An optional element must be enclosed in [ ].
- A group of options for an optional keyword must be enclosed in [ ] and delimited by |.
- A group of options for a mandatory keyword must be enclosed in { } and delimited by |.

The command syntax is shown in a frame such as this one.

Notes Regarding Notations Used in This Manual

- Items marked with "Linux" apply to both Red Hat® Enterprise Linux® AS (v.4 for Itanium), Red Hat® Enterprise Linux® 5 (for Intel Itanium) SUSE™ Linux Enterprise Server 9 for Itanium Processor Family, SUSE™ Linux Enterprise Server 10 for Itanium Processor Family.
- The IO Unit is indicated as "IOU" in the MMB Web-UI and in the figures shown in this manual.

Conventions for Alert Messages

This manual uses the following conventions to show alert messages. An alert message consists of an alert signal and alert statements.

WARNING	This indicates a hazardous situation that *could* result *in serious personal injury* if the user does not perform the procedure correctly.
CAUTION	This indicates a hazardous situation that *could* result *in minor or moderate personal injury* if the user does not perform the procedure correctly. This signal also indicates that damage to the product or other property *may* occur if the user does not perform the procedure correctly.
IMPORTANT	This indicates information that could help the user to use the product more effectively.

Alert messages in the text

In the text, alert messages are indented to distinguish then from regular text. A wider space precedes and follows the message to show where the message begins and ends.

WARNING

Certain tasks in this manual should only be performed by a certified service engineer. Users must not perform these tasks. Incorrect operation of these tasks may cause electric shock, injury, or fire.

- Installation and reinstallation of all components, and initial settings
- Removal of front, rear, or side covers
- Mounting/de-mounting of optional internal devices
- Plugging or unplugging of external interface cards
- Maintenance and inspections (repairing, and regular diagnosis and maintenance)

The important alert messages are listed in the "Important Alert Messages" table in the section titled, "NOTE ON SAFETY." after "Preface."

Environmental Requirements for Using This Product

This product is a computer which is intended to be used in a computer room. For details on the operational environment, see the following manuals:

- *PRIMEQUEST 580A/540A/580/540/480/440 Installation Planning Manual* (C122-H001EN)
- *PRIMEQUEST 520A/520/420 Installation Planning Manual* (C122-H002EN).

Reader Feedback

- In this manual, it is assumed that two BMMs (optional products) can be connected to a single IO Unit and IOX; this is reflected both in the explanations and in the figures included in this manual. The PRIMEQUEST 400 series supports only connection to one BMM (BMM#0) per IO Unit and IOX.
- In this manual, the term BP (BackPlane) used in descriptions for the PRIMEQUEST 480/440 series actually stands for MP (MidPlane).
- The screen images in this manual may be different from the actual screen images.
- If you find any errors or unclear statements in this manual, please fill in the "Reader's Comment Form" sheet at the back of this manual and forward it to the address indicated at the bottom of the sheet.
- This manual is subject to revision without prior notice.
- The PDF version of this manual is best viewed in Adobe® Reader® with a magnification of 100% and Single Page for the page layout.

NOTE ON SAFETY

Important Alert Messages

This manual provides the following important alert signals:

⚠ CAUTION

This indicates a hazardous situation that could result in minor or moderate personal injury if the user does not perform the procedure correctly. This signal also indicates that damage to the product or other property may occur if the user does not perform the procedure correctly.

Task	Warning	Page
Normal operation	**Malfunction** The MMB Web-UI (Web user interface) supports the following browsers. Note that other browsers may not correctly display the Web UI. ● Microsoft® IE (Internet Explorer) v5.5 (SP2) or later ● Netscape v7.02 or later	P.2-9
	Data destruction When power to the main processing unit is turned off in an operation from the MMB, only the following LEDs of the OPL and the MMB stay lit: ● MMB-Ready LED of the OPL ● Power LED of the MMB ● Ready LED of the MMB ● Active LED of the MMB Before turning off the main power (UPS, power distribution box, circuit breaker switches, etc.), be sure to confirm that all LEDs other than the above are off. Otherwise, turning off the main power may cause damage to data.	P.C-6 P.C-8
	Data destruction Before shutting down power, make sure the following events have occurred; otherwise, data may be destroyed: ● All applications have completed processing. ● No user is using a component.	P.C-10

Task	Warning	Page
Normal operation	**Malfunction** When performing the following operations, set Boot Watchdog [Disable]: ● CD-ROM boot ● Startup in single user mode ● Backup and restore using SystemcastWizard If the operation above is performed with Boot Watchdog set [Enable], operating system restart is repeated for the specified number of times, after which a specified action (Stop rebooting and Power Off, Stop rebooting, or Diagnostic Interrupt assert) is performed. The retry count for restarting the operating system and the action to be performed are determined according to the settings of the [ASR (Automatic Server Restart) Control] window of the MMB. At this time, by clicking the [Apply] button after checking the [Cancel Boot Watchdog] check box in the [ASR (Automatic Server Restart) Control] window of the MMB, Boot Watchdog can forcibly be set to [Disable].	P.4-102

Alert Labels

The following labels are attached to this product:

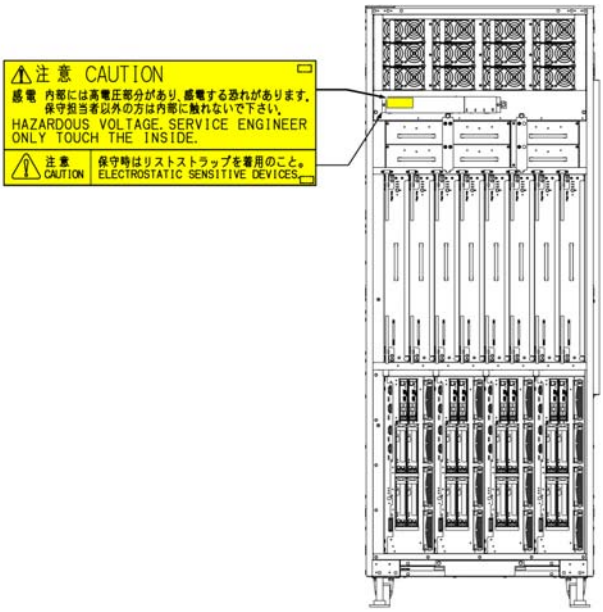
These labels provide information to the users of this product.

CAUTION

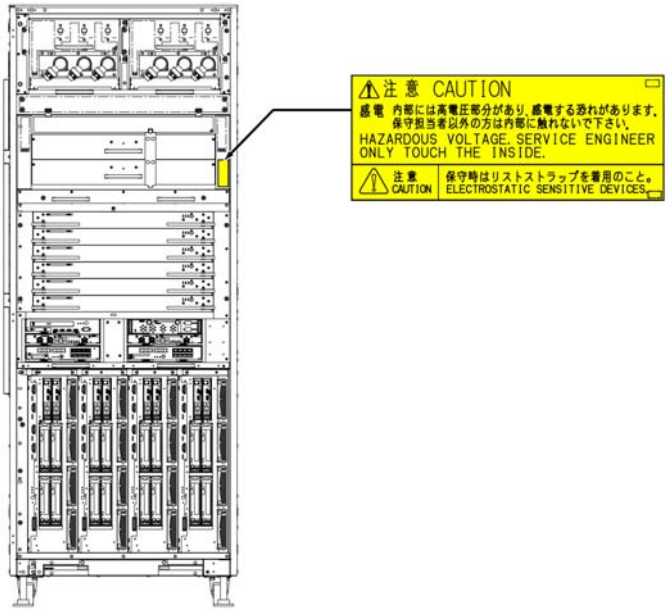
Do not peel off the labels.

PRIMEQUEST 580A/540A/580/540/480/440

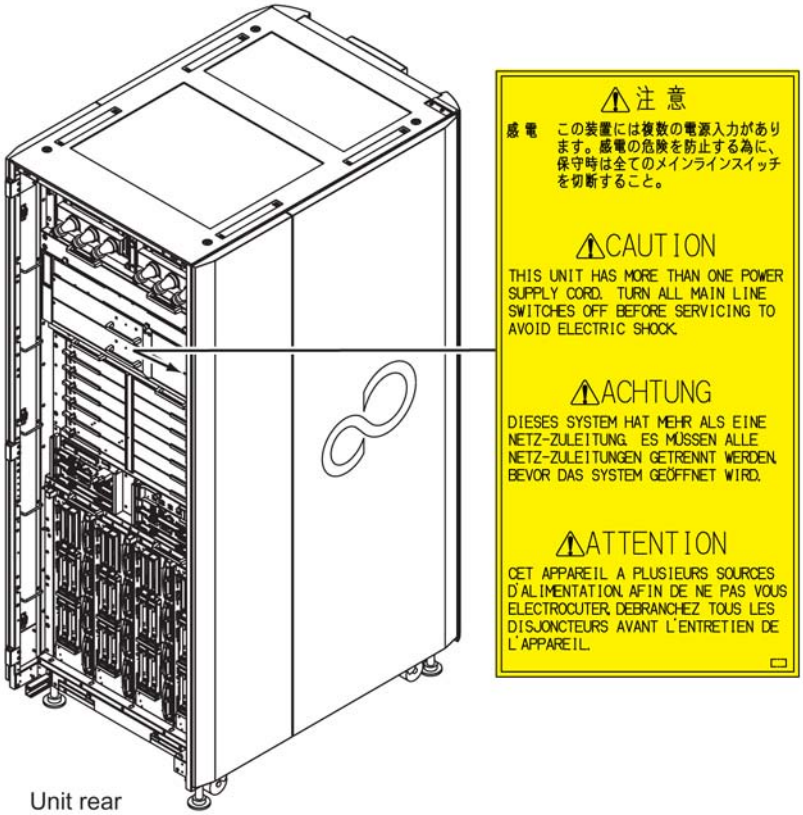
- Main unit



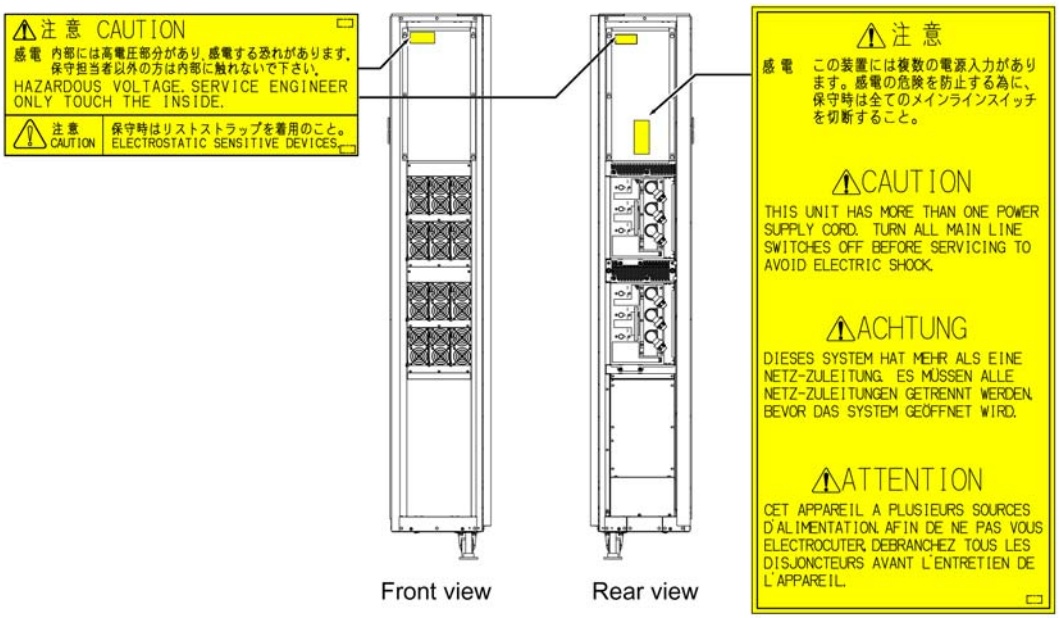
Front view



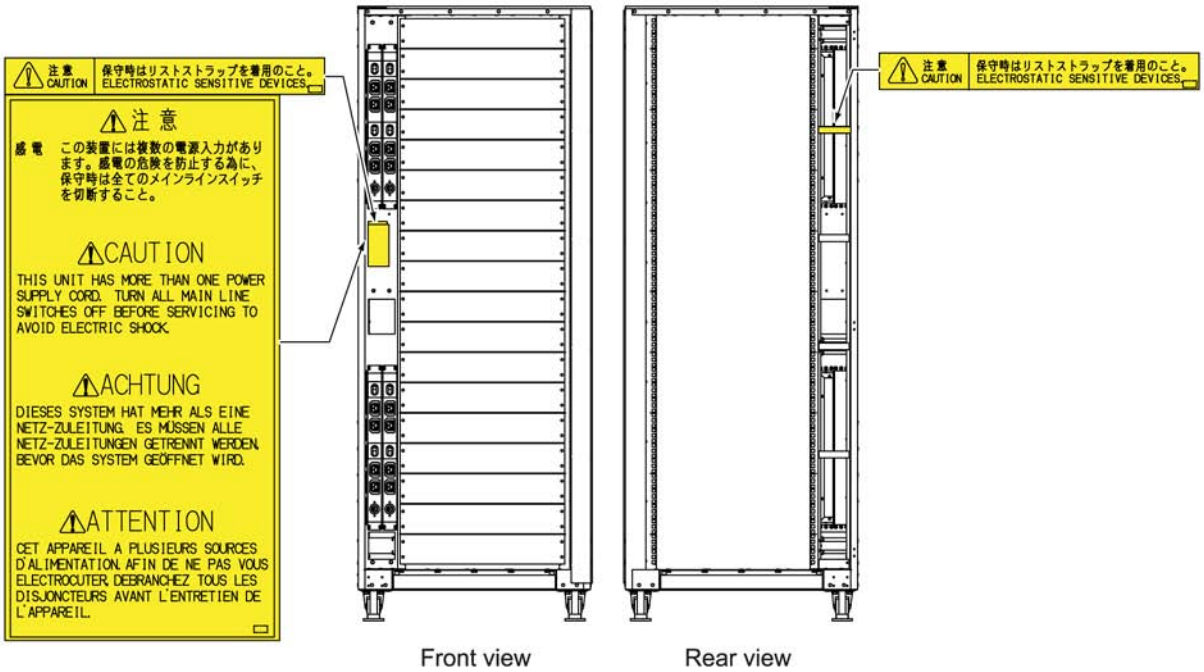
Rear view

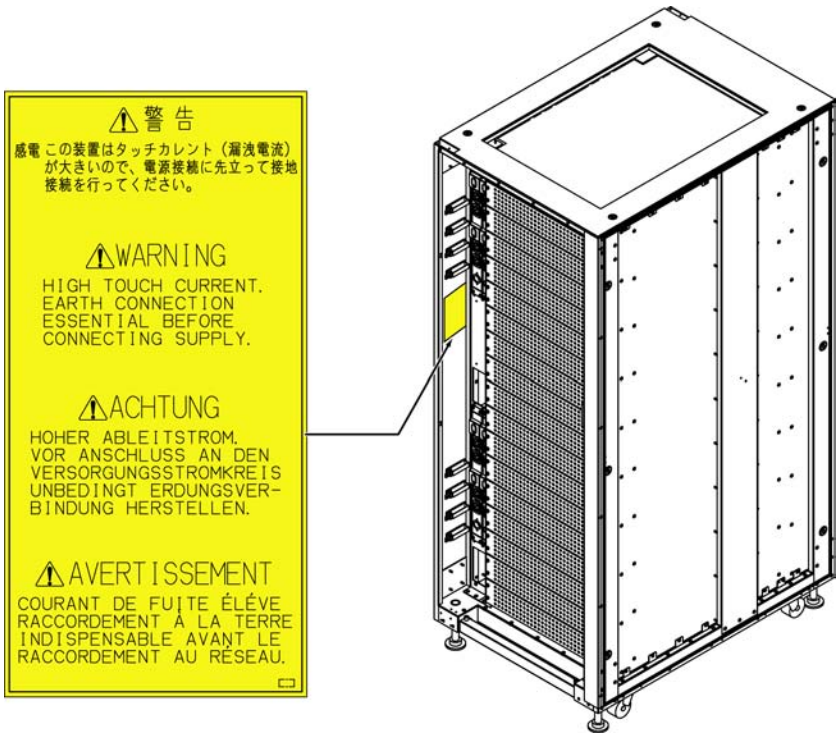


- Extended Power Cabinet

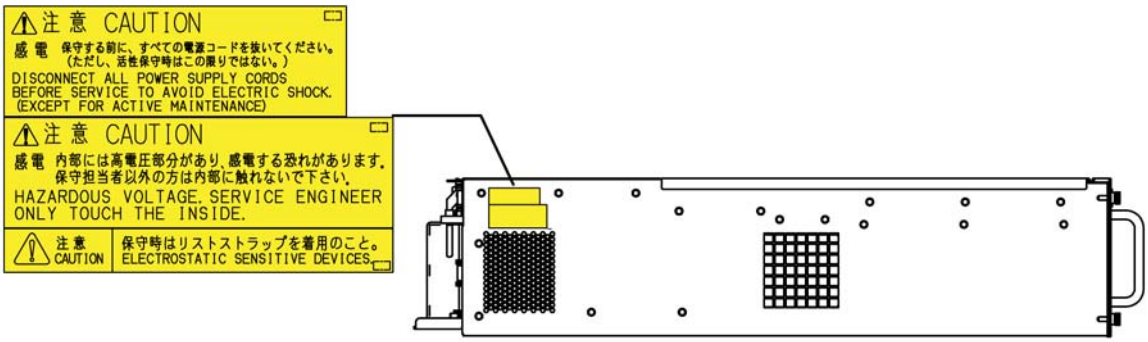


- Extended I/O Cabinet

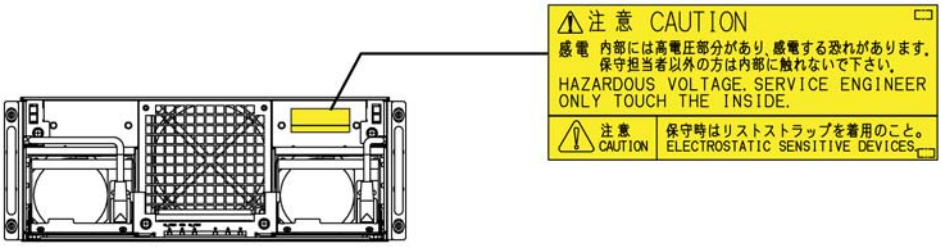




- PCI_Box



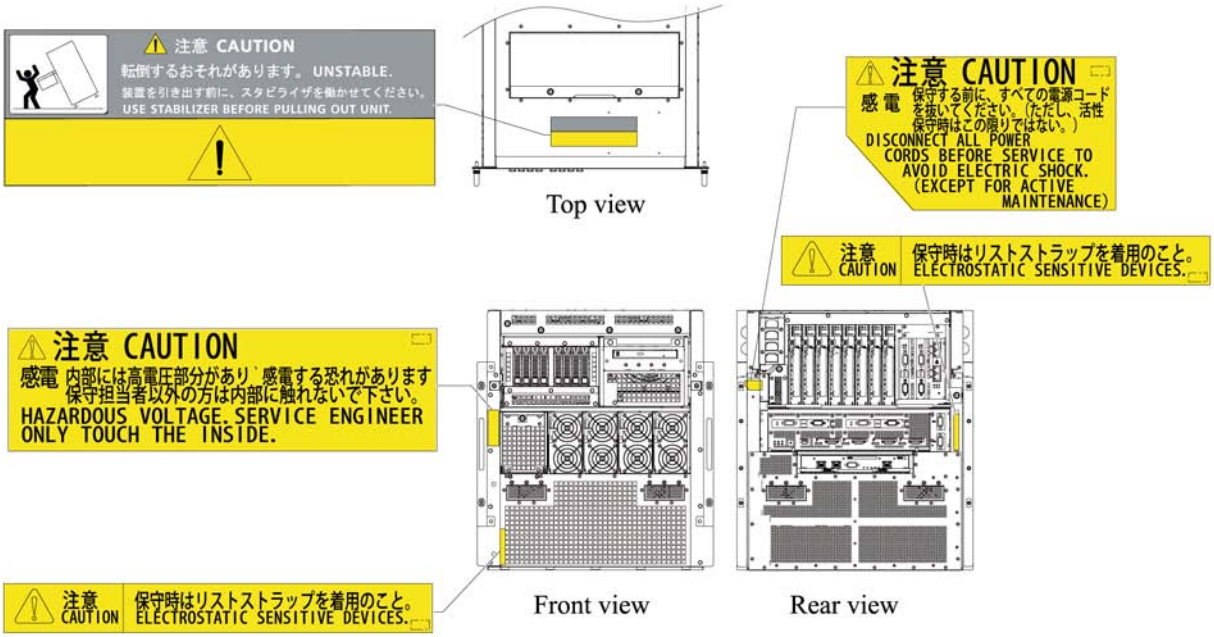
Left side view



Front view (without cover)

PRIMEQUEST 520A/520/420

- Main unit



Product Handling

Maintenance

WARNING

Certain tasks in this manual should only be performed by a certified service engineer. Users must not perform these tasks. Incorrect operation of these tasks may cause electric shock, injury, or fire.

- Installation and reinstallation of all components, and initial settings
- Removal of front, rear, or side covers
- Mounting/de-mounting of optional internal devices
- Plugging or unplugging of external interface cards
- Maintenance and inspections (repairing, and regular diagnosis and maintenance)

CAUTION

The following tasks regarding this product and the optional products provided from Fujitsu should only be performed by a certified service engineer. Users must not perform these tasks. Incorrect operation of these tasks may cause malfunction.

- Unpacking optional adapters and such packages delivered to the users

Remodeling/Rebuilding

CAUTION

Do not make mechanical or electrical modifications to the equipment.
Using this product after modifying or overhauling may cause unexpected injury or damage to the property, the user, or bystanders.

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CHAPTER 1 PRIMEQUEST Overview

1.1 Workflow for starting operation

This section describes the workflow to be executed to start PRIMEQUEST operation.

For the hardware and software overview, see the following manual that applies to your model.

- PRIMEQUEST 580A/540A/580/540/480/440
  See the *PRIMEQUEST 580A/540A/580/540/480/440 System Design Guide* (C122-B001EN).
- PRIMEQUEST 520A/520/420
  See the *PRIMEQUEST 520A/520/420 System Design Guide* (C122-B009EN).

1.2 Setup Workflow

This chapter describes how to set up the PRIMEQUEST. Some setup tasks should be performed by a certified service engineer, whereas other setup tasks should be performed by the user. This section covers the tasks that should be performed by the user.

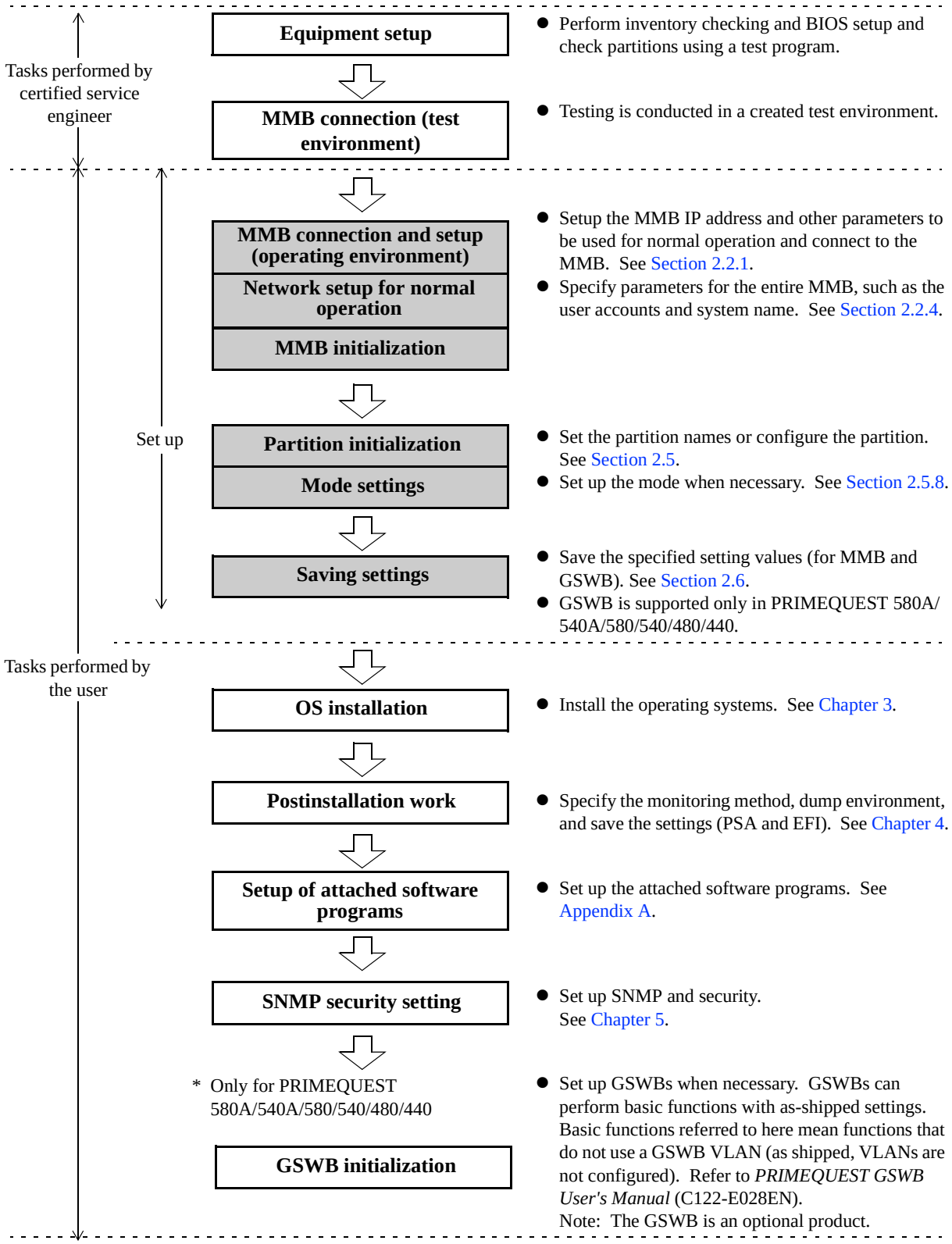


Figure 1.1 Setup workflow

Notes: Before the user can start setup tasks, certified service engineers must have executed tasks including machine setup, the part of MMB setup they are responsible for, and test program execution.

1.2.1 Items required for setup

Depending on your system configuration, you have to prepare the following items. If you need to prepare these items, contact the sales personnel or a certified service engineer.

Note: An external switching hub is required to construct a system in a configuration where the PRIMEQUEST is connected to an external switching hub via a LAN.

- PC to be used as a console
- LAN cables (for user LAN)

CHAPTER 2 Setup

2.1 Before Starting Setup

The setup procedure roughly consists of steps (1) to (3) below. Before starting setup, you need to determine the address and other information.

If the power has not been supplied to the main unit or partition, turn on the power by performing the power-on procedure explained in Appendix C, "Power Control."

Note: The management LAN and the business LAN must be configured on different subnets.

(1) MMB setup (see Section 2.2 for the procedure)

Before starting MMB setup, you need to determine the following:

- IP address, host name, subnet mask, and gateway address
- IP address of the PC to be used for the MMB console
- User accounts
- Name of the PRIMEQUEST system (also used as the SNMP system name)
- Environment used for management VLAN

and others.

(2) Partition setup (see Section 2.5 for the procedure)

If you use the partition function to configure multiple partitions, you must determine the number of partitions and the following items in advance:

- Partition names
- Partition configuration
- Home IOU
- Boot control
- System Mirror

and others.

Note: Naming each partition the same name as the host name of the OS installed in the partition makes managing partition an easier task.

(3) GSWB setup (only for PRIMEQUEST 580A/540A/580/540/480/440) (refer to the *PRIMEQUEST GSWB User's Manual* (C122-E028EN))

GSWBs can perform basic functions with as-shipped settings. Basic functions referred to here mean functions that do not use a GSWB VLAN. The *PRIMEQUEST GSWB User's Manual* (C122-E028EN) explains the settings to be made during installation. These settings are not required unless you plan to use GSWB. To make these settings, you must determine the following in advance:

- Host name, host IP address, subnet mask, default gateway
- Port to be enabled

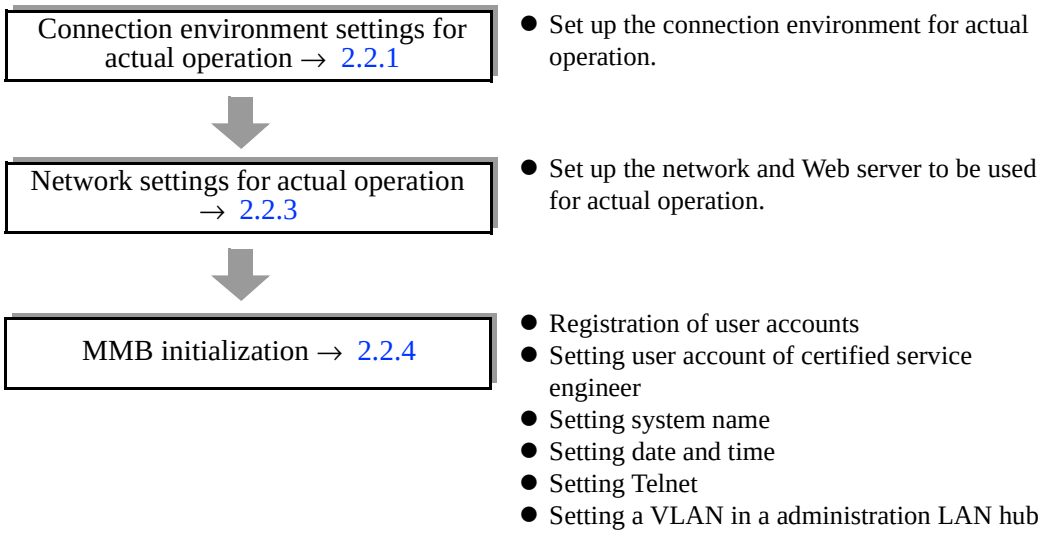
Remarks: These settings are required for each GSWB that is used.

2.2 MMB Connection and Setup

When you start MMB setup, the MMBs are in a test environment constructed by a certified service engineer, and test programs have been executed in it. Therefore, you need to reset the MMBs for actual operation.

More specifically, you need to specify MMB IP addresses and connect cables assuming actual operation. After the MMBs are connected, use the MMB Web-UI (Web user interface) to register and specify the user accounts, security parameters, time, and other MMB settings.

The figure below shows the MMB connection and setup flow.



2.2.1 Connection environment settings for actual operation

The connection environment for testing must be reset for actual operation. You need to perform the following operations:

- Specifying the IP address for the PC to be used as the MMB console (→ 2.2.1.1)
- Connecting the MMB console PC to the MMB user port (→ 2.2.1.2)
- External LAN connection for PRIMEQUEST (PRIMEQUEST 580A/540A/580/540/480/440)
  (→ 2.2.1.3)

2.2.1.1 Specifying the IP address for the PC to be used as the MMB console

On the user's PC to be used as the MMB console, specify the IP address of that PC. For information on the procedure, see the manuals for the PC.

2.2.1.2 Connecting the MMB console PC to the MMB user port

Connect the user's MMB console PC to the MMB user port by using a LAN cable. After connection is complete, the MMB console PC becomes able to communicate with the MMB LAN.

The PRIMEQUEST 580A/540A/580/540/480/440 uses a redundant MMB configuration in which one MMB is active and the other is a standby. When connecting the cable to an MMB LAN port during the setup, select the port of the active MMB (ACT LED: normally MMB#0 is on) indicated by the LED.

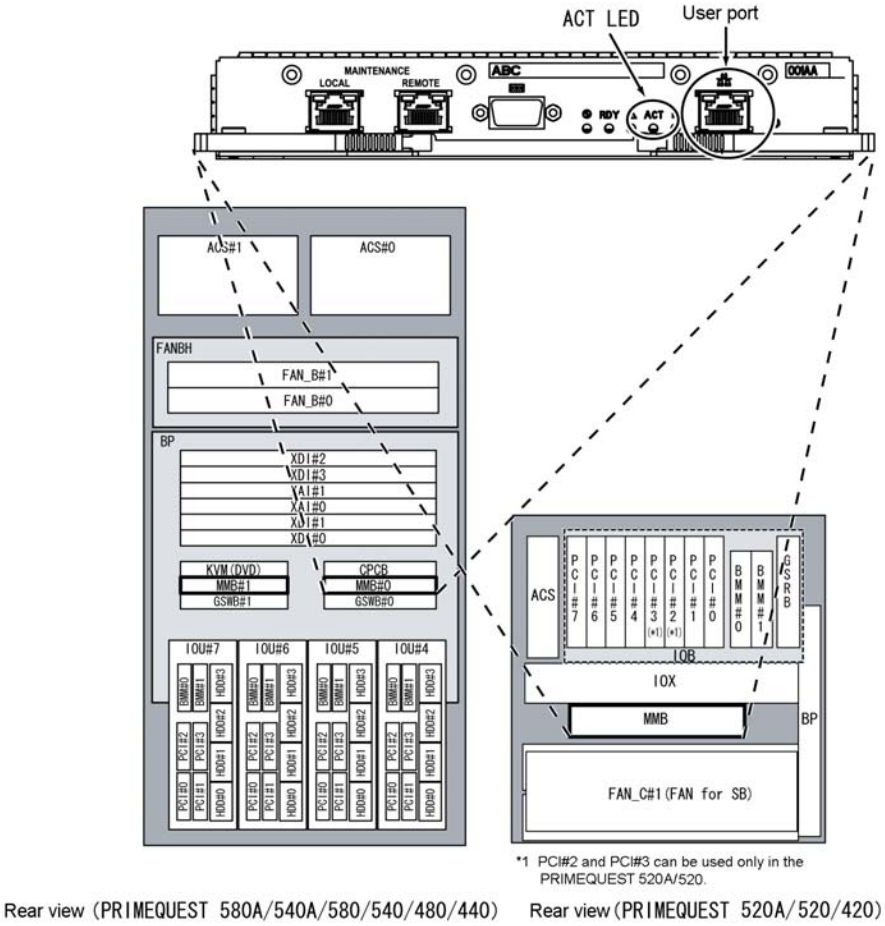


Figure 2.1 Location of the MMB user port

Remarks: BMM#1 is supported only in the PRIMEQUEST 500A/500 series.

2.2.1.3 External LAN connection for PRIMEQUEST (PRIMEQUEST 580A/540A/580/540/480/440)

This section describes the configuration for and notes on PRIMEQUEST external LAN connections. Fujitsu recommends establishing the external LAN connection after making the security settings.

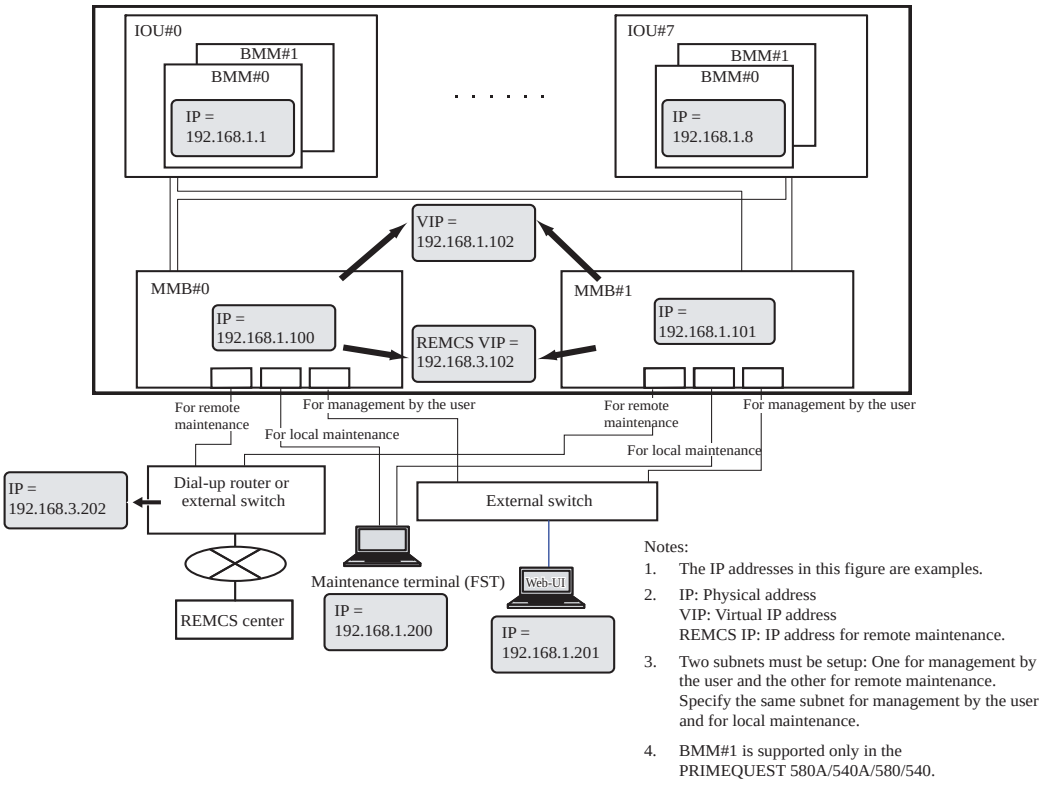


Figure 2.2 Management LAN network configuration and IP addresses (PRIMEQUEST 580A/540A/580/540/480/440)

The MMB#0 and MMB#1 management (user) ports are connected to an external switching hub via LAN cables. At the same time, a general-purpose PC for MMB Web-UI operation is also connected to the hub.

Specify the same subnet for the physical and virtual IP addresses of MMB#0 and MMB#1.

Each MMB has a physical IP address (192.168.1.100 for MMB#0 and 192.168.1.101 for MMB#1 in the above figure) and a virtual IP address (192.168.1.102 in the above figure). The virtual IP address is used for communication with the externally connected targets (Web browser, maintenance terminal, REMCS, and others).

Note:

- If you want to use a switching hub that supports a loop guard function (such as the spanning tree protocol and domain separation) as an external switch, suppress the loop guard function by disabling [Spanning Tree Protocol] for the port for connection between the switching hub and the main unit or by turning on [Domain Separation].
- The MMB transmits packets in communication of the following types: NTP, alarm e-mail, REMCS, and SNMP trap. If both a physical IP address and a virtual address are set for the MMB, the IP address of the packet sender becomes the physical IP address of the MMB.
  Under the following conditions, firewall, mail, and other servers must be configured such that the packets with the physical IP addresses of MMB#0 and MMB#1 can pass through:
  - The destination server is an external server outside the firewall.
  - IP addresses are restricted by the mail server used.

Also, if the REMOTE MAINTENANCE port is used with the PRIMEQUEST 580A/540A under the above conditions, the servers must be configured such that the packets with the IP addresses for REMOTE MAINTENANCE can pass through.

Remarks:

- The physical IP addresses of the MMBs are also used for linkage with PRIMECLUSTER.
- If REMCS connection is involved, the connection method explained below is used. For details, see Chapter 6, "REMCS" in the *PRIMEQUEST 580A/540A/520A/500/400 Series Reference Manual: Basic Operation/GUI/Commands* (C122-E003EN).
  - Internet connection:
    The REMCS ports are connected to an external switching hub or to the center via the firewall from the external switch of the management port.
  - P-P connection:
    The REMCS port of each MMB (MMB#0 and MMB#1) is directly connected to the dial-up router.

2.2.1.4 External LAN connection for PRIMEQUEST (PRIMEQUEST 520A/520/420)

This section describes the configuration for and notes on PRIMEQUEST external LAN connections. Fujitsu recommends establishing the external LAN connection after making the security settings.

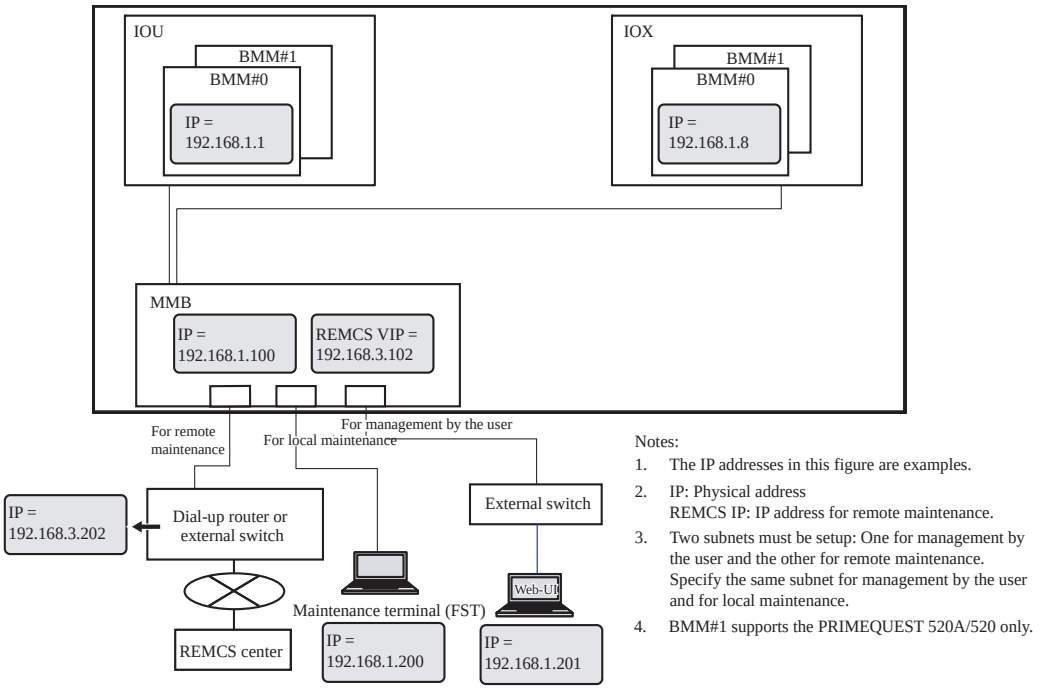


Figure 2.3 Management LAN network configuration and IP addresses (PRIMEQUEST 520A/520/420)

The MMB management (user) port is connected to an external switching hub via LAN cables. At the same time, a general-purpose PC for MMB Web-UI operation is also connected to the hub.

The MMB has a physical IP address (192.168.1.100 in the above figure). The IP address is used for communication with the externally connected targets (Web browser, maintenance terminal, REMCS, and others).

Note:

- If you want to use a switching hub that supports a loop guard function (such as the spanning tree protocol and domain separation) as an external switch, suppress the loop guard function by disabling [Spanning Tree Protocol] for the port for connection between the switching hub and the main unit or by turning on [Domain Separation].

- The MMB transmits packets in communication of the following types: NTP, alarm e-mail, REMCS, and SNMP trap.
  Under the following conditions, firewall, mail, and other servers must be configured such that the packets with the physical IP address of MMB can pass through:
  - The destination server is an external server outside the firewall.
  - IP addresses are restricted by the mail server used.

Also, if the REMOTE MAINTENANCE port is used with the PRIMEQUEST 520A under the above conditions, the servers must be configured such that the packets with the IP addresses for REMOTE MAINTENANCE can pass through.

Remarks:

- The IP addresses of the MMB are also used for linkage with PRIMECLUSTER.
- If REMCS connection is involved, the connection method explained below is used. For details, see Chapter 6, "REMCS" in the *PRIMEQUEST 580A/540A/520A/500/400 Series Reference Manual: Basic Operation/GUI/Commands* (C122-E003EN).
  - Internet connection:
    The REMCS ports are connected to an external switching hub or to the center via the firewall from the external switch of the management port.
  - P-P connection:
    The REMCS port of MMB is directly connected to the dial-up router.

2.2.2 MMB login and logout, and window configuration

You use the MMB Web-UI window for operations in Section 2.2.3, "Network settings for actual operation," 2.2.4, "MMB initialization", and 2.5, "Partition Initialization." This section explains how to log in to MMB Web-UI and how to read its display.

- Login to and logout from the MMB Web-UI (→ 2.2.2.1)
- Web-UI window elements (→ 2.2.2.2)

2.2.2.1 Login to and logout from the MMB Web-UI

The procedure for logging in to the MMB Web-UI is described below.

To log in to the Web-UI, you need to either specify the virtual IP address or physical IP address of the active MMB, or specify the fully qualified domain name (FQDN) corresponding to the IP address.

To specify a fully qualified domain name (FQDN), the DNS server must already be specified.

CAUTION

Malfunction

The MMB Web-UI (Web user interface) supports the following browsers. Note that other browsers may not correctly display the Web UI.

- Microsoft® IE (Internet Explorer) v5.5 (SP2) or later
- Netscape v7.02 or later

Login procedure

1 Start the Web browser.

Remarks 1: To use JavaScript, the MMB Web-UI must enable it by browser setting.

Remarks 2: For downloading through the MMB Web-UI, downloading must be enabled by the browser setting.

2 Enter the following URL.

Standard	http://nodename:adminport
SSL	https://nodename:adminport

nodename: Specifies an MMB FQDN or IP address.

adminport: Specifies a port number that is allocated to the MMB management port (default value: 8081 for standard or 432 for SSL).

3 Enter a user account name and password as follows, and click the [Login] button.

Remarks: When the browser is started for the first time or a setting change is not made, the following default user account and password are applied and a change to a new password is requested.

Username	Administrator
Password	Password specified by the Fujitsu certified service engineer during system setup.

Logout procedure

1 To quit operation, click [Logout] on the upper right of the browser window. Log out from the Web-UI.

Remarks: To perform other operations, select a menu or sub-menu.

2.2.2.2 Web-UI window elements

This section explains information to be displayed on the Web-UI window using the window of the PRIMEQUEST 580A/540A/580/540/480/440 as an example.

Information displayed on the window

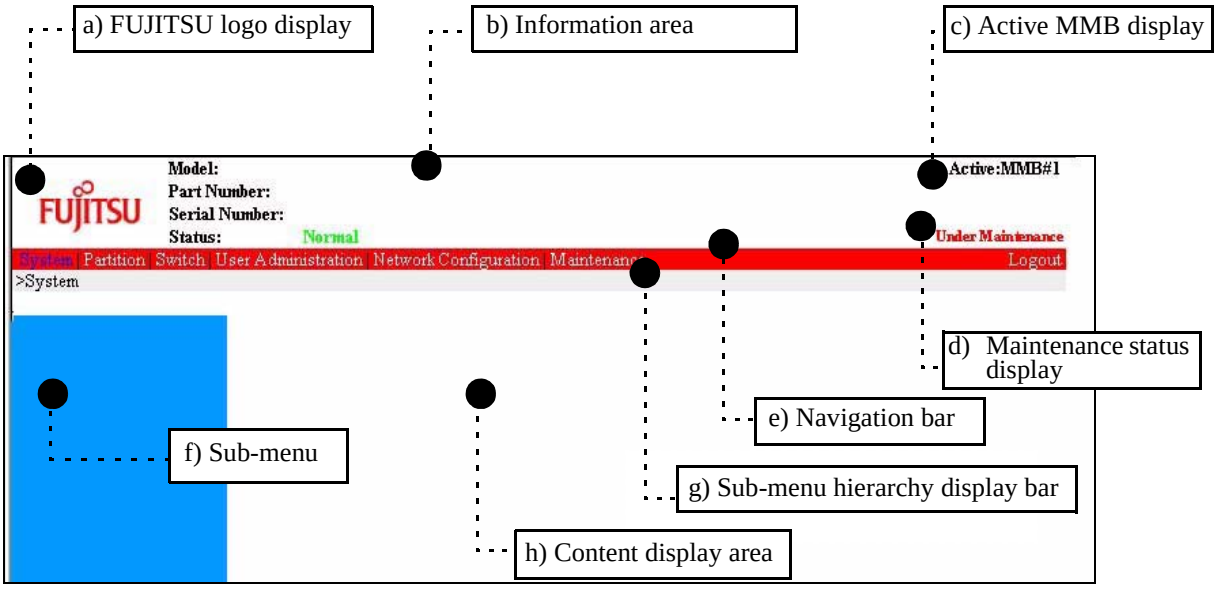


Figure 2.4 [Web-UI Frame Information] Window

a) FUJITSU logo display

The FUJITSU logo mark is displayed. Click this mark to display the FUJITSU homepage.

b) Information area

This area displays the following information.

- [Model]
  Displays the PRIMEQUEST model name (Product Info Product Name of operation panel FRU).

- [Part Number]
  Displays the PRIMEQUEST part number (Product Info Product Part/Model Number of operation panel FRU).

  Note: When "Read Error" is displayed, contact your Fujitsu certified service engineer.

- [Serial Number]
  Displays the serial number of the PRIMEQUEST.

  Note: When "Read Error" is displayed, contact your Fujitsu certified service engineer.

- [Status]
  Displays the status of the entire PRIMEQUEST. The system status display indicates the three statuses below. Click one of the three to display the [System Event Log] window.

Table 2.1 System status display

Status	Display color	Icon
Normal	Green	None
Warning	Yellow	Black ! in yellow triangle
Error	Red	White x in red circle

c) Active MMB display

Displays the number of the MMB that is operating as an active MMB with the Web-UI connected.

d) Maintenance status display

When a certified service engineer is maintaining this device by using a maintenance wizard menu, "Under Maintenance" is displayed in orange. When maintenance is not being conducted, no information is displayed.

e) Navigation bar

The top layer menus are displayed. A menu being selected is displayed in black characters, and one not selected is displayed in white characters.

- [System], [Partition], [Switch], [User Administration], [Network Configuration], [Maintenance]
  Click one of the menus to display the sub-menu in g).

Note: [Switch] is displayed for the PRIMEQUEST 520A/520/420 and for the PRIMEQUEST 580A/540A/580/540/480/440 with a built-in GTHB.

- [Logout]

  Click here to log out from the MMB Web-UI.

f) Sub-menu hierarchy display bar

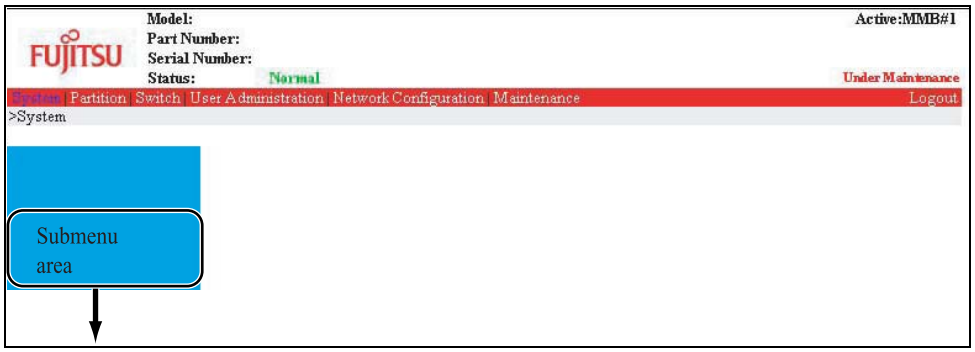
Hierarchy display

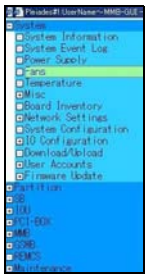
The menu hierarchies that the user passes from the top menu to the sub-menu displayed in the sub-menu area are displayed. Click the menu displayed here to display the content window of that menu.

Example: >System>System Status

g) Sub-menu

The sub-menu of the menu selected on the navigation bar is displayed.





The sub-menu is displayed as follows.

- Up to three menu hierarchies are displayed.
- A "+" display at the beginning indicates that there are lower-layer menus.
- A "-" display at the beginning indicates that there are lower layer menus, which are expanded.
- A "-" display at the beginning indicates that there is no lower menu.
- When the cursor is positioned on a menu, the menu color is displayed in reverse video.
- The background color of a selected menu changes.

Figure 2.5 Sub-menu

h) Content area

The window for a selected sub-menu is displayed in the content area.

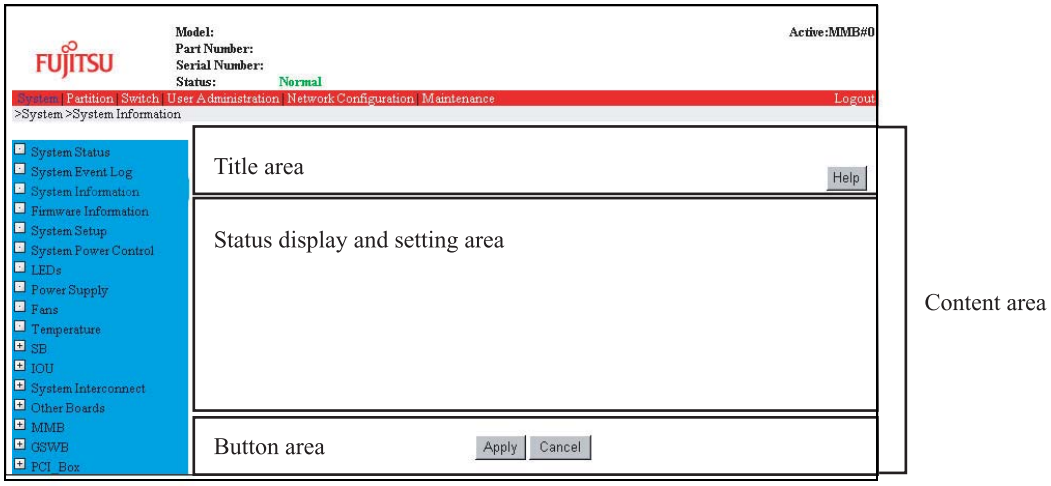


Figure 2.6 Content area

The content area is divided into the following three.

- Title area

  Content title is displayed.

  - This area has a [Help] button for displaying the Help menu for the content and the [Refresh] button to display the most up-to-date content.
  - The [Refresh] button is applied to only the content area.
  - The [Refresh] button is not displayed on all windows. It is not displayed on one where only settings are made and its status is not automatically changed.

    Remarks:Use [Refresh Rate] in the [Network Configuration] menu to set a refresh rate.

  - Windows with a [Refresh] button display are subject to automatic refreshing. (Excluding PSA)
  - This area is not scrolled together with [Status display and setting area].

- Status display and setting area

This area displays content related status and setting details.
The status display has three patterns, "Normal status," "Warning status," and "Error status," each displayed with the background colors indicated below.

Table 2.2 Status display

Status	Background color
Normal	Typical window background color
Warning	Warning color (yellow)
Error	Error color (red)

When the user has only the display authority, input field, radio button, and check box are displayed dimmed (not selectable).

- Button area
  Buttons for setting the status display and setting the setting area contents are displayed. The [Apply] and [Cancel] buttons are normally displayed.
  For contents that are displayed only and do not require user input, this button area is not displayed.

Basic operation

The basic operation flow is as follows:

1. Select a menu from the navigation bar.
   The submenu of the selected menu is displayed in the sub-menu area.
2. Select a menu from the sub-menu.
   The window of the selected menu is displayed in the content area.
3. Check and set information on the displayed window.
   Click the [Apply] button to set the information.
   Click the [Cancel] button to return the information to its state before it was input.
   Remarks: To return to the upper hierarchy, click the [←] (Back) button on the IE toolbar.
   The upper-hierarchy screen is displayed in the content area.

Note: If the MMB Web-UI is used from Internet Explorer and the dialog box for process execution confirmation or process completion notification is displayed for more than two minutes, the MMB Web-UI is disconnected. In such cases, log in to the MMB Web-UI again.

Notation used for window operation

The window operations in this manual are described as follows:

- Menu operation of Web UI
  [ ] → [ ]
  Example: Describing the operation procedure for displaying the [System Status] window
  Click [System] → [System Status]. (Select the items in order of indication.)
- Describing multiple menus indicated in the same hierarchy
  [ ]/[ ]/[ ]/[ ]
  Example: Describing the operation procedure for displaying the [Port Configuration] window of the IOU, front panel, port-channel, or partition
  Click [Switch] → [GSWB#x] → [Port] → [Port Configuration] → [IOU]/[Front Panel]/[port-channel]/[Partition].
- Describing one of multiple components (The actual Web-UI is indicated with a number.)
  Component-name#x
  Example: Describing a partition number in the second hierarchy
  Click [Partition] → [Partition#x] → [Mode].

If one of the MMB error or warning states shown in the following "operation interruption check conditions" occurs, refrain from operating the window. Instead, contact your Fujitsu certified service engineer.

- Operation interruption check conditions
  - The Alarm LED on the MMB is on.
  - The Active LEDs on both MMB#0 and MMB#1 are off.
  - A connection to the MMB Web-UI cannot be established.
  - The Alarm LEDs on two or more boards in the main unit are on.
  - "ReadError" is displayed on the MMB Web-UI.
  - "Not Present" is displayed for the state of every unit in the [System Status] window of the MMB Web-UI.

2.2.3 Network settings for actual operation

This section explains the following settings, which are required for actual operation. Perform these as needed for your operation mode.

- Setting up the MMB network (PRIMEQUEST 580A/540A/580/540/480/440) (→ 2.2.3.1)
- Setting up the MMB network (PRIMEQUEST 520A/520/420) (→ 2.2.3.2)
- Specifying Telnet parameters (→ 2.2.3.3)
- Setting up the DNS server (→ 2.2.3.4)

For backing up the settings, see Section 2.6, "Saving Configuration Information."

Remarks: This can be performed by users with administrator privilege.

2.2.3.1 Setting up the MMB network (PRIMEQUEST 580A/540A/580/540/480/440)

Specify information including the virtual IP address used to access the Web-UI and the physical IP address assigned to the MMB interface.

Note that this information may have already been set by a Fujitsu certified service engineer. If the information need not be changed, proceed with the next setting.

Notes:

- Specify the same subnet for the physical and virtual IP addresses of MMB#0 and MMB#1.
- When the virtual IP address is set, and the PRIMEQUEST series machine is accessed from an external device (for example, from a Web browser, maintenance terminal, the REMCS, etc.), the access is performed through the virtual IP address. Therefore, it is impossible to access the MMB Web-UI by specifying the physical IP address of MMB #0 or MMB #1.

Remarks:

- If you make changes to [MMB#0 IP Address] or [MMB#1 IP Address] and click the [Apply] button in the [Network Interface] window, the network is temporarily stopped and the Web-UI is disconnected to reflect the settings. In this case, you can reconnect the Web-UI by making a selection from the menu.
- When the IP address is changed, the connection to the MMB Web-UI is terminated. To use the MMB Web-UI, log in again.

Procedure

1 Click [Network Configuration] → [Network Interface].
The [Network Interface] window appears.

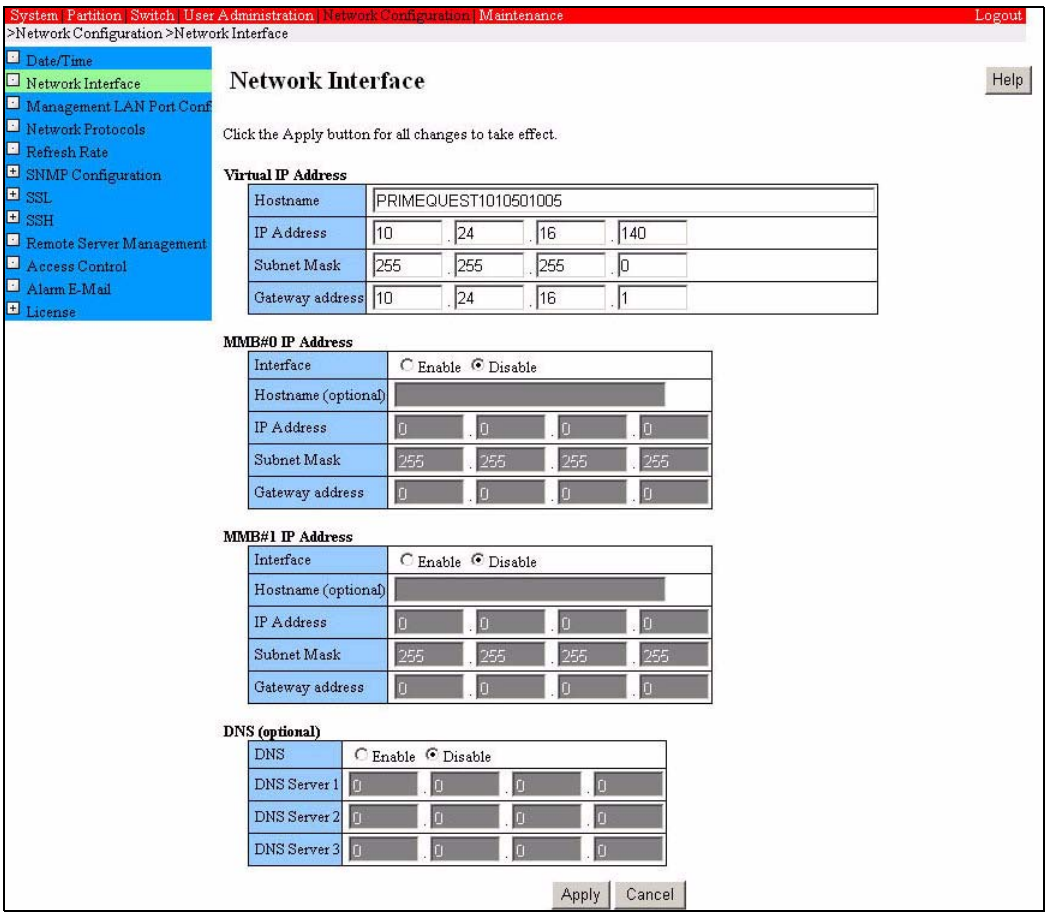


Figure 2.7 [Network Interface] window (PRIMEQUEST 580A/540A/580/540/480/440)

2 Specify the IP Address, Subnet Mask, and Gateway Address to the [Virtual IP Address] items. The host name must be specified.

Table 2.3 Displayed and setting items in the [Network Interface] window

Item	Description
Hostname	Specify the host name.
IP Address	Specify the virtual IP address to be used to access the Web-UI.
Subnet Mask	Specify the subnet mask.
Gateway Address	Specify the gateway IP address.

3 In [MMB#0 IP Address] or [MMB#1 IP Address], click [Enable] for the [Interface] item, and enter values for each item.
Specify the physical IP address to be assigned.

Table 2.4 Displayed and setting items in the [Network Interface] window

Item	Description
Hostname	Specify the host name.
IP Address	Specify the IP address.
Subnet Mask	Specify the subnet mask.
Gateway Address	Specify the gateway IP address.

4 After setting all necessary items, click the [Apply] button.

Note: If an incorrect value is specified for the IP address or another required parameter, the MMB Web-UI is not displayed. Connect a general-purpose PC to the COM port of the MMB, and specify the correct values. For details on how to set the parameters, see Appendix B, "Installation Procedure."

2.2.3.2 Setting up the MMB network (PRIMEQUEST 520A/520/420)

Specify information including the IP address used to access the Web-UI.

Note that this information may have already been set by a Fujitsu certified service engineer. If the information need not be changed, proceed with the next setting.

Remarks: When the IP address is changed, the connection to the MMB Web-UI is terminated. To use the MMB Web-UI, log in again.

Procedure

1 Click [Network Configuration] → [Network Interface].
The [Network Interface] window appears.

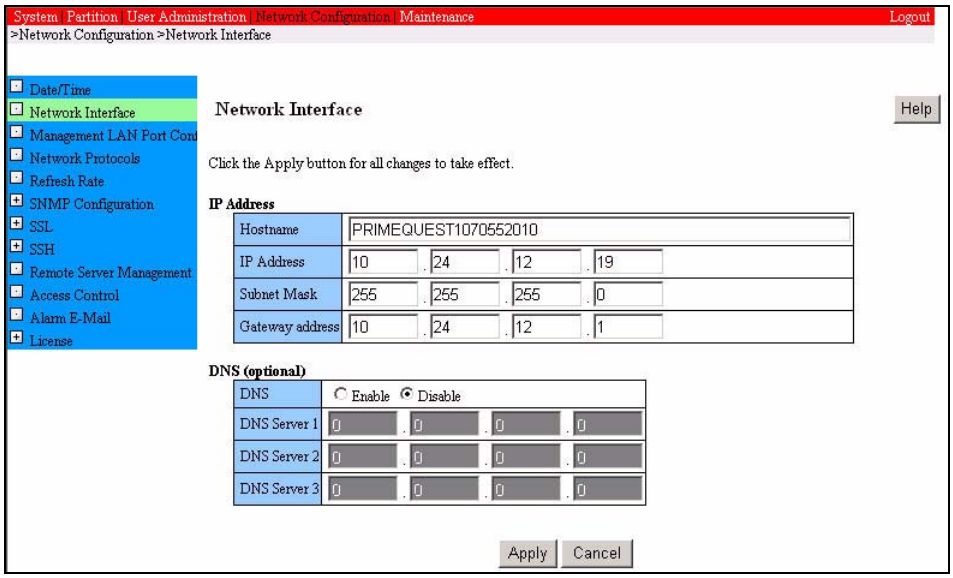


Figure 2.8 [Network Interface] window (PRIMEQUEST 520A/520/420)

2 Specify the IP Address, Subnet Mask, and Gateway Address to the [IP Address] items. The host name must be specified.

Table 2.5 Displayed and setting items in the [Network Interface] window

Item	Description
Hostname	Specify the host name.
IP Address	Specify the IP address to be used to access the Web-UI.
Subnet Mask	Specify the subnet mask.
Gateway Address	Specify the gateway IP address.

3 After setting all necessary items, click the [Apply] button.

Note: If an incorrect value is specified for the IP address or another required parameter, the MMB Web-UI is not displayed. Connect a general-purpose PC to the COM port of the MMB, and specify the correct values. For details on how to set the parameters, see Appendix B, "Installation Procedure."

2.2.3.3 Specifying Telnet parameters

Specify Telnet parameters for MMBs. This can be performed by users with administrator privilege.

Procedure

1 Click [Network Configuration] → [Network Protocols].
The [Network Protocols] window is displayed.

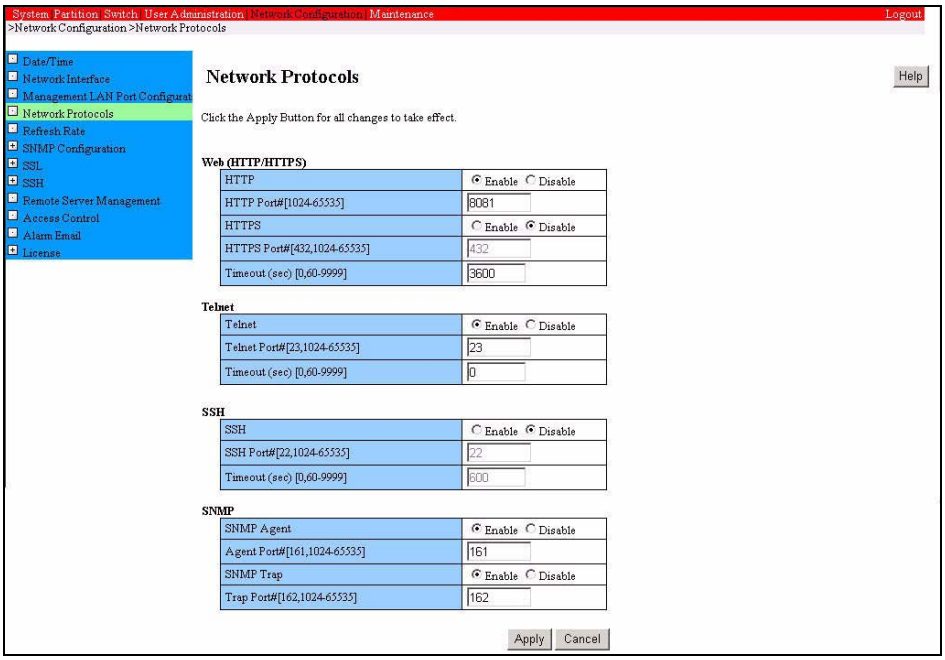


Figure 2.9 [Network Protocols] window

2 Specify the settings to the [Telnet] items.

Table 2.6 Displayed and setting items in the [Network Protocols] window

Item	Description
<Telnet>	
Telnet	Sets [Enable]/[Disable] of Telnet. Default: [Disable]
Telnet Port	Sets a port to be used for Telnet. Default: 23
Timeout	Sets a time interval allotted for entering data with Telnet connected before the connection is cut off. (At the end of this time interval, time-out occurs if no data is entered.) Default: 600 seconds

3 Click the [Apply] button.

2.2.3.4 Setting up the DNS server

Specify the DNS server to enable its use. You may specify it at a later time.

Procedure

1 Click [Network Configuration] → [Network Interface].
The [Network Interface] window appears.

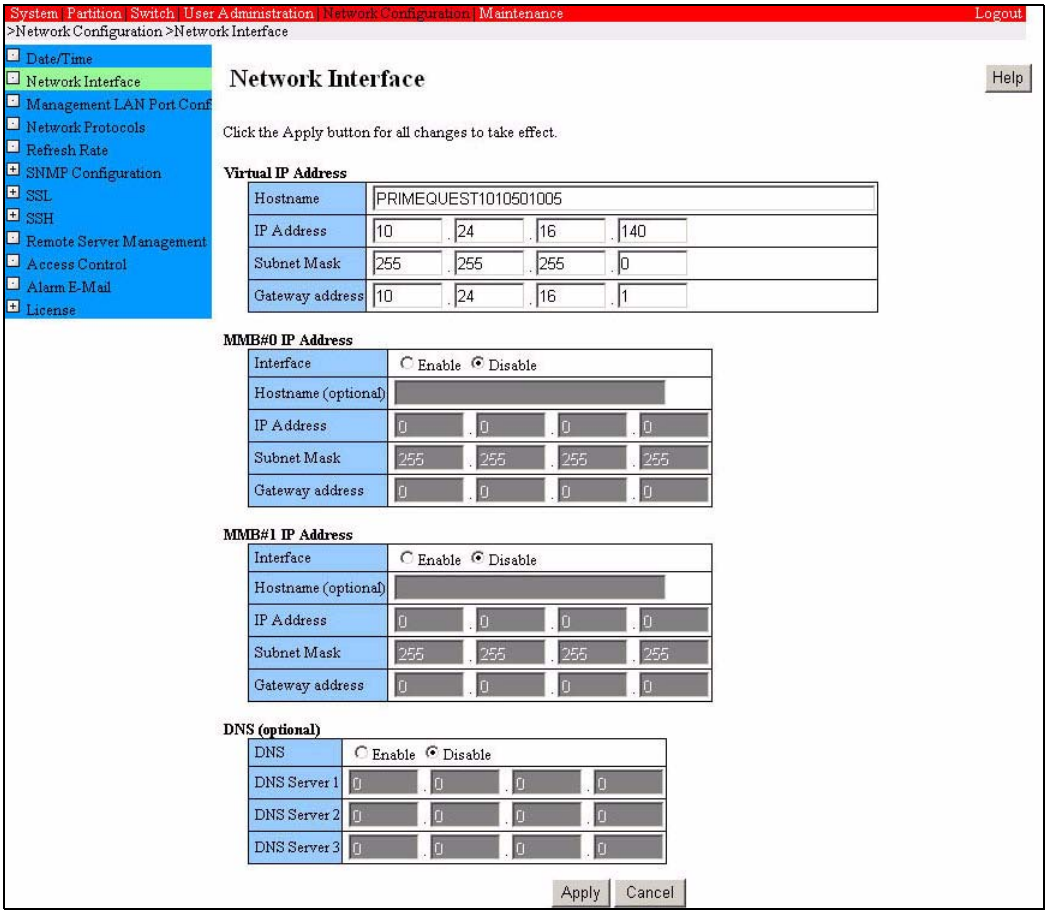


Figure 2.10 [Network Interface] window (PRIMEQUEST 580A/540A/580/540/480/440)

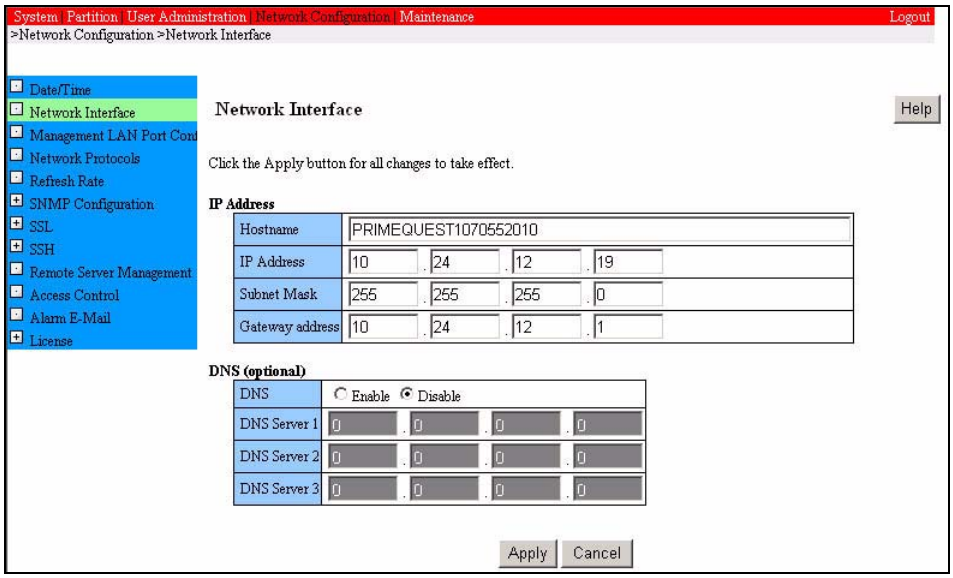


Figure 2.11 [Network Interface] window (PRIMEQUEST 520A/520/420)

2 Click [Enable] for the [DNS] item under [DNS (optional)], and enter values for each item.

Table 2.7 Displayed and setting items in the [Network Interface] window

Item	Description
DNS	Specify whether to use the DNS server. Enabled: Use the DNS server. Disabled: Do not use the DNS server. The default is [Disabled].
DNS Server1	Specify the IP address of DNS server 1.
DNS Server2	Specify the IP address of DNS server 2.
DNS Server3	Specify the IP address of DNS server 3.

3 After all necessary settings have been made, click the [Apply] button.

2.2.3.5 SMTP settings

Set up MMB SMTP (Simple Mail Transfer Protocol). More specifically, specify whether to report errors by e-mail if they occur during operation. If you specify reporting by e-mail, you will also need to specify the error level and the report destinations.

Setting e-mail reporting

- Procedure

1 Click [Network Configuration] → [Alarm E-Mail].
The [Alarm E-Mail] window is displayed.

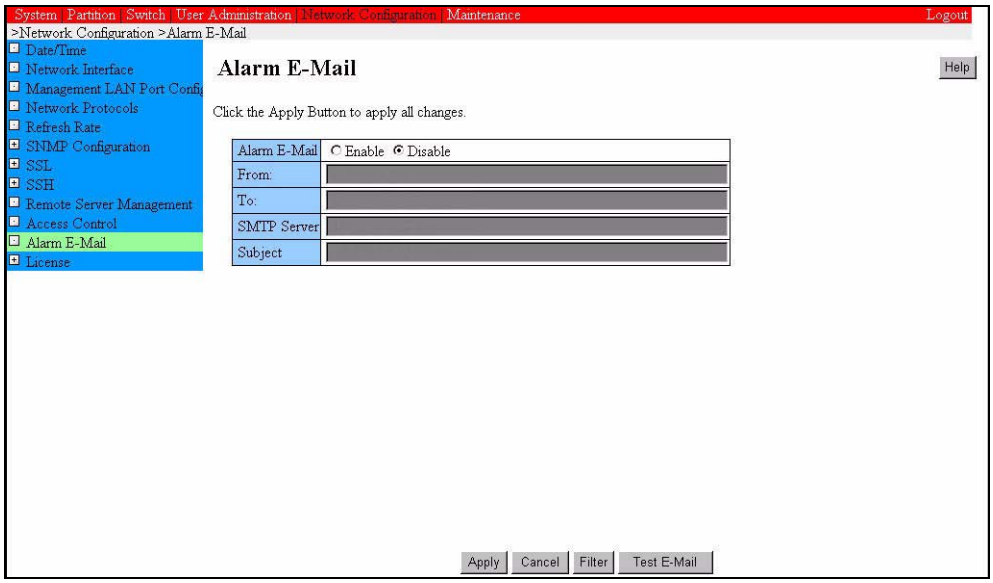


Figure 2.12 [Alarm E-Mail] window

2 Specify the required items.

Table 2.8 Displayed and setting items in the [Alarm E-mail] window

Item	Description
Alarm E-Mail	Specifies whether to transmit an Alarm E-Mail if an event occurs. To specify transmission, select [Enable].
From:	Sets the E-Mail address of the sender.
To:	Sets the E-Mail address of the recipient.
SMTP Server	Sets an SMTP server IP address or FQDN. Note that the FQDN can be set only when a DNS has been set.
Subject	Sets the subject of the mail.

3 Click the appropriate button.
- To set e-mail sending conditions: Click the [Filter] button.
- To enable the setting: Click the [Apply] button.
- To send e-mail for testing: Click the [Test E-Mail] button.

Note: A DNS server must be specified prior to specifying a fully qualified domain name (FQDN). You can specify it by selecting [Network Configuration] → [Network Interface].

Specifying mail sending conditions

- Procedure

1 To specify mail sending conditions, click the [Filter] button in the [Alarm E-Mail] window.
The [Alarm E-Mail Filtering Condition] window is displayed.

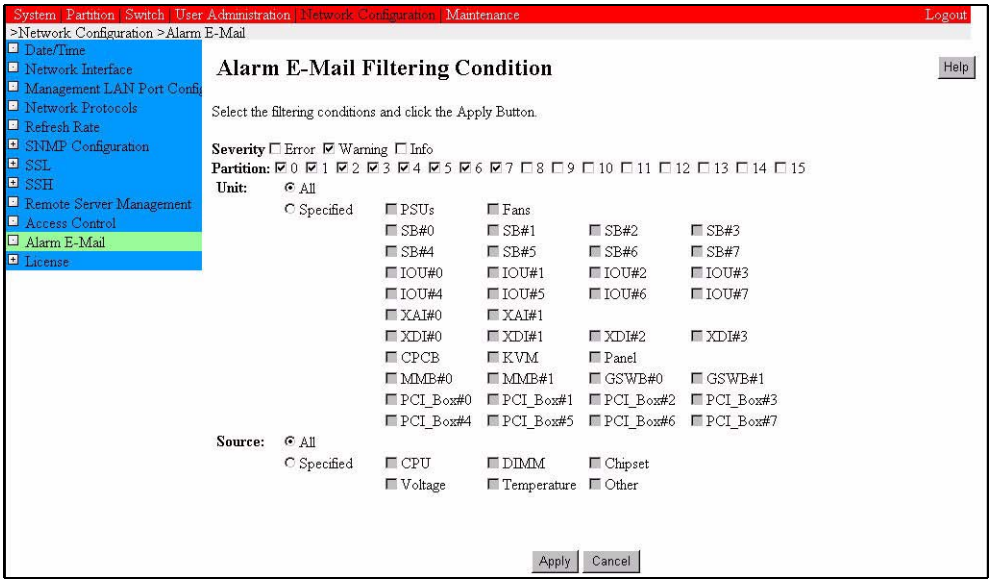


Figure 2.13 [Alarm E-Mail Filtering Condition] window
(PRIMEQUEST 580A/540A/580/540/480/440)

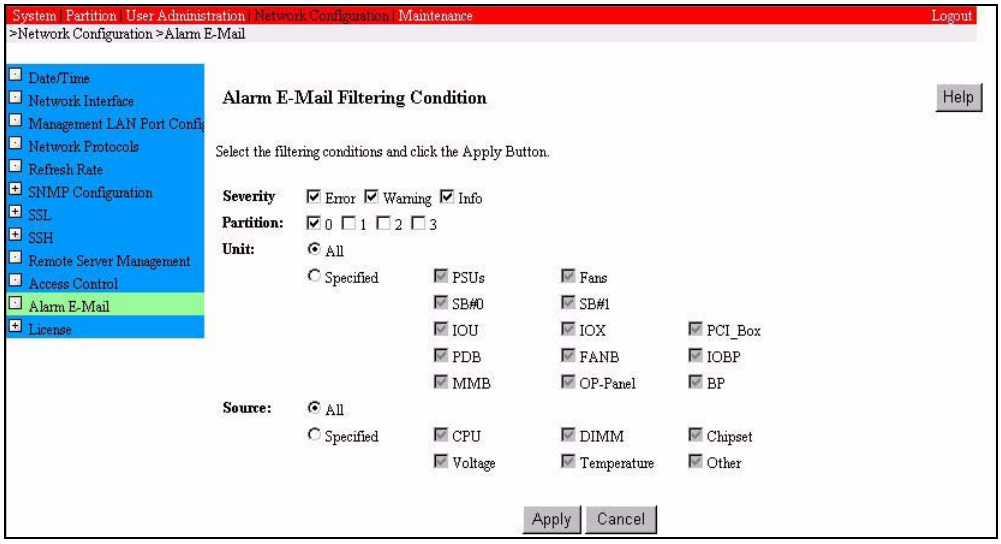


Figure 2.14 [Alarm E-Mail Filtering Condition] window
(PRIMEQUEST 520A/520/420)

2 Select the required items.
If multiple items are selected, they are joined by the AND operator and their sub-items are joined by the OR operator.

Table 2.9 Displayed and setting items in the [Alarm E-mail Filtering Condition] window

Item	Description
Severity	Selects the level of Severity to be reported by e-mail. More than one can be selected. • [Error]: Important problems such as hardware problems • [Warning]: Events not always important but likely be a problem in the future • [Info]: Normal events such as partition power-on Default: All errors
Partition	Selects the target partition for reporting by mail. More than one can be selected. Default: All partitions
Unit	Selects a unit to be displayed. Select [All] or [Specified] with a radio button. • If [All] is selected, filtering by [Unit] is not done. • If [Specified] is selected, filtering by unit can be set. Use the check box to select a unit for which you want events displayed. Default: [All]
Source	Selects the source on which notification e-mail is to be sent. Select [All] or [Specified] with a radio button. • [All]: Filtering by source is not done. • [Specified]: Filtering by source can be set.

3 Click the [Apply] button.

2.2.4 MMB initialization

This section explains the operations for various types of MMB initialization.

Note: The MMB uses the following TCP/IP port numbers:
- 623/udp: RMCP communication
- 664/udp: RMCP communication
- 5000: Event communication from PSA

It is recommended to back up the setup information after completing the following setup tasks.

For backing up the settings made here, see Section 2.6, "Saving Configuration Information."

- Registering user accounts (→ 2.2.4.1)
- Specifying a user account for the certified service engineer in charge (→ 2.2.4.2)
- Specifying the system name (→ 2.2.4.3)
- Setting the date and time (→ 2.2.4.4)
- Setting a management LAN hub (→ 2.2.4.5)

2.2.4.1 Registering user accounts

Register as many MMB user accounts as required.

Procedure

1 Click [User Administration] → [User List].
The [User List] window appears.

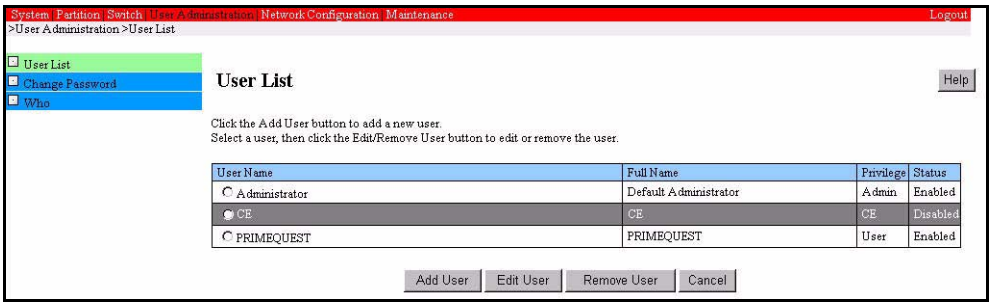


Figure 2.15 [User List] window

Table 2.10 Displayed and setting items in the [User List] window

Item	Description
User name	Displays the user name.
Full Name	Displays the actual name of [User Name].
Privilege	Displays permission for the user account.
Status	Displays the current status of this account: Enabled or Disabled.

2 Click the [Add User] button.
The [Add User] window appears.

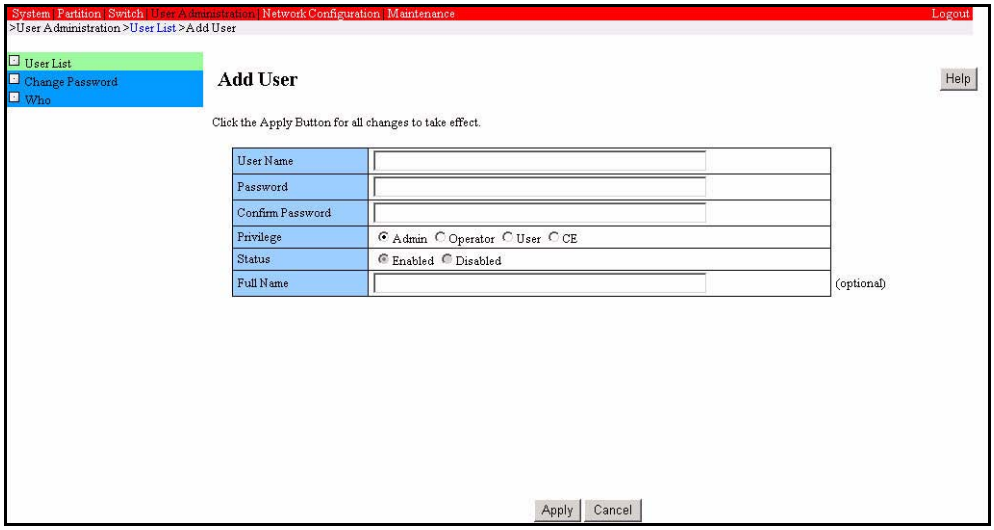


Figure 2.16 [Add User] window

Note: To change an existing user account, click the [Edit User] button in the [User List] window, and change its registration details in the [Edit User] window.

3 Specify the required items.

Table 2.11 Displayed and setting items in the [Add User] window

Item	Description
User name	Specify the user name, using 8 to 32 characters. The characters that can be used to specify the user name are 0 to 9, a to z, A to Z, -, and _. The user name must begin with a letter from a to z or A to Z.
Password	Specify the password in 8 to 32 characters. The password cannot be one that can be easily guessed by the help of dictionary. If the specified password is inappropriate, the system prompts for another password. The characters that can be used to specify the password are as follows: Digits: 0 to 9 Letters: a to z, A to Z Special characters: ! " # $ % & ' ( ) = - ^ ~ \ @ `[ ] { } : * ; + ? < . > , / _ |
Confirm Password	Reenter the password for confirmation.

Item	Description	
Privilege	Specify permission for the user account.	
	[User]	The user account is permitted only to read the PRIMEQUEST system status. The user account is not permitted to specify system configuration information or to turn on/off the power to the partition.
	[CE]	The user account is permitted to read the PRIMEQUEST system status. It is not permitted to perform user management or network configuration change operation or to turn on/off the power to the partition or the system using the normal procedure. Maintenance operations are permitted.
	[Operator]	The user account is permitted to read and specify the PRIMEQUEST system status. However, it is not permitted to perform user management or LAN configuration change operation.
	[Admin]	The user account is permitted to perform any operation. Note: [Admin] means administrator privilege.
Status	Specify the current status of this account. • [Enabled]: The account is available. • [Disabled]: The account is not available.	
Full Name	Used to enter the actual name corresponding to the name specified for [User Name] or other information. This field accepts up to 32 characters.	

4 Click the [Apply] button.

2.2.4.2 Specifying a user account for the certified service engineer in charge

Specify a user account that will be used by the certified service engineer in charge for maintenance purposes. The procedure is the same as that described in Section 2.2.4.1, "Registering user accounts." Specify the user permission for the certified service engineer as CE.

2.2.4.3 Specifying the system name

Specify a name for the PRIMEQUEST system. Only users who are granted Admin permission can change this name. This name is also used as the SNMP system name.

Procedure

1 Click [System] → [System Information].
The [System Information] window appears.

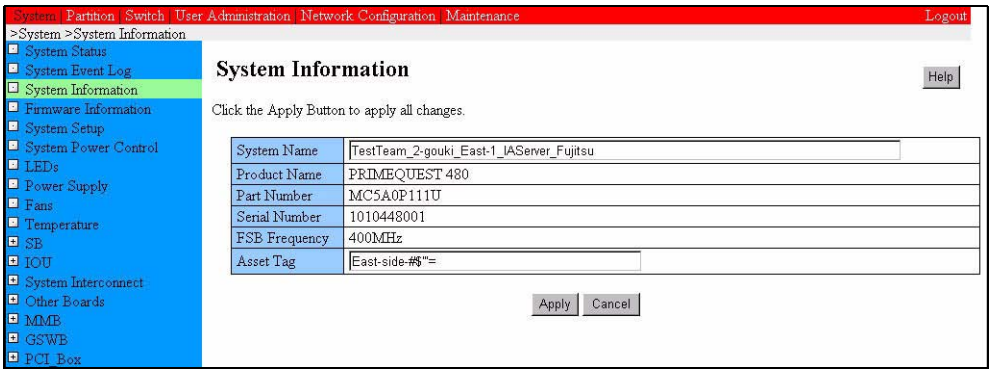


Figure 2.17 [System Information] window

2 Specify [System Name].

Table 2.12 Displayed and setting items in the [System Information] window

Item	Description
System Name	The name assigned to the PRIMEQUEST system is displayed. Users who are granted Admin permission can change this name. This field accepts up to 64 characters. Default: PRIMEQUEST + serial number Remarks: • Any of the following characters can be used: [0-9],[a-z],[A-Z], (en-size space) ! " # $ % & ' ( ) = - ^ ~ \ @ ` [ ] { } : * ; + ? < . > , / _ | However, the following restrictions apply: - The following characters cannot be used at the beginning of a string: # (en-size space) - The following character cannot be used at the end of the string: (en-size space) • This name will also be used as the SNMP system name. SNMP system name specification cannot be performed separately. The system name specified here is displayed on the [SNMP Configuration] window and it cannot be changed.
Product Name	The product name of the PRIMEQUEST system is displayed.
Part Number	The part number of the PRIMEQUEST system is displayed. Note: When "Read Error" is displayed, contact your Fujitsu certified service engineer.
Serial Number	The serial number of the PRIMEQUEST system is displayed. Note: When "Read Error" is displayed, contact your Fujitsu certified service engineer.
FSB Frequency	The frequency is displayed.
Asset Tag	Asset management information is displayed. Users who are granted Administrator permission can change the Asset Tag information. This field can accommodate up to 32 characters. Remarks: This field is designed for users to manage the PRIMEQUEST system asset number and others.

3 Click the [Apply] button.

2.2.4.4 Setting the date and time

Set the MMB date and time and NTP (when the NTP server is used).

You do not need to perform this step if it has already been performed by the certified service engineer for test program execution.

Remarks: The MMB has NTP client and NTP server functions. The NTP client function of the MMB makes time adjustments using the other NTP server. Each PRIMEQUEST partition uses the NTP server function of the MMB to adjust the time in a partition.
However, the MMB need not be specified for the NTP servers in any of the partitions. For stable NTP operation, specify multiple NTP servers from the NTP client (Fujitsu recommends at least three).

Procedure

1 Click [Network Configuration] → [Date/Time].
The [Date/Time] window is displayed.

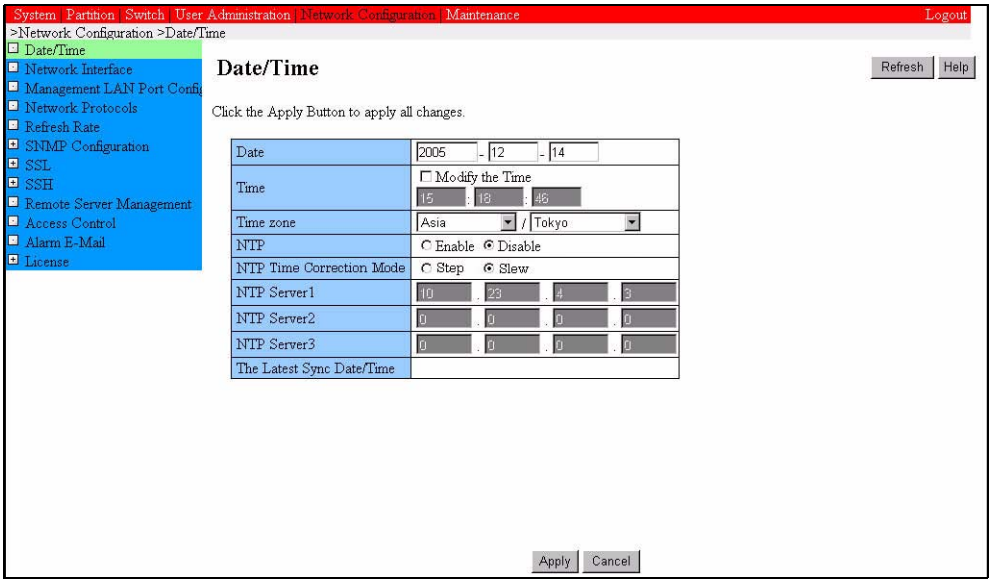


Figure 2.18 [Date/Time] window

2 Enter the required items.

Table 2.13 Displayed and setting items in the [Date/Time] window

Item	Description
Date	Specifies a date. * No setting is required if an NTP server is used.
Time	Sets hh:mm:ss (24-hour format). To set the time, select the [Modify the Time] check box. Entry in the hh:mm:ss time field is enabled only when the check box is selected. Because the MMB time when this window is opened is displayed, reloading is required to update the display. When the automatic update is set, the time when the window is updated is displayed. * No setting is required if an NTP server is used.
Time zone	Select a time zone from the pull-down menu.
NTP	Sets [Enable]/[Disable] of the NTP function. If the NTP function is set to [Enable], the MMB makes the NTP server time synchronizations that are set in NTP Server1 to NTP Server3 below. The NTP function must also be set to [Enable] when other clients such as partitions use the MMB as an NTP server. Default: Disable
NTP Server1	Sets the IP address of the primary NTP server. (Valid when the NTP function is [Enable].)
NTP Server2	Sets the IP address of the secondary NTP server. (Valid when the NTP function is [Enable].)
NTP Server3	Sets the IP address of the thirdary NTP server. (Valid when the NTP function is [Enable].)
The Latest Sync Data/Time	Displays the last time the MMB was synchronized with the specified NTP server.

3 Click the [Apply] button.

2.2.4.5 Setting a management LAN hub

This function sets Speed/Duplex for each port on the MMB and then sets a VLAN between the partition LAN port and MMB LAN port that are connected to the management LAN. The function also sets the communication speed and method (duplex) of each MMB port. These settings can be made with the Administrator privilege.

Speed/Duplex setting for the management LAN port

Set "AUTO" for Speed/Duplex of the USER port.

Remarks: If Speed/Duplex of the USER port is set to a value other than "AUTO," the Auto MDI/MDI-X function is disabled. To prevent this problem, use the following cable:
To connect a switching hub device: Crossover cable
To directly connect a PC: Straight cable

Also, note the following about the REMCS port:

- For the PRIMEQUEST 500/400 series
  The REMCS port also has the Auto MDI-X function. If Speed/Duplex is set to a value other than "AUTO," the appropriate cable for use is the same as that for the USER port.
- For the PRIMEQUEST 580A/540A/520A
  - The REMCS port does not have the Auto MDI-X function.
    Use the following cable regardless of the Speed/Duplex setting:
    To connect a switching hub device: Straight cable
    To directly connect a PC: Crossover cable
    Note:
    A different cable is used compared with that of the USER port. Be careful.
  - If Speed/Duplex of an external device connected to the REMCS port is set to a value other than "AUTO," also set "AUTO" for Speed/Duplex of the REMCS port. (Be sure to set the same value as that of the external device.)

VLAN functions of management LAN and VLAN mode

The management LAN hub on the MMB accommodates partition networks, user ports, REMCS ports, and certified service engineer ports. If this hub is a typical hub, the following problems occur.

- Inter-partition communication is enabled, so that a transaction system installed in a partition can be accessed from another system installed in another partition, and this poses a security risk.

- A user transaction system can be viewed from an REMCS port and a certified service engineer port.

To solve these problems, VLAN functions are used in the management LAN hub. VLAN is a function for logically dividing each port of one switching hub into groups, each operated as an independent LAN.

The VLAN functions of the PRIMEQUEST management LAN can be used in one of the three modes below, so that the user can select the mode that is suited to the operation method.

The following three modes are available. The default is the VLAN mode.

- No VLAN Mode (Inter-partition communication connection mode)
  - Communication is enabled among all partition ports.
  - Communication among REMCS ports, certified service engineer ports, and user ports and communication among REMCS ports, certified service engineer ports, and partition ports are not possible (Table 2.14).
- VLAN Mode (Inter-partition communication disconnection mode)
  - Inter-partition communication is disconnected. Communication is possible between the user port and a partition port as well as between the MMB and a partition in the PRIMEQUEST cabinet. Communication is possible only between the ports with the "Y" designation in Table 2.15.
    Communication is possible among the user port, MMB, and partition ports.
- Port Disable Mode (Partition system communication disconnection mode)
  - Mode for security upgrade
  - The ports of all partitions are disconnected. Communication between the management LAN and any partition port is disabled. Communication is possible only between the ports with the "Y" designation in Table 2.16.
    Communication is not possible between the MMB and any partition port.

Table 2.14 Communication-enabled ports in No VLAN Mode of management LAN

No VLAN mode	User ports	Certified engineer ports	REMCS ports	MMB	Partition ports
User ports	Y	N	N	Y	Y
Certified engineer ports	N	Y	N	Y	N
REMCS ports	N	N	Y	Y	N
MMB	Y	Y	Y	Y	Y
Partition ports	Y	N	N	Y	Y

Y: Communication-enabled
N: Communication-disabled

Table 2.15 Communication-enabled ports in VLAN Mode of management LAN

VLAN mode	User ports	Certified engineer ports	REMCS ports	MMB	Partition ports
User ports	Y	N	N	Y	Y
Certified engineer ports	N	Y	N	Y	N
REMCS ports	N	N	Y	Y	N
MMB	Y	Y	Y	Y	Y
Partition ports	Y	N	N	Y	N

Y: Communication-enabled
N: Communication-disabled

Table 2.16 Communication-enabled ports in Port Disable Mode of management LAN

Port disable mode	User ports	Certified engineer ports	REMCS ports	MMB	Partition ports
User ports	Y	N	N	Y	N
Certified engineer ports	N	Y	N	Y	N
REMCS ports	N	N	Y	Y	N
MMB	Y	Y	Y	Y	N
Partition ports	N	N	N	N	N

Y: Communication-enabled
N: Communication-disabled

Procedure

1 Click [Network Configuration] → [Management LAN Port Configuration].
The [Management LAN Port Configuration] window is displayed.

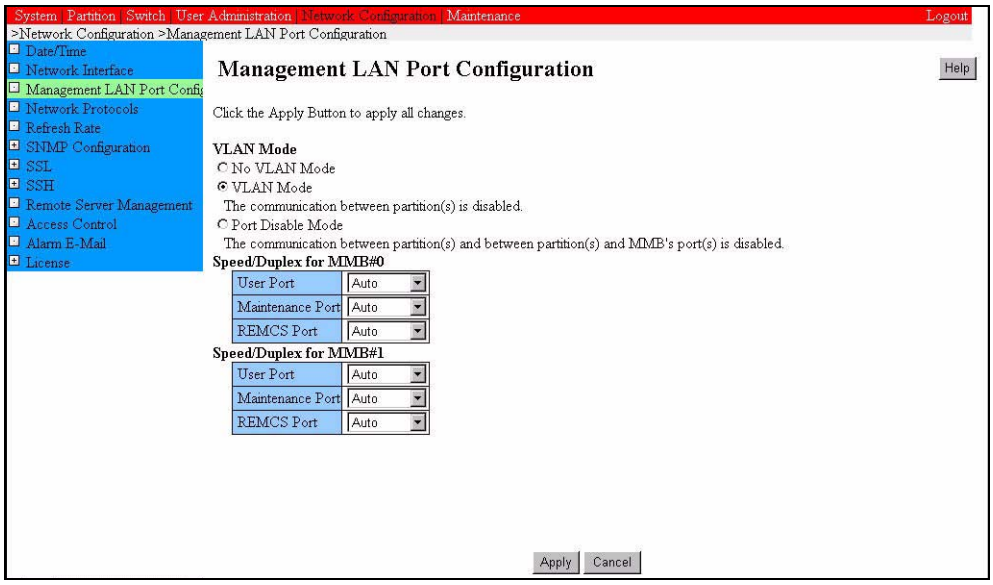


Figure 2.19 [Management LAN Port Configuration] window
(PRIMEQUEST 580A/540A/580/540/480/440)

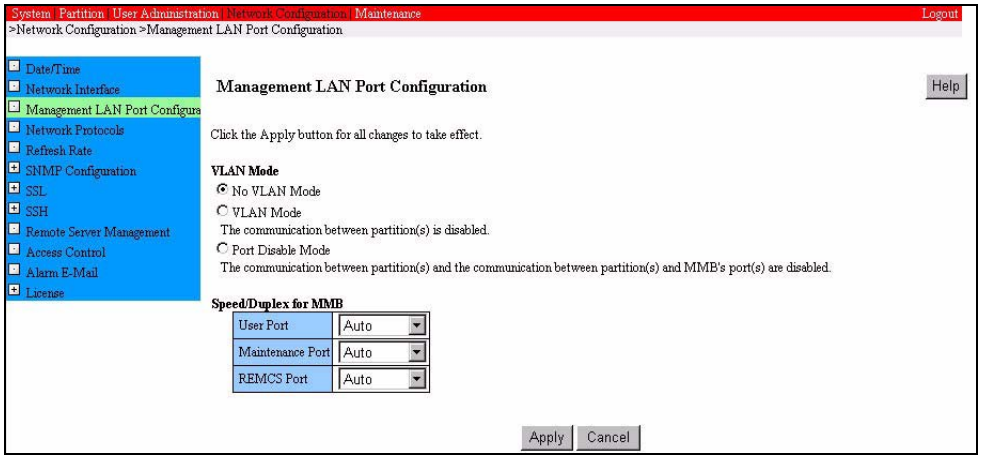


Figure 2.20 [Management LAN Port Configuration] window
(PRIMEQUEST 520A/520/420)

2 Enter the required items.

Table 2.17 Displayed and setting items in the [Management LAN Port Configuration] window

Item	Description
VLAN Mode	Selects an MMB hub VLAN mode. • [No VLAN Mode]: Enables communication between MMB ports and all partition ports. • [VLAN mode]: Disables inter-partition communication. • [Port disable mode]: Disables inter-partition communication and communication between MMB ports and partitions. Default: [VLAN mode]
Speed/Duplex for MMB (PRIMEQUEST 520A/520/420)	Sets Speed/Duplex of MMB#0 port. • [Auto]: Automatic setting • [100M/Full]: Full duplex communication at 100 Mbps • [100M/Half]: Half duplex communication at 100 Mbps • [10M/Full]: Full duplex communication at 10 Mbps • [10M/Half]: Half duplex communication at 10 Mbps Default: [Auto]
Speed/Duplex for MMB#0 (PRIMEQUEST 580A/540A/580/540/480/440)	Sets Speed/Duplex of MMB#0 port. • [Auto]: Automatic setting • [100M/Full]: Full duplex communication at 100 Mbps • [100M/Half]: Half duplex communication at 100 Mbps • [10M/Full]: Full duplex communication at 10 Mbps • [10M/Half]: Half duplex communication at 10 Mbps Notes: Displayed only when MMB#0 is installed. Default: [Auto]
Speed/Duplex for MMB#1 (PRIMEQUEST 580A/540A/580/540/480/440)	Sets Speed/Duplex of MMB#1 port. • [Auto]: Automatic setting • [100M/Full]: Full duplex communication at 100 Mbps • [100M/Half]: Half duplex communication at 100 Mbps • [10M/Full]: Full duplex communication at 10 Mbps • [10M/Half]: Half duplex communication at 10 Mbps Notes: Displayed only when MMB#1 is installed. Default: [Auto]

3 Click the [Apply] button.

2.3 Enabling the Extended Mirror Mode

To use a partition in Extended Mirror Mode, a System Mirror Option must be procured, and license data must be registered.

The system mirror option may already be installed at the time of shipment from the factory. If so, this procedure is not required. For details on settings, contact a Fujitsu certified service engineer.

1 Insert the CD-ROM disk supplied with the System Mirror Option into the CD-ROM drive of the MMB console.

2 Click [Network Configuration] → [License] → [Mirror License].
The [Mirror License] window is displayed.

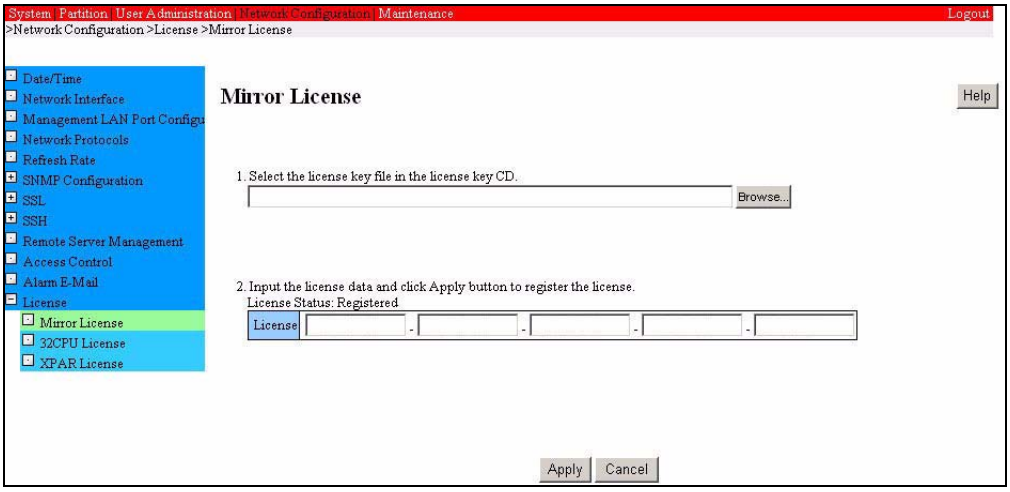


Figure 2.21 [Mirror License] window

Table 2.18 Displayed and setting items in the [Mirror License] window

Item	Description
Select the license key file in the license key CD.	Select the license key file used to validate the license.
License Status	Displays the current license status. • Not registered: The license has not been registered. Alternatively, the license data (entered) for registration is not appropriate. • Registered: The license is correctly registered.
License	Enter the license data.

3 Click the [Browse] button, and select the license key file in the file selection window.

4 Enter the license date in the sheet, which is supplied with the System Mirror Option, in the [License] box and click the [Apply] button.
Then, Extended Mirror Mode can be set in each partition.

Remarks: For details on how to set Extended Mirror Mode, see 2.5.8, "Setting various modes."

Note: The system mirror option must be purchased separately from the PRIMEQUEST main unit.

2.4 Enabling XPAR (PRIMEQUEST 500A/500 series)

For operation of split SBs, IO Units, and IOXs installed in partitions, an XPAR option must be procured and license data must be registered.

The XPAR option may already be installed at the time of shipment from the factory. If so, this procedure is not required.

For details on its settings, contact a Fujitsu certified service engineer.

1 Insert the CD-ROM disk supplied with the XPAR option into the CD-ROM drive of the MMB console.

2 Click [Network Configuration] → [License] → [XPAR License].
The [XPAR License] window is displayed.

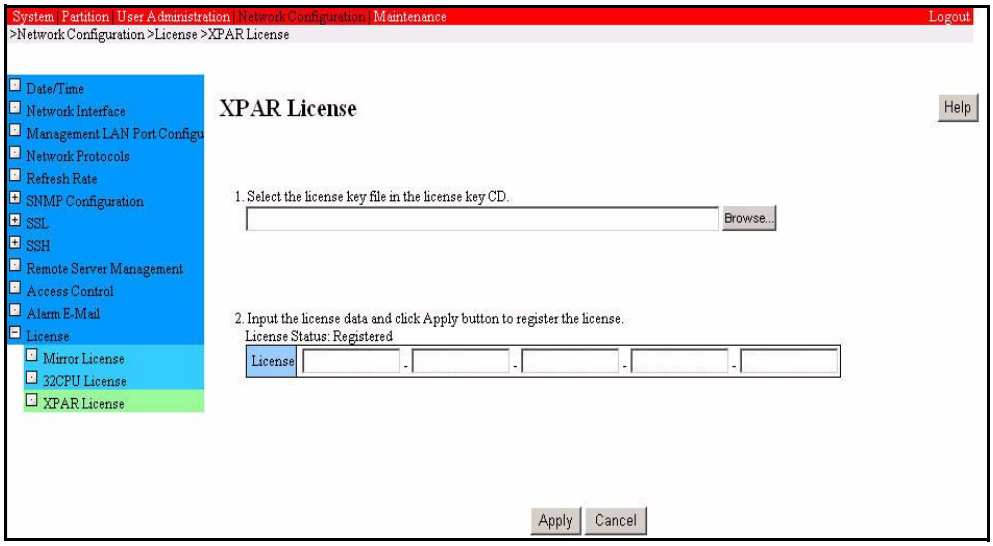


Figure 2.22 [XPAR License] window

Table 2.19 Displayed and setting items in the [XPAR License] window

Item	Description
Select the license key file in the license key CD.	This field is used to select the license key file to enable the license.
License Status	This field displays the current license status. • Not registered: The license has not been registered. Alternatively, the license data (entered) for registration is not appropriate. • Registered: The license is correctly registered.
License	This field is used to enter license data.

3 Click the [Browse] button, and select the license key file in the file selection window.

4 Enter the license data that is on the sheet supplied with the XPAR option into the [License] boxes, and click the [Apply] button.
Each partition then becomes ready to be set with XPAR.

Remarks: For details on setting XPAR, see Section 2.5.3, "Splitting and merging SBs, IO Units, and IOXs (in the PRIMEQUEST 500A/500 series only)."

Note: The XPAR option is procured separately from the PRIMEQUEST main unit.

2.5 Partition Initialization

This section describes the procedures used to specify a variety of partition information. If multiple partitions exist, perform the setup procedures for each partition.

This section explains the following.

- Partition setting flow (→ 2.5.1)
- Shutting down a partition (→ 2.5.2)
- Splitting and merging SBs, IO Units, and IOXs (in the PRIMEQUEST 500A/500 series only) (→ 2.5.3)
- Adding an SB, IO Unit, and IOX (→ 2.5.4.1)
- Removing an SB, IO Unit, or IOX (→ 2.5.4.2)
- Setting a Home IOU (→ 2.5.5)
- Setting a reserved SB (→ 2.5.6)
- Setting partition names (→ 2.5.7)
- Setting various modes (→ 2.5.8)
- Starting a partition (→ 2.5.9)
- Checking partition information (→ 2.5.10)

2.5.1 Partition setting flow

When creating partitions, follow the workflow in the chart shown below as many times as the number of created partitions. The procedures described below show sample screenshots of windows displayed for the PRIMEQUEST 580A/540A/580/540/480/440.

Note: After changing the configuration of a partition that is active, be sure to shut down and reboot it.

Shut down the target partition.

* Only if the partition is active.

PRIMEQUEST 500A/500 series only

Split/merge SBs, IO Unit, and IOXs.

Adding an SBs, IO Units, and IOX into the partition.

- Add a free SB, IO Unit, and IOX.
- Release the reserved SB (→ 2.5.6) and add it.
- Remove the SB, IO Unit, and IOX from an existing partition (→ 2.5.4.2) and add them to the target partition.

Set the Home IOU.

Set a reserved SB as needed.

Setting the partition name.

Setting various modes.

Reboot the partition.

2.5.2 Shutting down a partition

This section explains how to shut down a partition that is active.

Procedure

1 Click [Partition] → [Power Control].
The [Power Control] window is displayed.

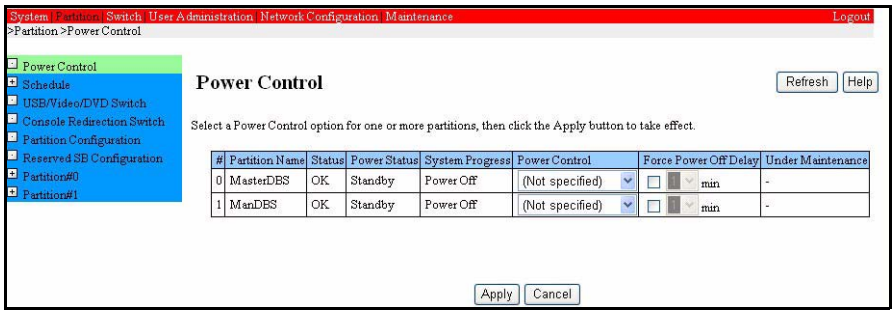


Figure 2.23 [Power Control] window

2 In the [Power Control] window, select [Power Off] for the partition, and click the [Apply] button.

Note: You may not be able to shut down a partition in which Windows is installed by using the shutdown command from the MMB Web-UI. In such cases, execute the Windows shutdown command to power off the partition. For details on how to shut down Windows, see the relevant Windows manual or the *PRIMEQUEST 580A/540A/520A/500/400 Series Reference Manual: Basic Operation/GUI/Commands* (C122-E003EN).

Table 2.20 Displayed and setting items in the [Power Control] window

Item	Description
Power Control	Select a power control setting to be displayed for the partition. The [Power On] menu item is not displayed for a powered-on partition. Conversely, the [Power Off], [Power Cycle], [Reset], [INIT], and [Force Power Off] menu items are not displayed for a powered-off partition. • Power On: Powers on the partition. • Power Off: Powers off the partition. • Power Cycle: Forcibly powers off the partition and powers it on again. • Reset: Resets the partition. • INIT: Generates an INIT interrupt for the partition and produces a Dump. • Force Power Off: Forcibly powers off the partition. • Not specified: Takes no action for the partition. Note: • To forcibly terminate applications running in the partition, execute INIT. Before executing INIT, stop important applications. Also, unmount unnecessary file systems.

2.5.3 Splitting and merging SBs, IO Units, and IOXs (in the PRIMEQUEST 500A/500 series only)

With the PRIMEQUEST 500A/500 series, you can logically split SBs, IO Units, and IOXs into two separate units as necessary, enabling flexible system configuration .

This section describes procedures for splitting and merging SBs, IO Units, and IOXs.

Remarks: SBs, IO Units, and IOXs belonging to a partition operating in Extended Mirror Mode cannot be split.

You can split and merge only free SBs, IO Units, and IOXs. To split or merge any SBs, IO Units, and IOXs that already belong to partitions, they must first be unregistered from the partition.

Notes:

- If the XPAR license has not been registered, the [Split Configuration] menu, [SB Split] window, and [IOU Split] window are not displayed.
- Extended Mirror Mode cannot be set in partitions containing SBs, IO Units or IOXs split with XPAR set. No split SB, IO Unit, or IOX can be assigned to a partition that is set in Extended Mirror Mode.
- No SB split with XPAR set can be assigned as the reserved SB of a partition that is set in Extended Mirror Mode. Extended Mirror Mode cannot be set in partitions to which split SBs are assigned as reserved SBs.
- XPAR is supported only in the PRIMEQUEST 500A/500 series, and the XPAR option is required for setting XPAR.

2.5.3.1 Splitting an SB and merging SBs

This section describes the procedure for splitting an SB or merging SBs.

Notes:

- If the XPAR license has not been registered, the [SB Split] window is not displayed.

1 Click [Partition] → [Split Configuration] → [SB Split].
The [SB Split] window is displayed.

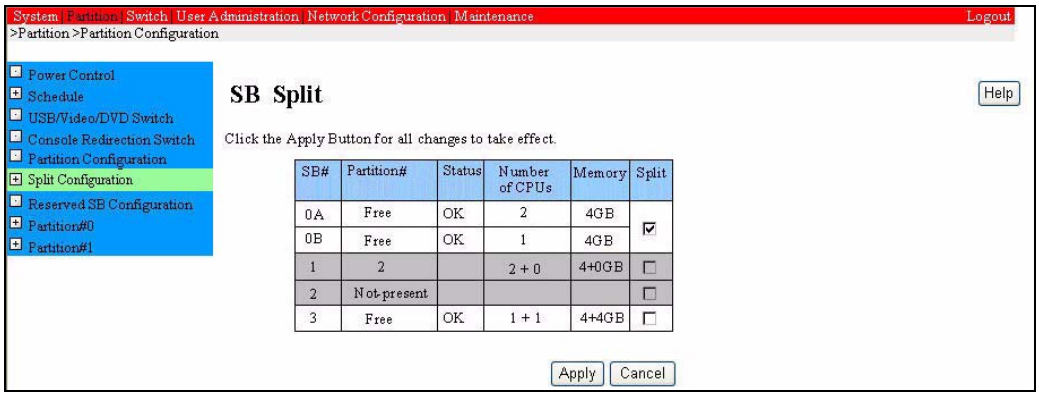


Figure 2.24 [SB Split] window

Table 2.21 Displayed and setting items in the [SB Split] window

Item	Description
SB#	Displays an SB identification number (numbers). If the SB is already split, xA and xB are displayed.
Partition#	Displays a partition number or "Free," which indicates that the SB is free.
Status	Displays the SB status.
Number of CPUs	Displays the number of CPUs mounted on the SB.
Memory	Displays the memory size available on the SB.
Split	Specifies whether to split the SB.

- To split an SB:
  1. Check the [Split] check box of the SB to be split into two portions, and click the [Apply] button.
     The SB is split into two portions, with xA and xB displayed for them in the window.
- To merge SBs:
  1. Uncheck the [Split] check box of the SBs to be merged, and click the [Apply] button.
     The SBs are merged and shown as one merged SB in the window.

2.5.3.2 Splitting an IO Unit or IOX and merging IO Units or IOXs

This section describes the procedure for splitting an IO Unit or IOX or merging IO Units or IOXs. Only free IO Units and IOXs belonging to a partition can be split.

Notes:

- If the XPAR license has not been registered, the [IOU Split] window is not displayed.

1 Click [Partition] → [Split Configuration] → [IOU Split].
The [IOU Split] window is displayed.

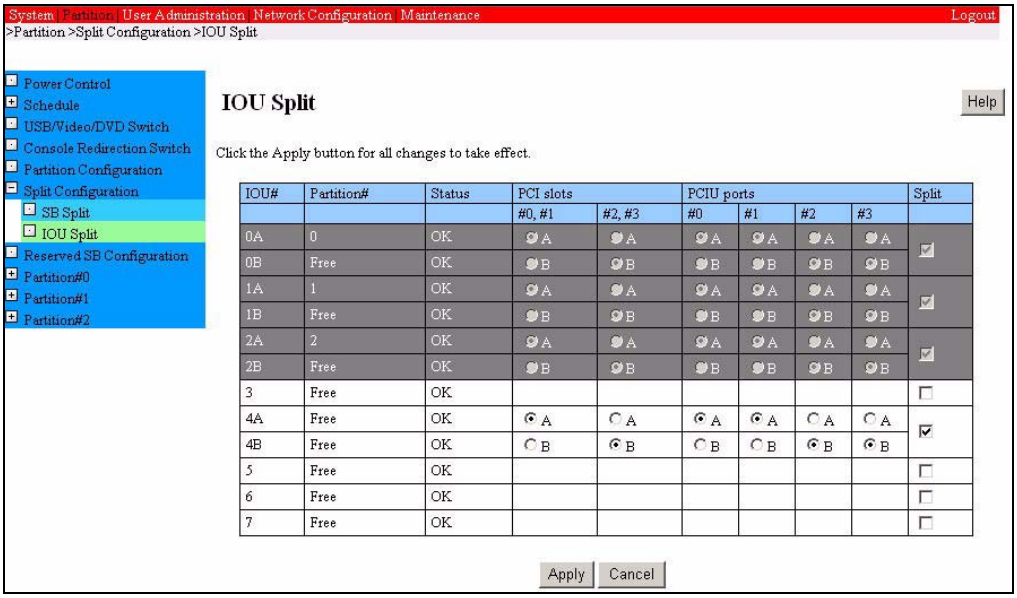


Figure 2.25 [IOU Split] window (PRIMEQUEST 580A/540A/580/540)

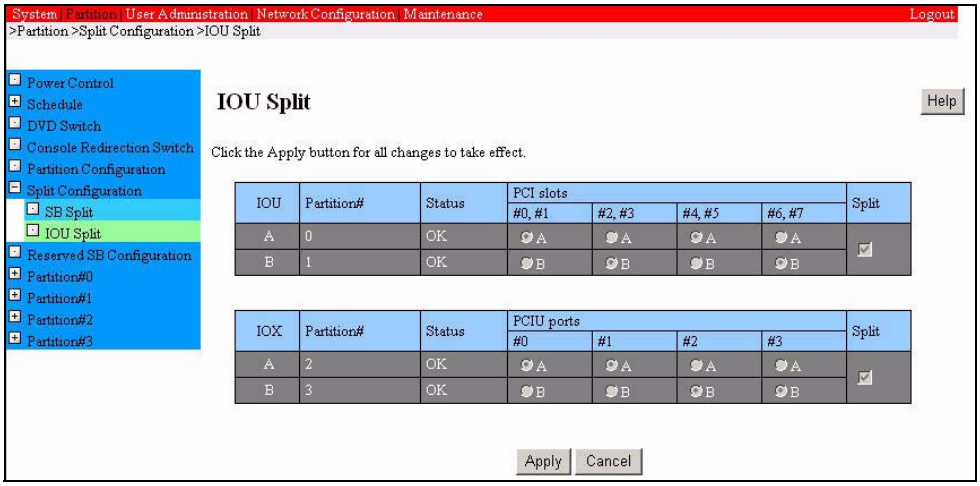


Figure 2.26 [IOU Split] window (PRIMEQUEST 520A/520)

Table 2.22 Displayed and setting items in the [IOU Split] window

Item	Description
IOU#	Displays an IO Unit identification number (numbers). If the IO Unit is already split, xA and xB are displayed.
IOX (in the PRIMEQUEST 520A/520 only)	Displays an IOX identification number (numbers). If the IOX is already split, xA and xB are displayed.
Partition#	Displays a partition number or "Free," which indicates that the IO Unit or IOX is free.
Status	Displays the IO Unit or IOX status.
PCI slots	Specifies the PCI slots assigned to the split IO Units A and B.
PCIU ports	Specifies the PCIU ports assigned to the split IO Units or IOXs A and B.
Split	Specifies whether to split the IO Unit or IOX.

- To split an IO Unit or IOX:
  1. Check the [Split] check box of the IO Unit or IOX to be split.
  2. Specify the PCI slots and PCIU ports assigned to the split IO Units A and B by selecting the appropriate [PCI slots] and [PCIU ports] radio buttons.
  3. Click the [Apply] button.
     The IO Unit or IOX is split, with xA and xB displayed for each portion in the window.
- To merge IO Units or IOXs:
  1. Uncheck the [Split] check box of the IO Units or IOXs to be merged, and click the [Apply] button.
     The IO Units or IOXs are merged and shown as one merged IO Unit or IOX in the window.

2.5.4 Configuring a partition

This section explains how to add and remove an SB, IO Unit, and IOX.

- Adding an SB, IO Unit, and IOX (→ 2.5.4.1)
- Removing an SB, IO Unit, or IOX (→ 2.5.4.2)

2.5.4.1 Adding an SB, IO Unit, and IOX

You can add an SB, IO Unit, and IOX to a partition.

Notes:

- Extended Mirror Mode cannot be set in partitions containing SBs, IO Units or IOXs split with XPAR set. No split SB, IO Unit, or IOX can be assigned to a partition that is set in Extended Mirror Mode.
- No SB split with XPAR set can be assigned as the reserved SB of a partition that is set in Extended Mirror Mode. Extended Mirror Mode cannot be set in partitions to which split SBs are assigned as reserved SBs.
- XPAR is supported only in the PRIMEQUEST 500A/500 series, and the XPAR option is required for setting XPAR.

Remarks: You can add an SB, IO Unit, or IOX to a partition even while the OS of the partition is operating. In such cases, reboot the partition to validate the changed configuration.

Procedure

1. Click [Partition] → [Partition Configuration].
   The [Partition Configuration] window is displayed.

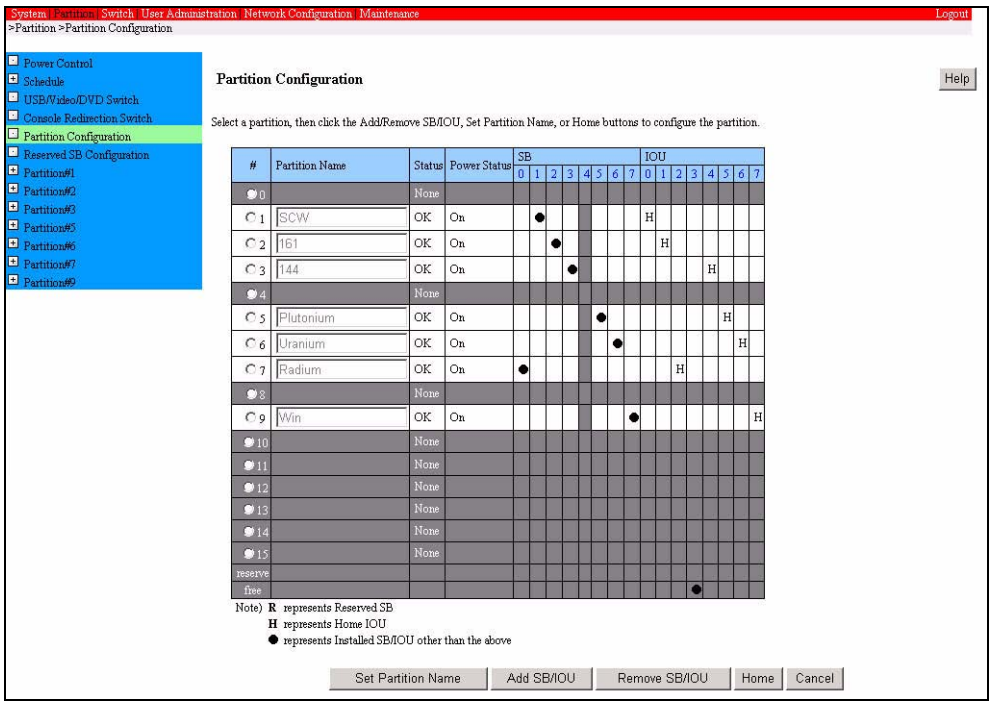


Figure 2.27 [Partition Configuration] window (PRIMEQUEST 580A/540A/580/540/480/440)

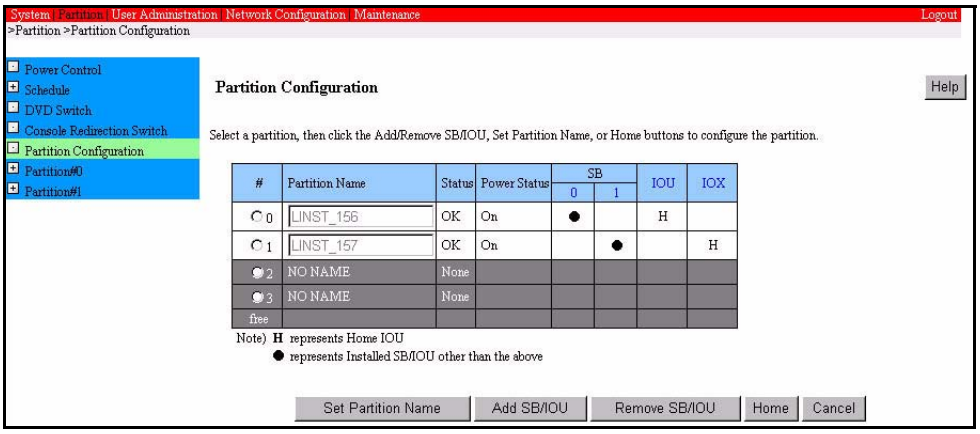


Figure 2.28 [Partition Configuration] window (PRIMEQUEST 520A/520/420)

Table 2.23 Displayed and setting items in the [Partition Configuration] window

Item	Description
#	Displays a partition identification number. In the case of a PRIMEQUEST 580A/540A/580/540/480/440, displays a partition number from 0 to 15. In the case of a PRIMEQUEST 520A/520/420, displays a partition number from 0 to 3.
Partition Name	Displays and sets a name assigned to a partition. The name can include up to 16 characters. You can use the following characters: 0-9, a-z, A-Z, " " (en-size space), #, - (hyphen), _ (underscore) Remarks: Set the same name as Host Name to be set on the OS to make the name easy to recognize.
Status	Displays partition status. • OK: Normal • Degraded: Component error has occurred. (The failed component can be disconnected to continue operation.) • Failed: Failure has occurred. • None: No partition configuration. Specifically, SBs and IO Units are not allocated.
Power Status	Displays partition power status. • On: ON • Standby: Standby
SB	Displays ● to indicate the partition to which the SB belongs. If the SB has been split into two portions, two columns are displayed. The column in which no SB is mounted is grayed out.
IOU	Displays ● to indicate the partition to which the IOU belongs. If the IO Unit has been split into two portions, two columns are displayed. If "H" is displayed, the IOU is the Home IOU. The column in which no IOU is mounted is grayed out.
IOX (PRIMEQUEST 520A/520/420 only)	Displays ● to indicate the partition to which the IOX belongs. If the IOX has been split into two portions, two columns are displayed. The column in which no IOX is mounted is grayed out.

2 Click the radio button of the number of the partition in which an SB, IO Unit, or IOX is to be added.

3 Click the [Add SB/IOU] button.
The [Add SB/IOU to Partition] window is displayed with a list of available SBs, IO Units, and IOX.

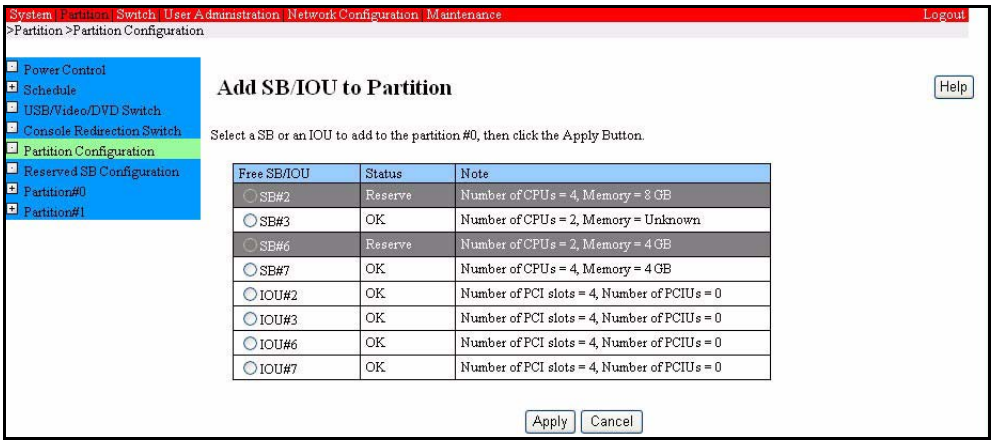


Figure 2.29 [Add SB/IOU to Partition] window

Table 2.24 Displayed and setting items in the [Add SB/IOU to Partition] window

Item	Description
Free SB/IOU	Displays free SBs, IO Unit, and IOX (SBs not belonging to any partition).
Status	Displays the status of a free SBs, IO Unit, and IOX.
Note	(For SB) • [Number of CPUs]: Displays the number of CPUs installed on the SB. • [Memory]: Displays the size of memory installed on the SB. Note: When an SB is extracted and inserted, "unknown" (unknown memory size) may be displayed.
Note	(For IO Unit or IOX) • [Number of PCI slots]: Displays the number of IO Unit PCI slots. • [Number of PCIUs]: Displays the number of PCI units connected to the IO Unit. • [Number of PEXU]: Displays the number of PCI Express units connected to the IO Unit.

4 Click the radio button of an SB, IO Unit, or IOX to be added to a partition.
Free SBs, IO Units, or IOX can be selected only one at a time.

5 Click the [Apply] button.
A confirmation dialog box is displayed.

6 Click the [OK] button.
The selected SB, IO Unit, or IOX is added to the partition.
Repeat steps 3 to 6 until all the necessary SBs, IO Units, or IOX are added

2.5.4.2 Removing an SB, IO Unit, or IOX

This section explains how to remove an SB, IO Unit, or IOX from the partition.

Remarks: You cannot remove an SB, IO Unit, or IOX from a partition while the OS of the partition is operating. In such cases, set the partition power to the standby state, and then remove the SB, IO Unit, or IOX.

Procedure

1 Click [Partition] → [Partition Configuration].
The [Partition Configuration] window is displayed.

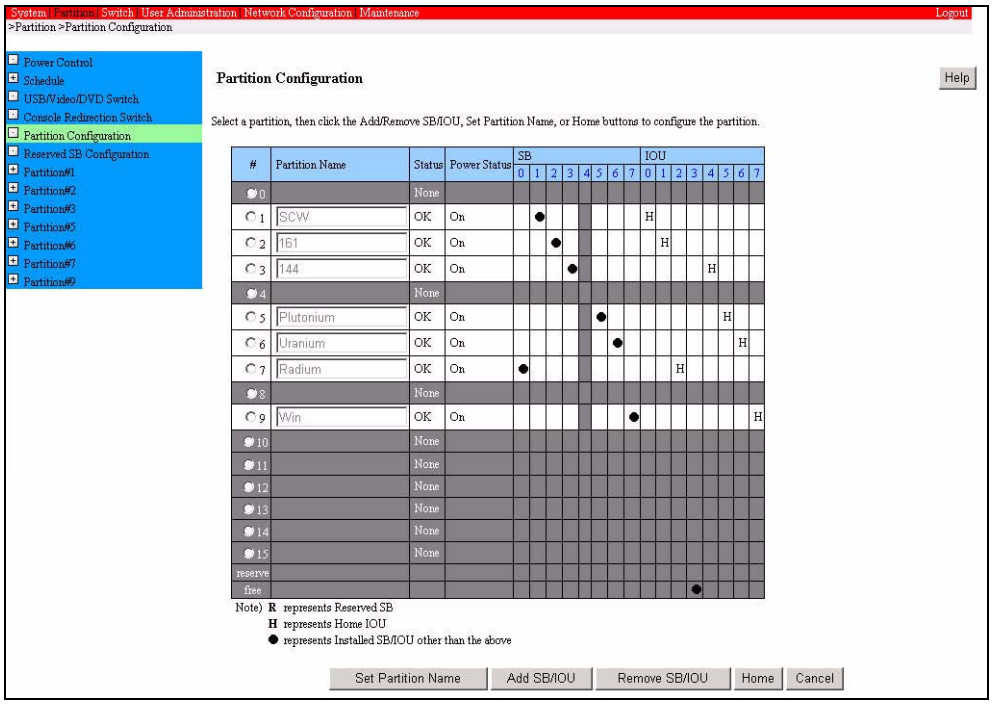


Figure 2.30 [Partition Configuration] window (PRIMEQUEST 580A/540A/580/540/480/440)

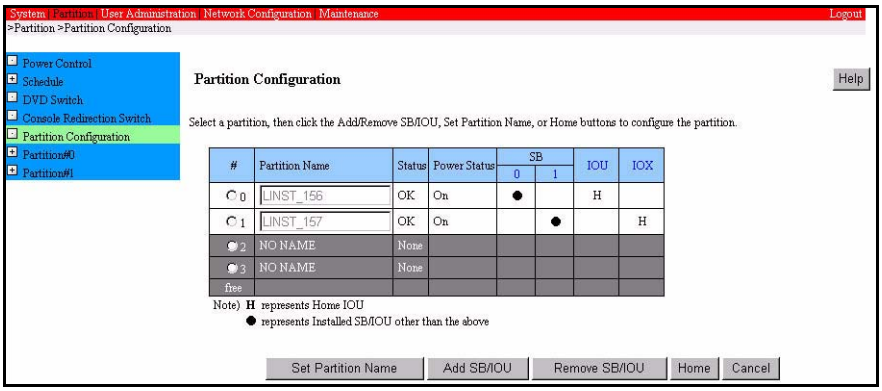


Figure 2.31 [Partition Configuration] window (PRIMEQUEST 520A/520/420)

2 Click the radio button of the number of the partition from which an SB, IO Unit, or IOX is to be removed.

3 Click the [Remove SB/IOU] button.
The [Remove SB/IOU from Partition] window is displayed with a list of the SBs, IO Units, and IOX incorporated into the partition selected in step 2.

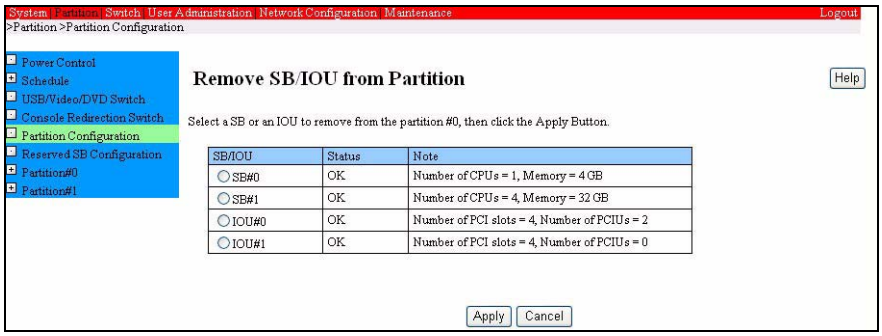


Figure 2.32 [Remove SB/IOU from Partition] window

Table 2.25 Displayed and setting items in the [Remove SB/IOU from Partition] window

Item	Description
SB/IOU	Displays the SBs, IO Units, and IOX belonging to the partition.
Status	Displays the status of each SB, IO Unit, and IOX.
Note	(For SB) • Number of CPUs: Displays the number of CPUs installed on the SB. • Memory: Displays the size of memory installed on the SB. Note: When an SB is extracted and inserted, "unknown" (unknown memory size) may be displayed.
Note	(For IO Unit or IOX) • Number of PCI slots: Displays the number of PCI slots on the IO Unit. • Number of PCIUs: Displays the number of PCI units connected to the IO Unit. • [Number of PEXU]: Displays the number of PCI Express units connected to the IO Unit.

4 Click the radio button of the SB, IO Unit, or IOX to be removed from the partition. You can select only one SB, IO Unit, or IOX at a time.

5 Click the [Apply] button.
A confirmation dialog box appears.

6 Click the [OK] button.
The selected SB, IO Unit, or IOX is removed from the partition and becomes free.

2.5.5 Setting a Home IOU

This operation defines one of the mounted IO Units and IOX in a partition as its Home IOU.

Procedure

1 After SBs, IO Units, and IOX are included, click [Partition] → [Partition Configuration].
The [Partition Configuration] window is displayed.

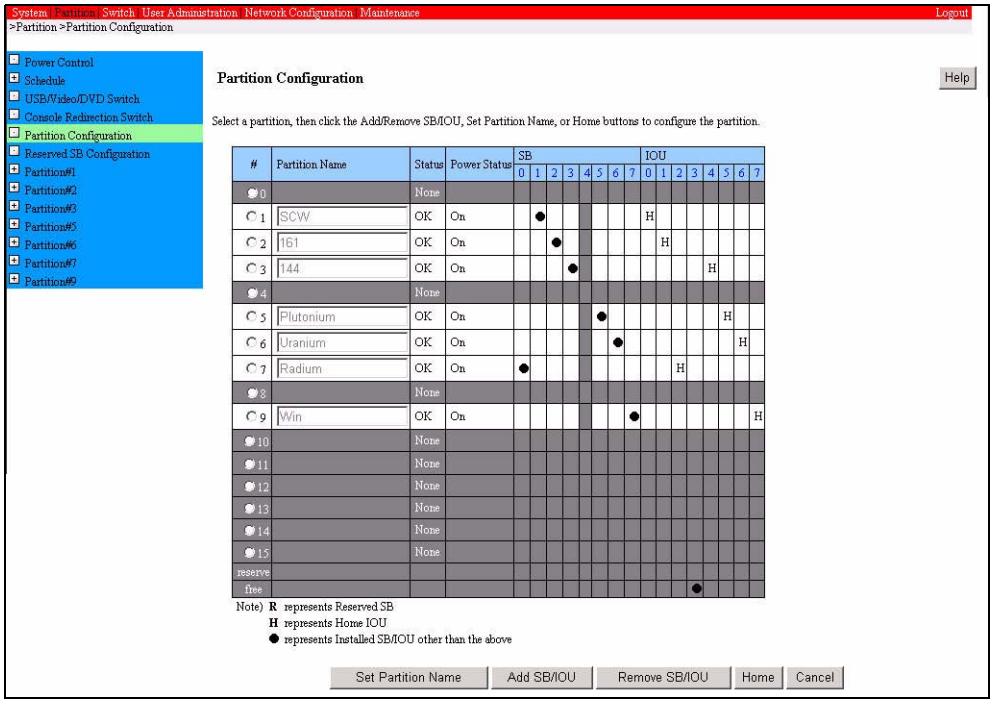


Figure 2.33 [Partition Configuration] window (PRIMEQUEST 580A/540A/580/540/480/440)

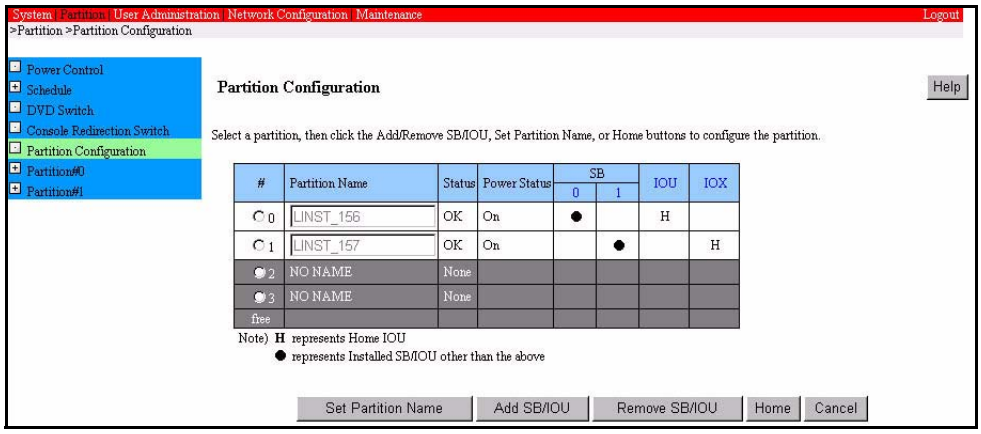


Figure 2.34 [Partition Configuration] window (PRIMEQUEST 520A/520/420)

2 Select the partition to which you want to add a Home IOU, and click the [Home] button.
The [Partition Home] window is displayed.

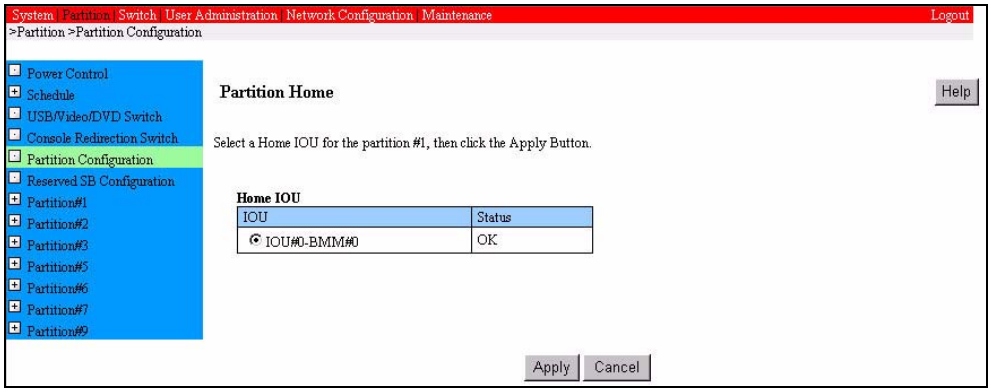


Figure 2.35 [Partition Home] window

Table 2.26 Displayed and setting items in the [Partition Home] window

Item	Description
<Home IOU>	
IOU	Displays the IO Units and IOX that contain BMMs and are included in partitions.
Status	Displays the status of the target BMM.

3 Click the radio buttons of an IO Unit or IOX to be made home.
Note: For the SB to be defined as the home SB, always select the one having the smallest number.

4 Click the [Apply] button.
The specified IO Unit or IOX is set respectively as partition home. "H" is displayed in the corresponding IOU column in the [Partition Configuration] window.

2.5.6 Setting a reserved SB

A reserved SB is prepared for a partition with consideration given to the operation states. If an SB included in the partition fails and must be disconnected, the reserved SB is newly added to the partition to replace the disconnected SB.
Regarding free SBs and SBs that have already been defined as reserved SBs for particular partitions, the user can also define to which partitions reserved SBs are to be set.

In addition, one of the split SBs can be specified as a reserved SB in a partition.

Notes:

- If an SB failure causes the reboot of a partition, a switch is made to the reserved SB indicated as the Reserved SB in the partition.
  If a failure occurs in one of the components (such as memory) in a duplicated component configuration in Extended Mirror Mode and the other component continues operating without interruption, switching to a reserved SB is not made.
- No SB split with XPAR set can be assigned as the reserved SB of a partition that is set in Extended Mirror Mode. Extended Mirror Mode cannot be set in partitions to which split SBs are assigned as reserved SBs.
- The reserved SB defined for a partition is recommended to be one that has the same memory and CPU configurations as those of SBs configured in the partition. If the number of CPUs increases during switching to the specified reserved SB, additional licenses are required.
- The reserved SB must contain the same type of CPU as those of SBs configured in the partition. An SB housing a different type of CPU cannot be defined as the reserved SB.
- An SB with 32 GB of memory mounted (8-GB DIMM x 4) cannot be mixed in the same partition with an SB having another memory configuration.
  Therefore, an SB with 32 GB of memory mounted (8-GB DIMM x 4) cannot be set as a reserved SB in a partition consisting of SBs having another memory configuration.
- An SB with 16 GB of memory mounted (4-GB DIMM x 4) cannot be mixed in the same partition with an SB having another memory configuration.
  Therefore, an SB with 16 GB of memory mounted (4-GB DIMM x 4) cannot be set as a reserved SB in a partition consisting of SBs having another memory configuration.
- When started for the first time after a switch to a reserved SB in a partition on which Windows Server 2003 is installed, the system prompts for a restart of the partition. As soon as the message is displayed, restart the partition as instructed.

- When estimating the length of time that operation may be stopped because of an SB failure in a partition on which Windows Server 2003 is installed, consider the time required for a restart. The actual time required for resuming operation is the total of the time taken for system startup and the time taken for a reboot after the switching to a reserved SB.

Procedure

1 Click [Partition] → [Reserved Configuration].
The [Reserved Configuration] window is displayed.
The check boxes are displayed vertically in an SB column that contains the free or reserved SBs.

Remarks: For PRIMEQUEST 500 series, the contents of the [Reserved SB Configuration] window vary with the MMB firmware version. If the firmware version is 3.24 or later, the window in Figure 2.36 or Figure 2.39 is displayed. If the firmware version is earlier than 3.23, the window in Figure 2.37 or Figure 2.40 is displayed. Confirm the firmware version on the [Firmware Information] window (click [System] → [Firmware Information].).

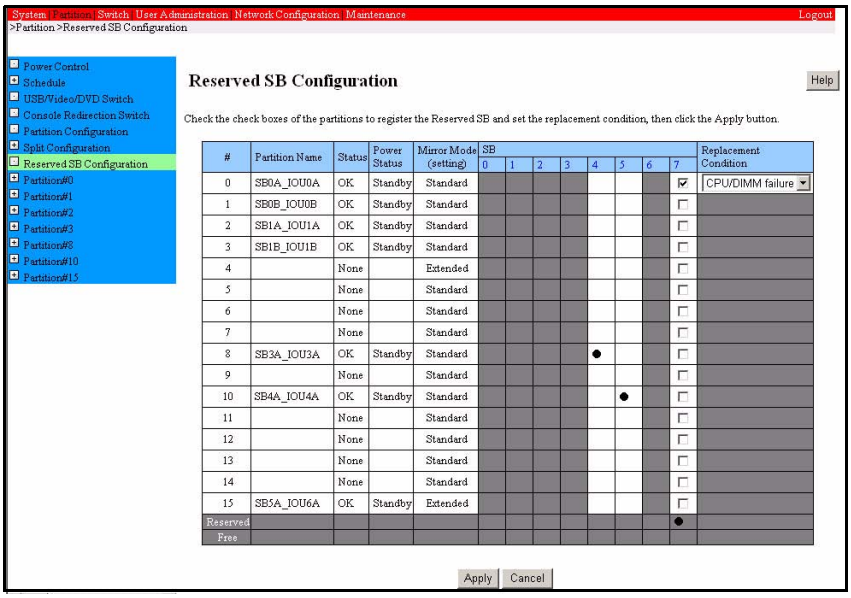


Figure 2.36 [Reserved SB Configuration] window (PRIMEQUEST 580A/540A and PRIMEQUEST 580/540: This window is displayed for MMB firmware version 3.24 or later)

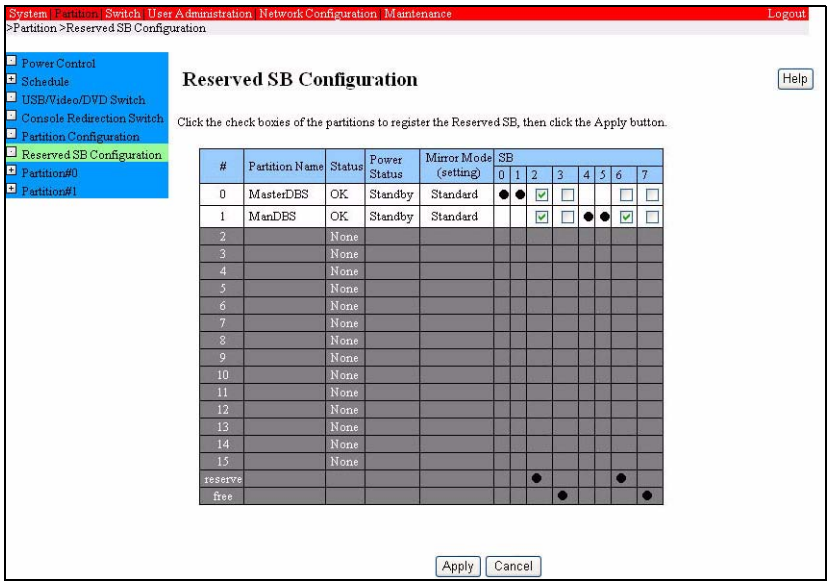


Figure 2.37 [Reserved SB Configuration] window (PRIMEQUEST 580/540: This window is displayed for an MMB firmware version earlier than 3.23.)

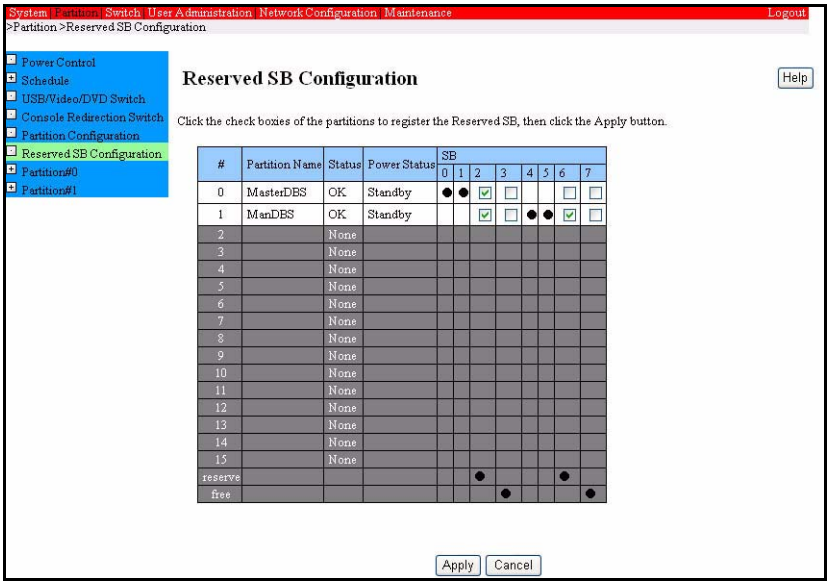


Figure 2.38 [Reserved SB Configuration] window (PRIMEQUEST 480/440)

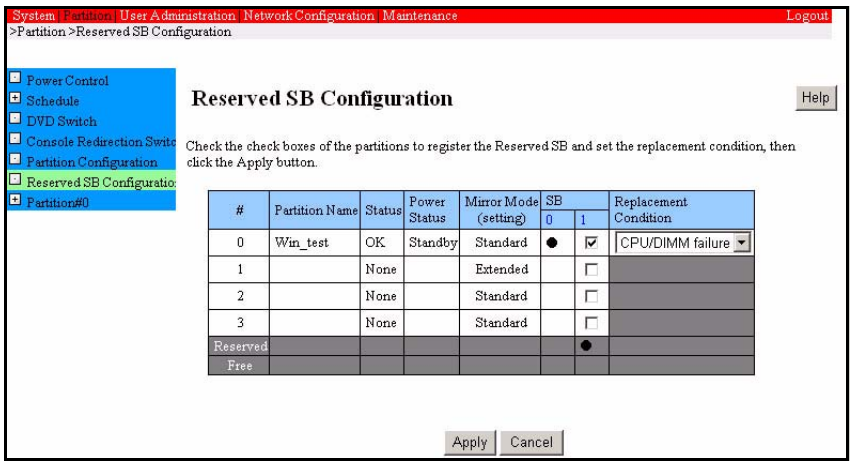


Figure 2.39 [Reserved SB Configuration] windows (PRIMEQUEST 520A and PRIMEQUEST 520: This window is displayed for an MMB firmware version 3.24 or later.)

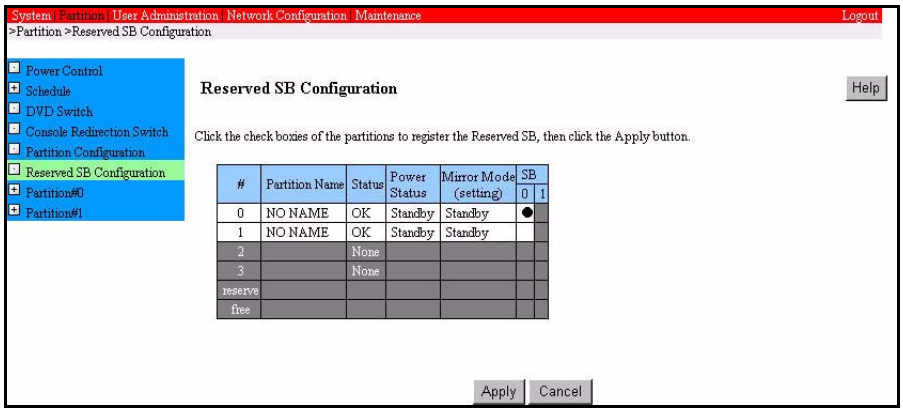


Figure 2.40 [Reserved SB Configuration] window (PRIMEQUEST 520: This window is displayed for an MMB firmware version earlier than 3.23)

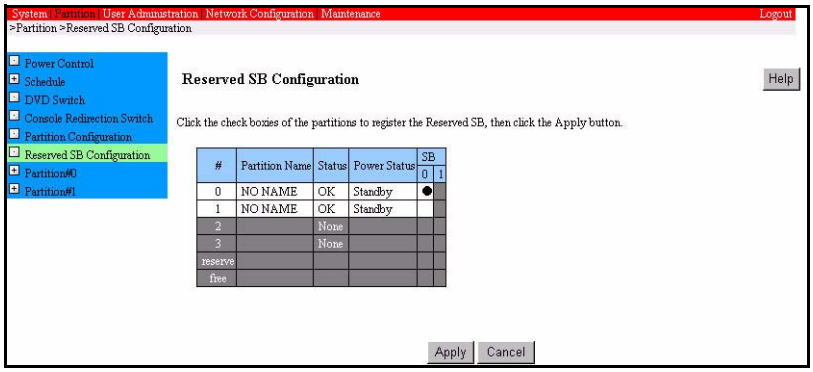


Figure 2.41 [Reserved SB Configuration] window (PRIMEQUEST 420)

2 Select the check box for the target partition in a column containing an SB that has not been added to any partition (free SB or reserved SB).

3 [Replacement Condition] sets the condition that determines the timing at which the reserved SB is to be switched.
(PRIMEQUEST 580A/540A/520A or PRIMEQUEST 500 series running MMB firmware whose version level is 3.24 or later)

4 Click the [Apply] button.

Notes: To change a reserved SB to a free SB, clear its check box in the [Reserved SB Configuration] window.

2.5.7 Setting partition names

This function sets a partition name. This can be performed by users with administrator privilege.

Procedure

1 Click [Partition] → [Partition Configuration].
The [Partition Configuration] window is displayed.

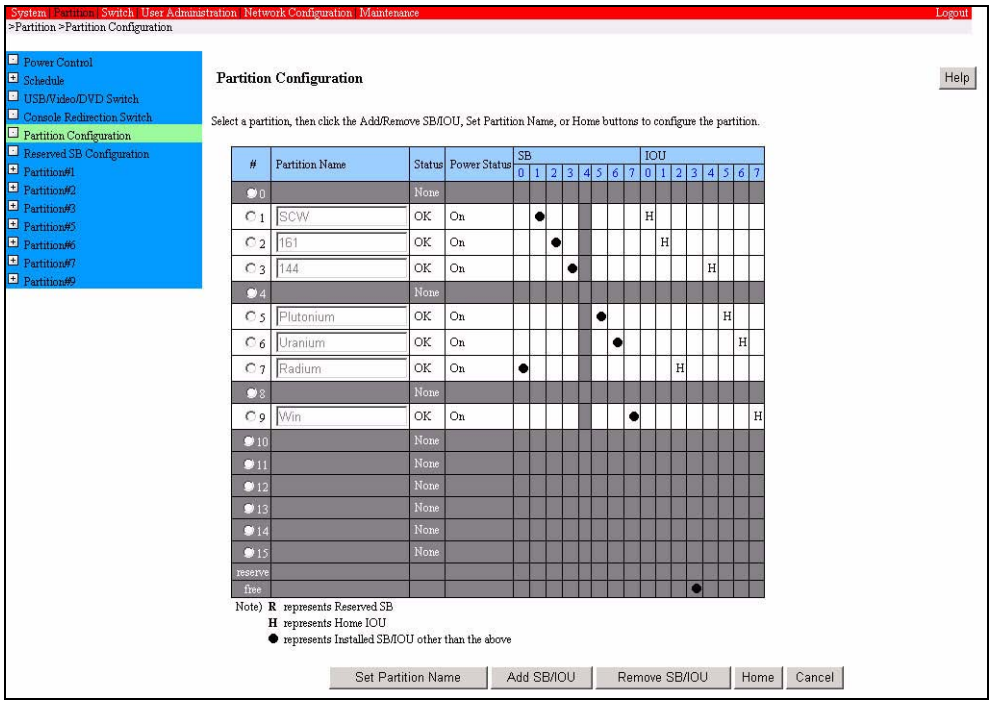


Figure 2.42 [Partition Configuration] window (PRIMEQUEST 580A/540A/580/540/480/440)

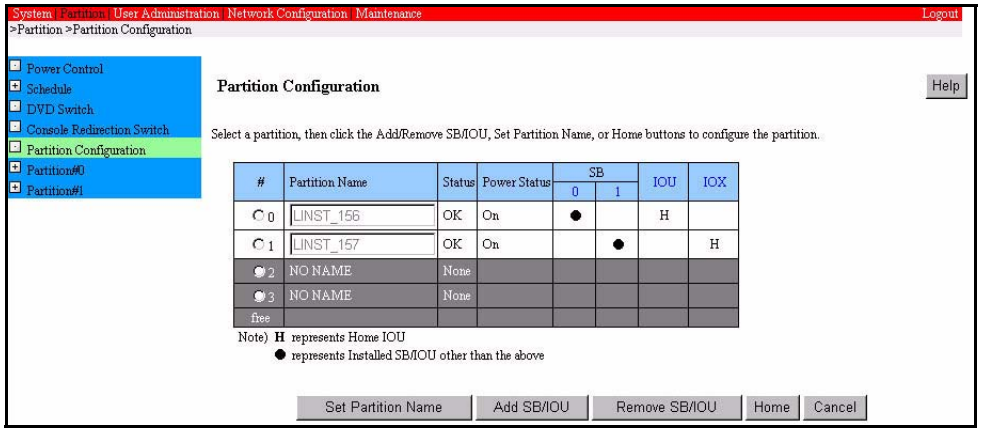


Figure 2.43 [Partition Configuration] window (PRIMEQUEST 520A/520/420)

2 Select the partition to which you want to assign a partition name, and enter the partition name in the [Partition Name] cell.
Remarks:

- The name can include up to 16 characters. You can use the following characters:
  0-9, a-z, A-Z, " " (en-size space), #, - (hyphen), _ (underscore)
- Set the same name as host name to be set on the OS to make the name easy to recognize.

3 Click the [Set Partition Name] button.
The name is set for the entered partition.

2.5.8 Setting various modes

This function sets the PCI address mode (only for PRIMEQUEST 580A/540A/580/540/480/440) for a partition, the System Mirror Mode, and the Hyper Threading Mode (only for PRIMEQUEST 500A/500 series).

Note the following about setting XPAR mode:

Notes:

- Extended Mirror Mode cannot be set in partitions containing SBs, IO Units or IOXs split with XPAR set. No split SB, IO Unit, or IOX can be assigned to a partition that is set in Extended Mirror Mode.
- No SB split with XPAR set can be assigned as the reserved SB of a partition that is set in Extended Mirror Mode. Extended Mirror Mode cannot be set in partitions to which split SBs are assigned as reserved SBs.
- XPAR is supported only in the PRIMEQUEST 500A/500 series, and the XPAR option is required for setting XPAR.

Procedure

1 Click [Partition] → [Partition#x] → [Mode].
The [Mode] window is displayed.

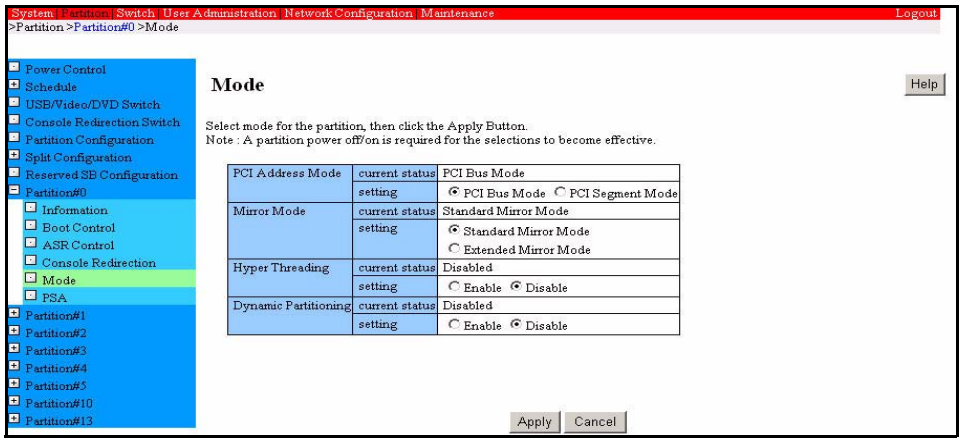


Figure 2.44 [Mode] window (PRIMEQUEST 580A/540A)

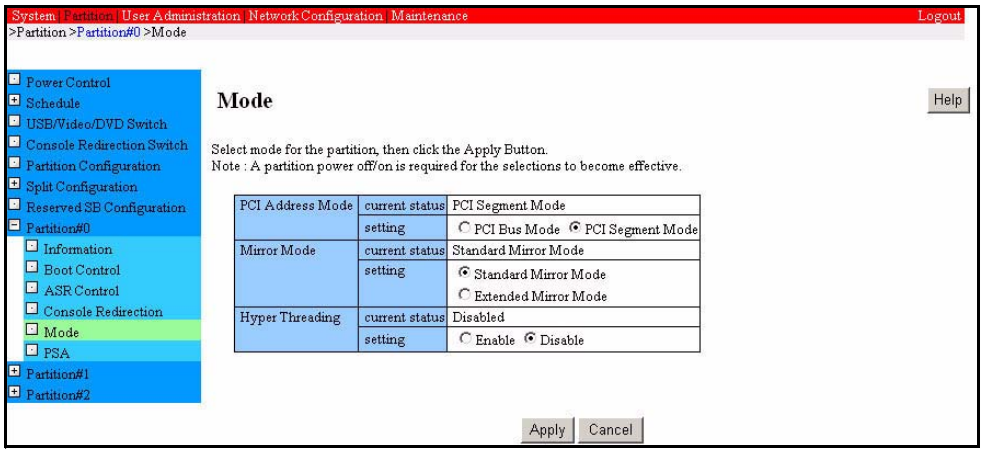


Figure 2.45 [Mode] window (PRIMEQUEST 580/540)

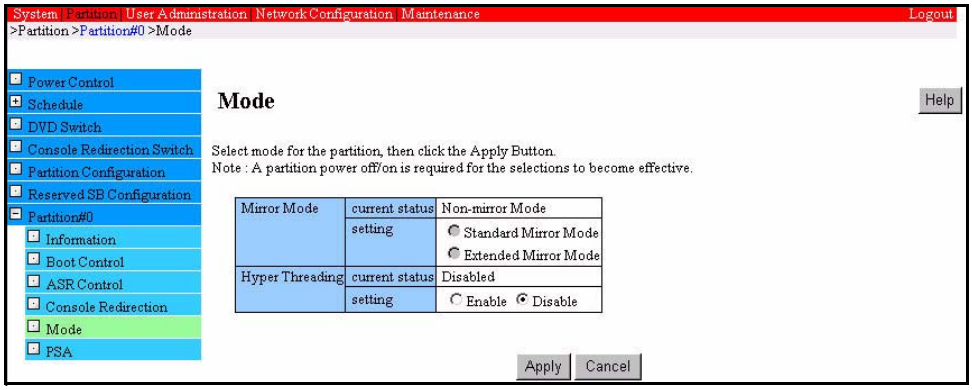


Figure 2.46 [Mode] window (PRIMEQUEST 520A/520)

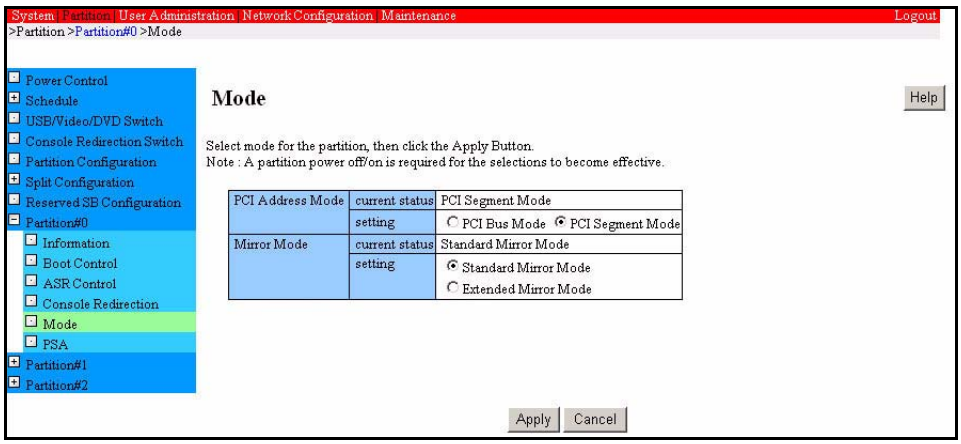


Figure 2.47 [Mode] window (PRIMEQUEST 480/440)

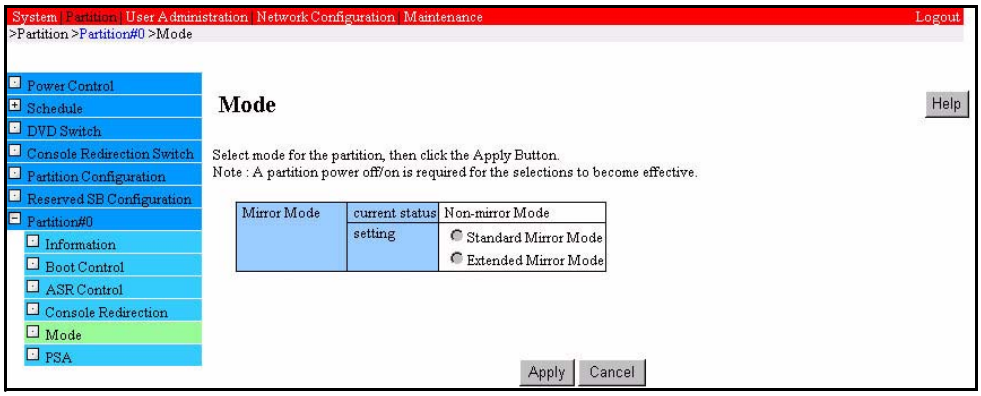


Figure 2.48 [Mode] window (PRIMEQUEST 420)

2 Set various modes.

Remarks: For details on the Dynamic Partitioning setting, see the *PRIMEQUEST 580A/540A DP (Dynamic Partitioning) Manual* (C122-E085EN).

Table 2.27 Displayed and setting items in the [Mode] window

Item	Description
PCI Address Mode (current status) (only for PRIMEQUEST 580A/540A/580/540/ 480/440)	Displays a PCI address mode that is enabled in the partition. • [PCI Bus Mode]: Defines all PCI spaces in the partition under segment number 0. • [PCI Segment Mode]: Defines the PCI spaces in the partition, segment by segment, for each IO Unit. When they are set in [PCI Segment Mode], a PCI device under IOU#0 appears in the space under segment#0, and a PCI device under IOU#1 also appears in the space under segment#1.
PCI Address Mode (setting) (only for PRIMEQUEST 580A/540A/580/540/ 480/440)	Sets the PCI address mode of a partition. The set mode is enabled after the partition is reset. Notes: • Set PCI Bus Mode for the partition that uses Windows Server 2003 as the OS. • Set PCI Segment Mode for the partition that uses Linux as the OS. • If Linux is installed, PCI Bus Mode must be set. • For information on how to set the PCI address mode for a partition running Windows Server 2008, see the *PRIMEQUEST Windows Server 2008 User's Guide* (C122-E087EN).
Interleave Mode between SBs (only for PRIMEQUEST 480/440)	Note: This mode is displayed for PRIMEQUEST 480/440 machines. However, do not use this mode.

Item	Description
Mirror Mode (Current status)	Displays the modes that are currently valid.
Mirror Mode (setting)	Sets a Mirror Mode by selecting one of the following modes. For details on the Mirror Mode, see the *System Design Guide*. • Standard Mirror Mode • Extended Mirror Mode Note: When [Mirror Mode] is set as [Disable] in the [System Setup] window, [Mirror Mode] is grayed out and cannot be selected. The default is [Standard Mirror Mode].
Hyper Threading (current) (available only in the PRIMEQUEST 500A/ 500 series)	Indicates whether the Hyper Threading function is enabled or disabled. • Enabled: Hyper Threading is enabled. • Disabled: Hyper Threading is disabled.
Hyper Threading (setting) (available only in the PRIMEQUEST 500A/ 500 series)	Enables or disables the Hyper Threading function. • Enable: Enables Hyper Threading. • Disable: Disables Hyper Threading. The default for Hyper Threading is [Disable] (disabled).
Dynamic Partitioning (current) (PRIMEQUEST 580A/ 540A series only)	Displays whether the Dynamic Partitioning function is enabled. • Enabled: Dynamic Partitioning is enabled. • Disabled: Dynamic Partitioning is disabled.
Dynamic Partitioning (setting) (PRIMEQUEST 580A/ 540A series only)	Specifies whether to enable the Dynamic Partitioning function. • Enable: Enables Dynamic Partitioning. • Disable: Disables Dynamic Partitioning. Note: The DP function is not supported in any of the cases listed below. In these cases, set [Disable] since operation cannot be guaranteed; setting [Enable] leads to a possibility that installation cannot be performed correctly. • The system used runs under RHEL with a version level earlier than RHEL 5.1 (IPF). • The system used runs a Windows version earlier than Windows Server 2008. • The system used runs under SUSE. • The virtual machine function is used. The default setting is [Disable] (disabling Dynamic Partitioning). For details, see the *PRIMEQUEST 580A/540A Dynamic Partitioning (DP) Manual* (C122-E085EN).

IMPORTANT

- To apply the changes to settings made on this window, the partition needs to be turned on/off.

3 Click the [Apply] button.

A confirmation window is displayed.

4 Click the [OK] button.

2.5.9 Starting a partition

This section explains how to start a partition that is in operation.

Procedure

1 Click [Partition] → [Power Control].
The [Power Control] window is displayed.

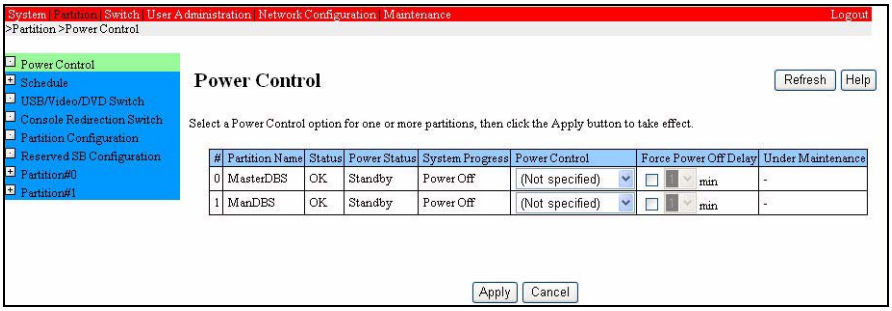


Figure 2.49 [Power Control] window

2 In the [Power Control] window, select [Power On] for the partition, and click the [Apply] button.

Table 2.28 Displayed and setting items in the [Power Control] window

Item	Description
Power Control	Select a power control setting to be displayed for the partition. The [Power On] menu item is not displayed for a powered-on partition. Conversely, the [Power Off], [Power Cycle], [Reset], [INIT], and [Force Power Off] menu items are not displayed for a powered-off partition. • Power On: Powers on the partition. • Power Off: Powers off the partition. • Power Cycle: Forcibly powers off the partition and powers it on again. • Reset: Resets the partition. • INIT: Generates an INIT interrupt for the partition and produces a Dump. • Force Power Off: Forcibly powers off the partition. • Not specified: Takes no action for the partition. Note: • To forcibly terminate applications running in the partition, execute INIT. Before executing INIT, stop important applications. Also, unmount unnecessary file systems.

2.5.10 Checking partition information

This function displays partition status information and partition related information.

You can also check the entire partition configuration in the PRIMEQUEST system in the [Partition Configuration] window.

Procedure

1 Click [Partition] → [Partition#x] → [Information]
The [Information] window is displayed.

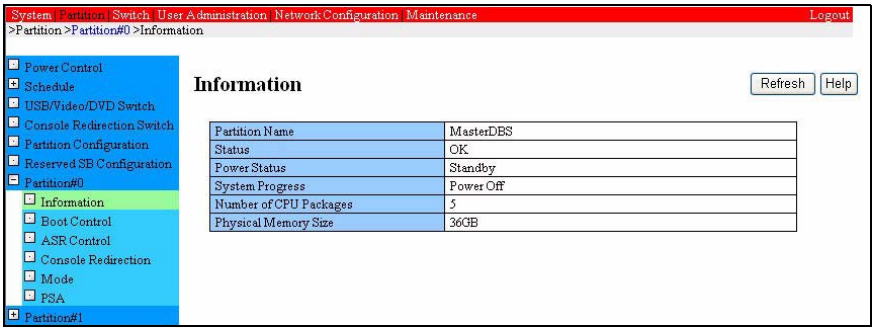


Figure 2.50 [Information] window

Table 2.29 Displayed and setting items in the [Information] window

Item	Description
Partition Name	Displays a partition name.
Status	Displays partition status. • OK: The partition is operating normally. • Degraded: The partition contains a failing component (operation continues with the failing component isolated). • Warning: The partition is in the warning state (a problem will probably occur in the future). • Failed: The partition failed.
Power Status	Displays partition power status. • On: Partition power is on. • Standby: Partition power is in standby status.

Item	Description
System Progress	Displays partition progress conditions. • [Power Off]: Power to the partition is off. • [Power On In Progress]: Partition power-on processing is in progress. • [Reset]: The partition is being reset. • [POST XXXXh]: Indicates that POST Code=XXXXh is started. • Boot: The partition is in one of the following states: - The partition is being booted. - SA is not installed. - Installation is in progress. - Backup or restoration using Systemcast Wizard is in progress. • [OS Running]: The operating system is running. • [OS Shutdown]: The operating system is shut down. • [Panic]: The partition is in the panic state. • [Power Off In Progress]: Partition power-off processing is in progress. • [Check Stop]: The partition has stopped.
Number of CPU packages	Displays the number of CPU packages included in a partition. Notes: Degraded CPUs are not included in this number.
Physical Memory Size	Displays the size of physical memory included in the partition. Notes: This size differs from the memory size that the OS can actually use. Degraded DIMMs are not included in this memory size.

2.6 Saving Configuration Information

This section describes how to save the settings made during installation. Be sure to make a backup of MMB configuration information.

- MMB Configuration Information Backup (→ 2.6.1)

Remarks:

- For saving PSA retention information and EFI settings, see Section 4.13, "Saving Setup Information" in Chapter 4, "Work Required After Operating System Installation."
- Make a backup of MMB configuration information at a regular interval.

2.6.1 MMB Configuration Information Backup

This section describes how to back up the MMB configuration information. The MMB configuration information is backed up to a remote PC.

Remarks: For backing up the MMB configuration information, see the Section 5.6.2.1, "[Backup/Restore Configuration] window" in the *PRIMEQUEST 580A/540A/520A/500/400 Series Reference Manual: Basic Operation/ GUI/Commands* (C122-E003EN).

Procedure

1 Click [Maintenance] → [Backup/Restore Configuration] → [Backup/Restore MMB Configuration].
The [Backup MMB Configuration] window is displayed.

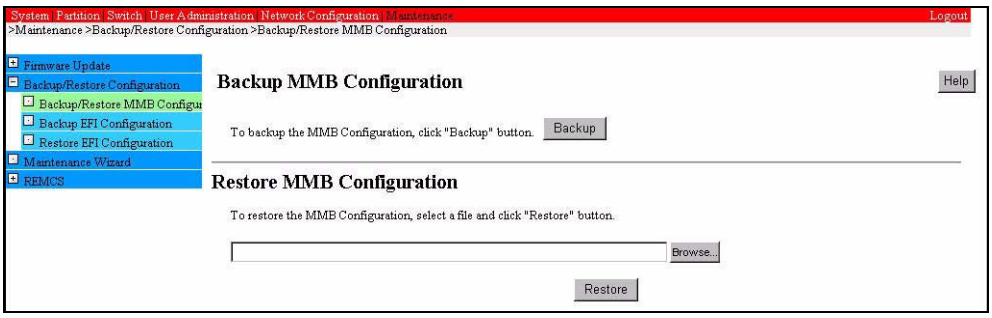


Figure 2.51 [Backup MMB Configuration] window

2 Click the [Backup] button.
The browser saving destination dialog box is displayed.

3 Select a saving path and click the [OK] button.
This starts the downloading of a configuration information file.
The default name of the MMB configuration information file to be backed up is as follows.

MMB_(backup-date)_(MMB-version).dat

CHAPTER 3 Operating System Installation

3.1 Overview

This section chapter describes the following topics:

- Installable operating systems (→ 3.1.1)
- Types of installation methods (→ 3.1.2)
- Requirements for installation (→ 3.1.3)
- Work required after operating system installation (→ 3.1.4)

3.1.1 Installable operating systems

The installable operating systems include:

- Red Hat® Enterprise Linux® AS (v.4 for Itanium)
- Red Hat® Enterprise Linux® 5 (for Intel Itanium)
- SUSE™ Linux Enterprise Server 9 for Itanium Processor Family
- SUSE™ Linux Enterprise Server 10 for Itanium Processor Family
- Microsoft® Windows Server® 2003, Enterprise Edition for Itanium-based Systems
- Microsoft® Windows Server® 2003, Datacenter Edition for Itanium-based Systems
- Microsoft® Windows Server® 2008 for Itanium-Based Systems

3.1.2 Types of installation methods

This section describes the types of Linux and Windows installation methods and the differences among them.

Linux installation methods

Linux OS installation methods include the following:

- Local installation: Linux OS installation using the KVM (PRIMEQUEST 580A/540A/580/540/480/440)
  Installation using the independent KVM switch (PRIMEQUEST 520A/520/420)
- Remote installation: Installation using SystemcastWizard Lite

Remarks: Use remote installation for installation in multiple partitions.

The Figure 3.1 indicates the differences between the above installation methods.

Table 3.1 Comparison of Linux installation methods

Classification	Method	Server configuration	Simultaneous installation in multiple partitions	Ease of operation
Local installation	Installation using the KVM	Display, USB keyboard, USB mouse, and USB floppy drive that are connected to the KVM interface unit	Not allowed	High
	Installation without using the KVM	Display, USB keyboard, USB mouse, and USB floppy drive that are connected to the server unit.		
Remote installation	Installation using SystemcastWizard Lite	Deployment server and SystemcastWizard Lite software required	Allowed	High

Windows installation methods

Windows OS installation methods include the following:

- Remote installation
  Installation using SystemcastWizard Lite
- Local installation
  - Installation using the Installation Support Tool for Windows
  - Installation using the KVM

The Figure 3.2 indicates the differences among the above installation methods.

Table 3.2 Comparison of Windows installation methods

Classification	Method	Recommendation level	Simultaneous installation in multiple partitions	Ease of operation	Linkage with PRIMEQUEST Software Installer
Remote installation	SystemcastWizard Lite remote OS setup	Most recommended	Available	O	Available
Local installation	Installation Support Tool for Windows	Recommended	Unavailable	O	Available
Local installation	Manual installation using the KVM	Seldom recommended	Unavailable	-	Unavailable

- SystemcastWizard Lite remote OS setup (recommended)

  The SystemcastWizard Lite software supplied with the PRIMEQUEST server is used to install Windows. It enables automatic installation of Windows via a network.

  The High-Reliability Tools are automatically installed after Windows installation is completed.

  For details, see Section 3.3.2, "Windows installation using SystemcastWizard Lite."

- Installation Support Tool for Windows

  The Installation Support Tool for Windows software which is supplied with the PRIMEQUEST server is used to install Windows. Most of this installation method is automated, except for CD-ROM/DVD replacement and some other operations.

  The High-Reliability Tools are automatically installed after Windows installation is completed.

  For details, see Section 3.3.3, "Windows installation using the installation support tool."

- Manual installation using the KVM

  Windows is manually installed from the Windows installation DVD.

  The High-Reliability Tools must be installed manually after Windows installation is completed.

  For details, see Section 3.3.4, "Windows Installation using the KVM (PRIMEQUEST 580A/540A/580/540/480/440)" and Section 3.3.5, "Windows Installation using the independent KVM switch (PRIMEQUEST 520A/520/420)."

3.1.3 Requirements for installation

Install an OS in each partition.

Installation procedures described in this chapter assume that the PRIMEQUEST has fulfilled the following requirements:

- The tasks described in Chapter 2, "Setup" have been completed.
  - The PRIMEQUEST main unit has already been installed.
  - The server unit has already been appropriately installed.
  - The MMB console is connected and can control the MMB.
  - Required partitions have already been defined.
- All that is required for OS (LINUX or Windows) setup is ready.
  - Installation medium
  - Server license
  - CAL (Windows)

3.1.4 Work required after operating system installation

After completing the installation of the operating system, you need to perform the tasks indicated in the Table 3.3. For further information on each task, see Chapter 4, "Work Required After Operating System Installation."

Table 3.3 Tasks required after installation

OS installed	Task	Description
Linux or Windows	PSA setup	Specify the settings required to make the PSA operable. Set up S.M.A.R.T. Set up Watchdog.
Linux or Windows	NTP client setup	Set up an NTP client.
Linux (Red Hat only) or Windows	Dump environment setup	Set up a dump environment.
Linux (Red Hat only) or Windows	OS Backup	Back up the installed operating system.
Linux or Windows	Settings saving	Save PSA settings and EFI configuration information.

Remarks: The components required by REMCS functions on the OS side are installed when PSA is installed under Linux (Red Hat) or Windows. REMCS configuration will be performed by a certified service engineer.

3.2 Linux Installation

This section describes the following installation methods:

- Linux Installation using the KVM interface unit (PRIMEQUEST 580A/540A/580/540/480/440) (→ 3.2.1)
- Linux installation using the independent KVM switch (PRIMEQUEST 520A/520/420) (→ 3.2.2)
- Linux installation using SystemcastWizard Lite (→ 3.2.3)

To efficiently install multiple systems (three or more system partitions), an installation method using SystemcastWizard Lite is recommended.

3.2.1 Linux Installation using the KVM interface unit (PRIMEQUEST 580A/540A/580/540/480/440)

3.2.1.1 Hardware requirements and procedure

Before installing an OS using the KVM interface unit, you must first create a config file. A config file is a file that contains OS installation option settings, etc. Use the installation support tool to create a config file.

Table 3.4 provides an outline of the system requirements for the installation support tool. For details, see the *PRIMEQUEST Installation Support Tool User's Guide (Red Hat)* (C122-E005EN) or the *PRIMEQUEST Installation Support Tool User's Guide (SUSE)* (C122-E047EN).

Table 3.4 System requirements for the installation support tool

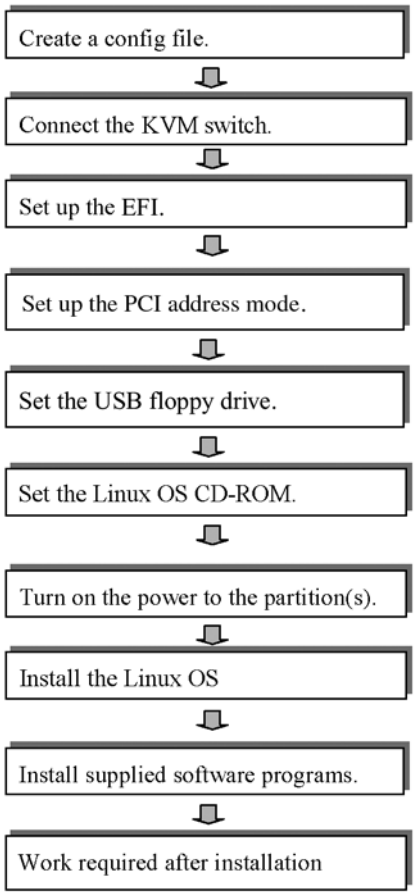
Classification	Compatible environment
Hardware	A personal computer running Windows The OS must be one of the following: • Windows 2000 Professional Service Pack4 or later • Windows XP Home Edition Service Pack2 or later • Windows XP Professional Service Pack2 or later * Only the 32-bit version of the OS

When config file creation is complete, you can start installation using the KVM. To perform installation using the KVM, the following devices are required for the KVM:

- Display
- USB Keyboard

- USB Mouse
- USB floppy disk drive

The installation procedure is as follows:



3.2.1.2 Creating a config file installation support

Using the tool, choose OS installation options, etc. For details, see the *PRIMEQUEST Installation Support Tool User's Guide (Red Hat)* (C122-E005EN) or the *PRIMEQUEST Installation Support Tool User's Guide (SUSE)* (C122-E047EN).

3.2.1.3 Connecting the devices

Perform the following steps to connect the KVM to the partition on which you are installing the Linux OS:

(1) Connecting the KVM

1 Connect a keyboard, a mouse, and a display unit to the KVM interface unit.

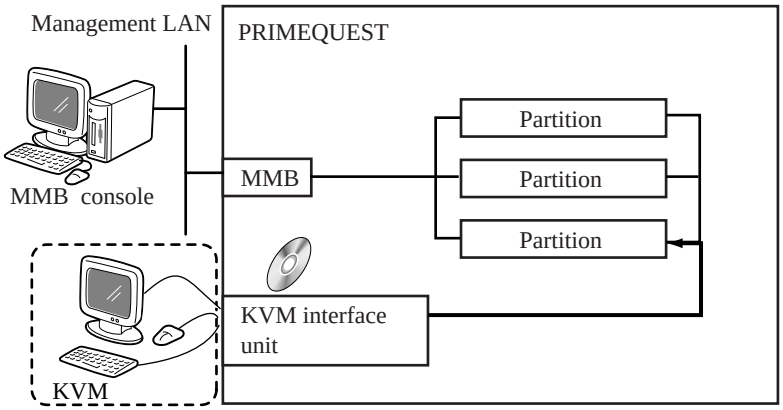


Figure 3.1 Example of connections for installation using the KVM

2 On the MMB Web-UI, click [Partition] → [USB/Video/DVD Switch].
The [USB/Video/DVD Switch] window appears.
Remarks: For information on how to log in to the MMB, see Section 2.2.2.1, "Login to and logout from the MMB Web-UI,"

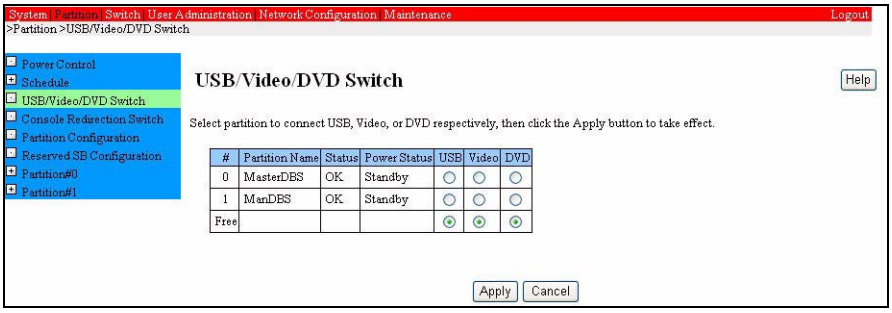


Figure 3.2 [USB/Video/DVD Switch] window

3 Select the USB, Video and DVD radio button for the partition on which you are installing the OS, and click the [Apply] button.

(2) Setting up the EFI

Set up the EFI for the partition on which you are installing the OS to ensure that the system will be booted from the DVD-ROM.

1 On the MMB Web-UI window, click [Partition] → [Partition#x] → [Boot Control].
The [Boot Control] window appears.

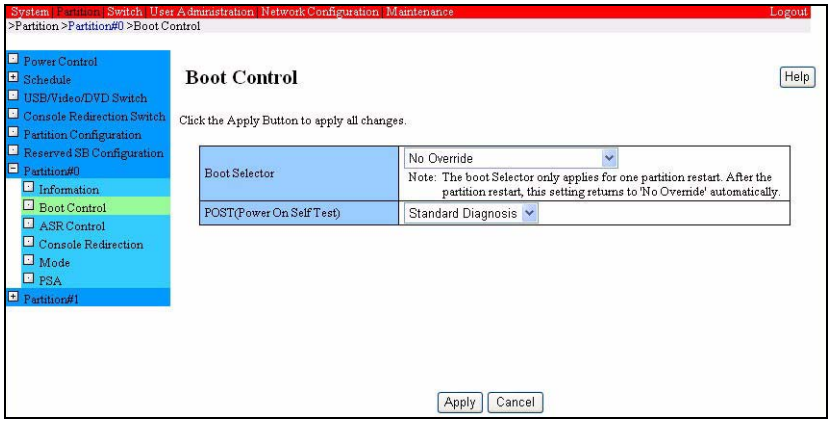


Figure 3.3 [Boot Control] window

2 Select [Force boot from DVD] in [Boot Selector], and click the [Apply] button.

(3) Setting PCI address mode

Set "PCI Bus Mode" as the PCI address mode of the partition in which the operating system is to be installed.

1 From the Web-UI window of the MMB, click [Partition] → [Partition #x] → [Mode].
The [Mode] window appears.

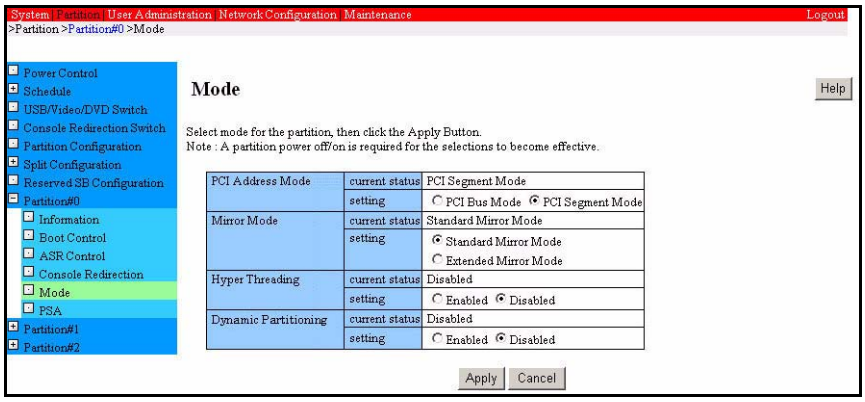


Figure 3.4 [Mode] window (PRIMEQUEST 580A/540A)

2 Select [PCI Bus Mode] for [PCI Address Mode], and click the [Apply] button.
A confirmation window is displayed.

3 Click the [OK] button.

Remarks: Use PCI Bus Mode so that a fixed location is set for the PRIMEQUEST main unit on the LAN registered on the MMB during installation.

(4) Connecting a USB floppy disk drive.

1 Connect a USB floppy disk drive to the USB port of the KVM interface unit. Then, insert the floppy disk containing the configuration file into the USB floppy disk drive.

(5) Inserting the Linux OS CD-ROM disk

1 Insert the CD-ROM of the Linux OS to be installed, into the KVM DVD-ROM drive.

(6) Turning on the power to the partition

Turn on the power to the partition as described below.

If the power is already on, reset the partition.

1 On the MMB Web-UI window, click [Partition] → [Power Control].
The [Power Control] window appears.

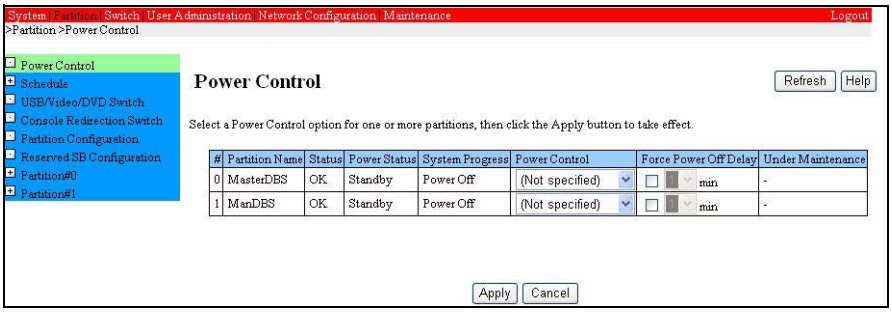


Figure 3.5 [Power Control] window

2 From [Power Control] of the partition to be switched on, select [Power On] or [Reset].

3 Click the [Apply] button.

3.2.1.4 Installing the Linux OS

Boot the OS from the CD to install it.

For details, see the *PRIMEQUEST Installation Support Tool User's Guide (Red Hat)* (C122-E005EN) or the *PRIMEQUEST Installation Support Tool User's Guide (SUSE)* (C122-E047EN).

Follow the instructions from the installer displayed on the KVM display to change the CD-ROM. After Linux OS installation is complete, the system is rebooted.

Note: Switching the partition connected to the KVM devices during Linux OS installation may stop Linux OS installation and cause an I/O error. Do not perform KVM switching during installation.

3.2.1.5 Installing attached software programs

After installing the OS, follow the instructions displayed on the KVM display to insert the supplied CD-ROM into the KVM DVD-ROM drive and install the attached software program. For details of the bundled-software package installer, see the *PRIMEQUEST Installation Support Tool User's Guide (Red Hat)* (C122-E005EN) or the *PRIMEQUEST Installation Support Tool User's Guide (SUSE)* (C122-E047EN).

3.2.1.6 Work required after installation

After installation is complete, remove the USB floppy drive from the USB port of the KVM interface unit. Then, set the PCI address mode.

Set "PCI Segment Mode" as the PCI address mode of the partition in which the operating system has been installed. For information on the setting method, see Section 2.5.8, "Setting various modes."

After setting the PCI address mode, perform the installation work for the Linux OS.

For further information, see Chapter 4, "Work Required After Operating System Installation."

3.2.2 Linux installation using the independent KVM switch (PRIMEQUEST 520A/520/420)

3.2.2.1 Hardware requirements and procedure

For installing using the independent KVM switch, you must first create a config file. A config file is a file that contains OS installation option settings, etc. Use the installation support tool to create a config file.

Table 3.4 provides an outline of the system requirements for the installation support tool. For details, see the *PRIMEQUEST Installation Support Tool User's Guide (Red Hat)* (C122-E005EN) or the *PRIMEQUEST Installation Support Tool User's Guide (SUSE)* (C122-E047EN).

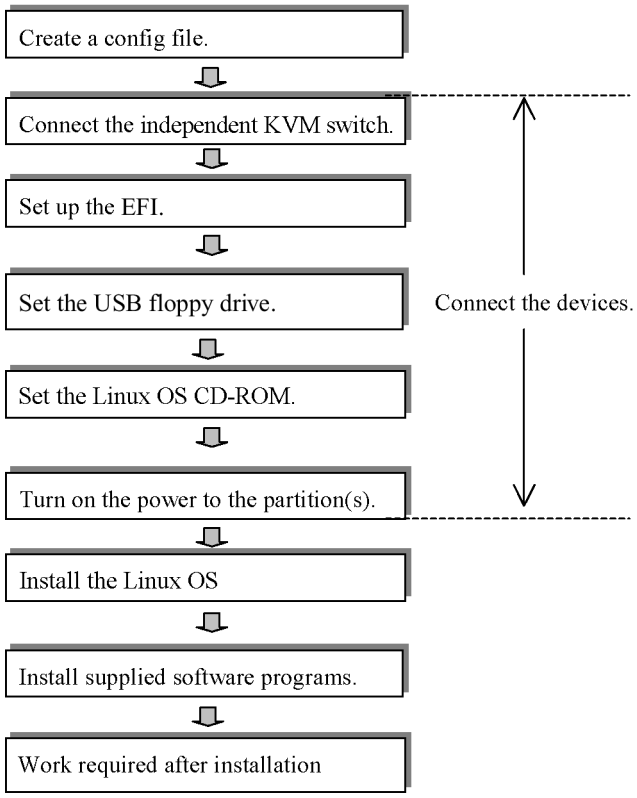
Table 3.5 System requirements for the installation support tool

Classification	Compatible environment
Hardware	A personal computer running Windows The OS must be one of the following: • Windows 2000 Professional Service Pack4 or later • Windows XP Home Edition Service Pack2 or later • Windows XP Professional Service Pack2 or later * Only the 32-bit version of the OS

When config file creation is complete, the following devices are required for the installation:

- Display
- USB Keyboard
- USB Mouse
- USB floppy disk drive

The installation procedure is as follows:



3.2.2.2 Creating a config file installation support

Using the tool, choose OS installation options, etc. For details, see the *PRIMEQUEST Installation Support Tool User's Guide (Red Hat)* (C122-E005EN) or the *PRIMEQUEST Installation Support Tool User's Guide (SUSE)* (C122-E047EN).

3.2.2.3 Connecting the devices

Perform the following steps to connect the devices required for the installation to the partition on which you are installing the Linux OS:

(1) Connecting the independent KVM switch

1 Connect the independent KVM switch to the USB port of an IO Unit.

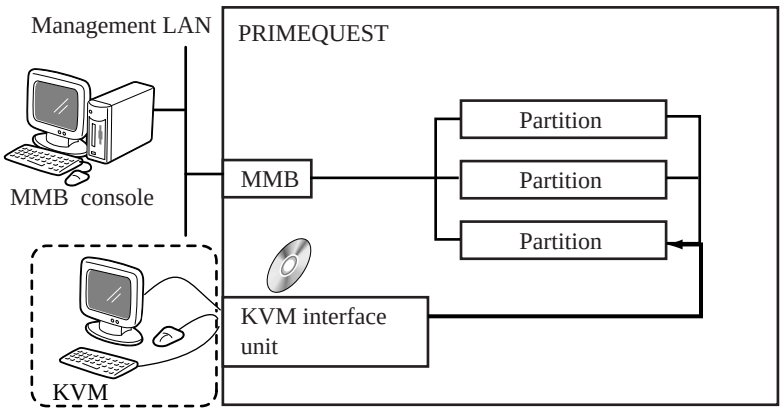


Figure 3.6 Example of connections for installation using the independent KVM switch

2 On the MMB Web-UI, click [Partition] → [DVD Switch].
The [DVD Switch] window appears.
Remarks: For information on how to log in to the MMB, see Section 2.2.2.1, "Login to and logout from the MMB Web-UI,"

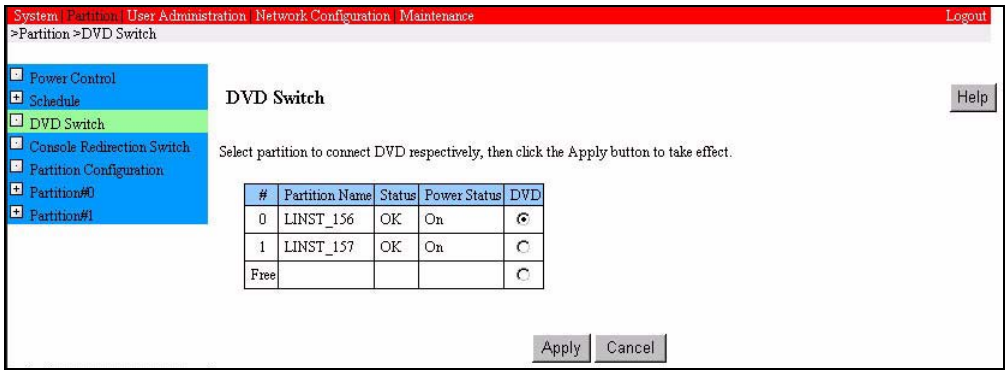


Figure 3.7 [DVD Switch] window

3 Select the DVD radio button for the partition on which you are installing the OS, and click the [Apply] button.

(2) Setting up the EFI

Set up the EFI for the partition on which you are installing the OS to ensure that the system will be booted from the DVD-ROM.

1 On the MMB Web-UI window, click [Partition] → [Partition#x] → [Boot Control].
The [Boot Control] window appears.

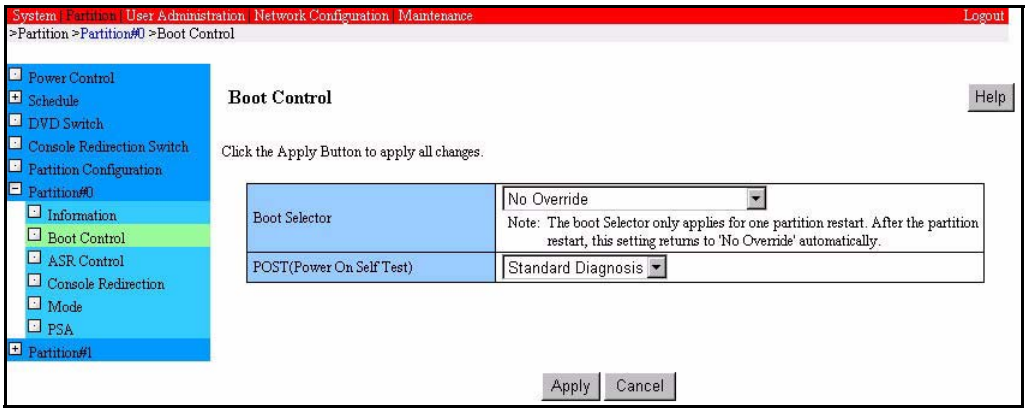


Figure 3.8 [Boot Control] window

2 Select [Force boot from DVD] in [Boot Selector], and click the [Apply] button.

(3) Connecting a USB floppy disk drive.

1 Connect a USB floppy disk drive to the BMM USB port. Then, insert the floppy disk containing the configuration file into the USB floppy disk drive.

(4) Inserting the Linux OS CD-ROM disk

1 Insert the CD-ROM of the Linux OS to be installed, into the OPL DVD-ROM drive.

(5) Turning on the power to the partition

Turn on the power to the partition as described below.

If the power is already on, reset the partition.

1 On the MMB Web-UI window, click [Partition] → [Power Control].
The [Power Control] window appears.

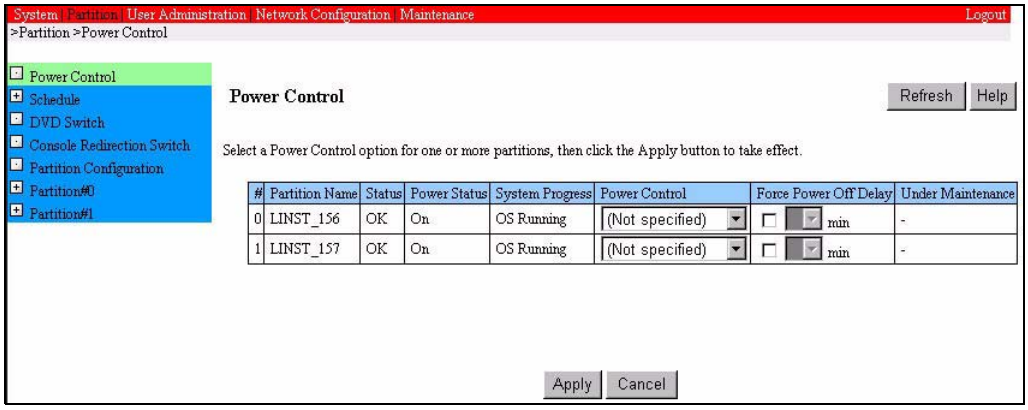


Figure 3.9 [Power Control] window

2 From [Power Control] of the partition that is the installation target, select [Power On].
Remarks: If the power to the partition is already on, select [Reset].

3 Click the [Apply] button.

3.2.2.4 Installing the Linux OS

Boot the OS from the CD to install it.

For details, see the *PRIMEQUEST Installation Support Tool User's Guide (Red Hat)* (C122-E005EN) or the *PRIMEQUEST Installation Support Tool User's Guide (SUSE)* (C122-E047EN).

Follow the instructions from the installer displayed on the display to change the CD-ROM. After Linux OS installation is complete, the system is rebooted.

3.2.2.5 Installing attached software programs

After installing the OS, follow the instructions displayed on the KVM display to insert the supplied CD-ROM into the OPL DVD-ROM drive and install the attached software program.

For details of the bundled-software package installer, see the *PRIMEQUEST Installation Support Tool User's Guide (Red Hat)* (C122-E005EN) or the *PRIMEQUEST Installation Support Tool User's Guide (SUSE)* (C122-E047EN).

3.2.2.6 Work required after installation

After installation is complete, remove the USB floppy drive from the USB port of the KVM interface unit. Then, proceed with the work required after Linux OS installation.

For further information, see Chapter 4, "Work Required After Operating System Installation."

3.2.3 Linux installation using SystemcastWizard Lite

3.2.3.1 Hardware requirements and procedure

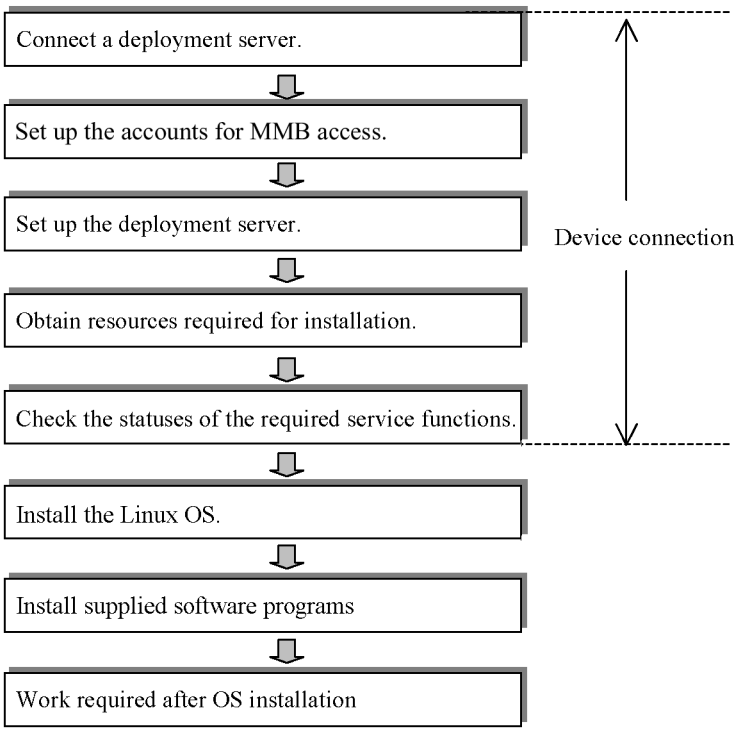
Before you can use SystemcastWizard Lite to install the operating system, a personal computer for SystemcastWizard Lite must be prepared. Install SystemcastWizard Lite on this PC, and use the PC as a server (deployment server) that can store the registered resources and information required for setup.

The Table 3.6 outlines the system requirements. For details, see the *PRIMEQUEST SystemcastWizard Lite User's Guide* (C122-E010EN).

Table 3.6 Outline of system requirements

Classification	Compatible environment
Hardware	PRIMERGY/FMV series (IA-32) *: A CD-ROM or DVD-ROM drive is required. The server OS must be one of the following: • Windows Server 2003, Standard Edition (Service Pack 1 or later) • Windows Server 2003, Enterprise Edition (Service Pack 1 or later) • Windows Server 2003 R2, Standard Edition • Windows Server 2003 R2, Enterprise Edition • Windows XP Professional (Service Pack 2 or later) • Windows Vista Business • Windows Vista Enterprise
	LAN cables
Software	SystemcastWizard Lite, bundled software of PRIMEQUEST

The installation procedure is as follows:



3.2.3.2 Connecting the devices

Perform the following steps to connect the devices:

(1) Connecting a deployment server

1 Connect to the network the deployment server.
To install SystemcastWizard Lite, see the *PRIMEQUEST SystemcastWizard Lite User's Guide* (C122-E010EN).

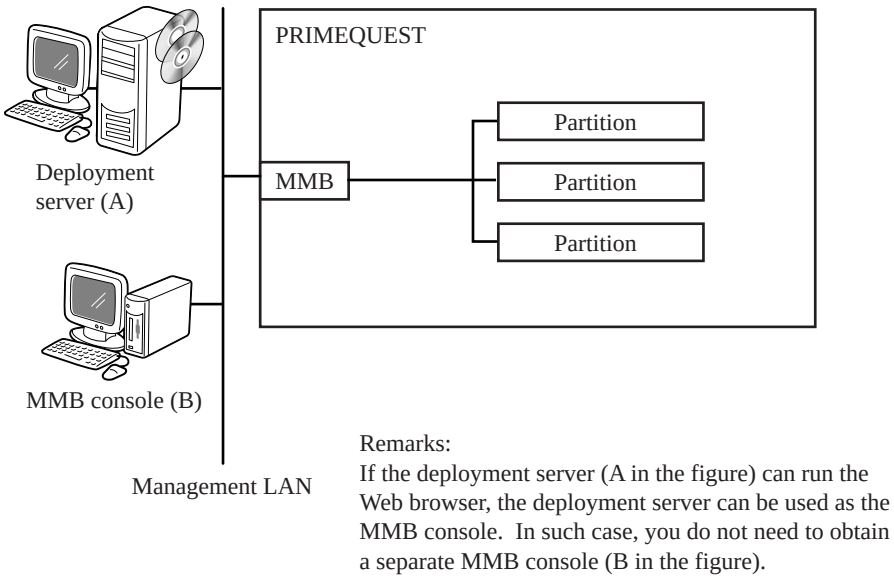


Figure 3.10 Example of connections for installation using SystemcastWizard Lite

Notes: Although the PXE function is used to activate the network, you cannot activate the network across a router. Therefore, connect the deployment server to the management LAN to which the PRIMEQUEST machine is connected.
The target partition is started remotely or MMB#0 is used for all communication for backup or restoration. Always perform this operation with MMB#0 connected to the management LAN. However, MMB#0 need not be active.

(2) Setting up the accounts for MMB access

The user information required for remote control of the MMB with RMCP can be specified.

1 Click [Network Configuration] → [Remote Server Management] in the MMB Web-UI window. The [Remote Server Management] window is displayed.

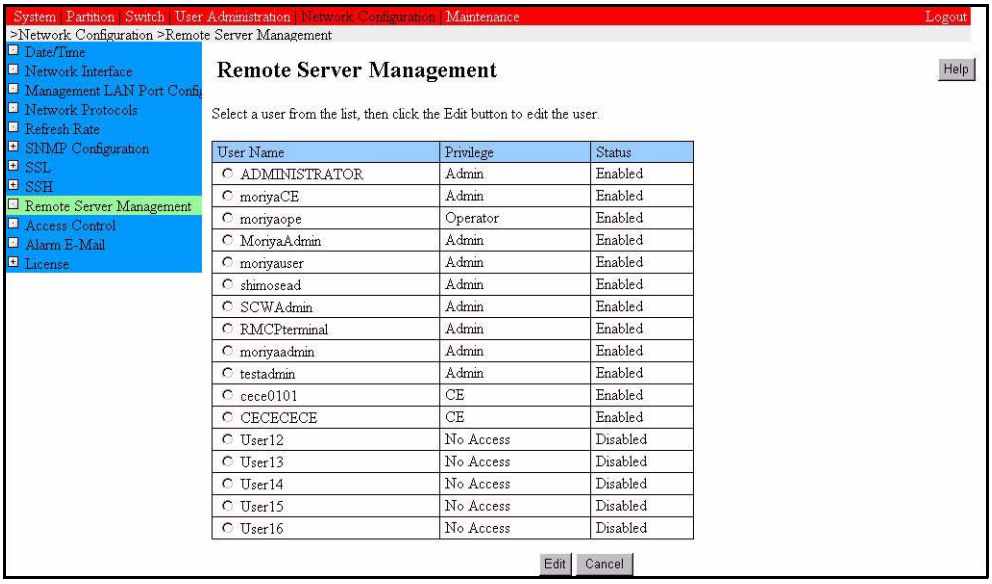


Figure 3.11 [Remote Server Management] window (example)

2 Select the applicable user radio button, and click the [Edit] button.
The [Edit User] window is displayed.

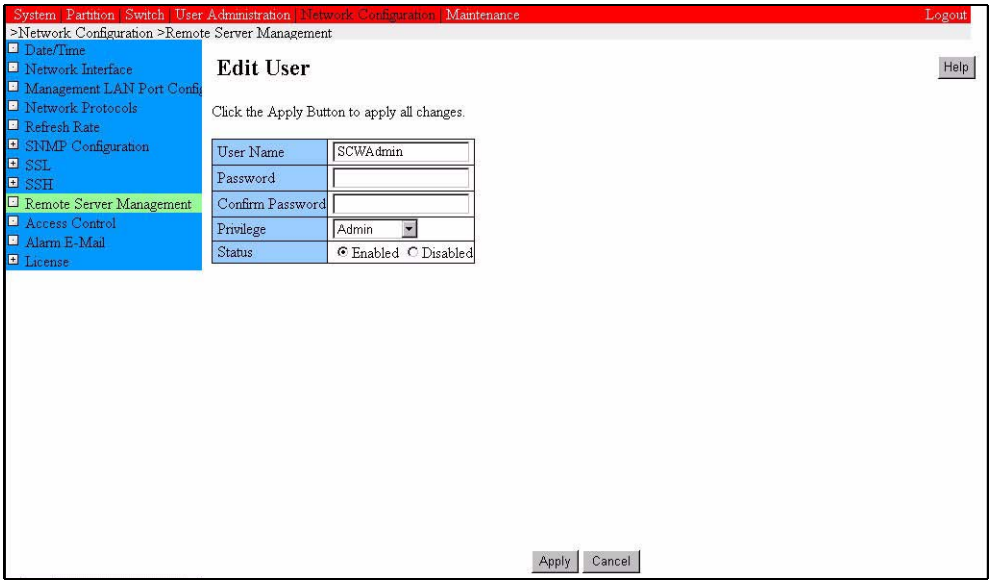


Figure 3.12 [Edit User] window (example)

3 Specify the user management information in the [Edit User] window, and click the [Apply] button.
- User Name: Specify a user name (consisting of at least 8 and up to 16 characters).
- Password: Specify a password (consisting of at least 8 and up to 16 characters).
- Confirm Password: Enter the specified password again for confirmation.
- Privilege: Select Admin.
- Status: Select Enabled.

(3) Setting up the deployment server

1 Register the partition on which you are installing the Linux OS, in the deployment server. For this purpose, use the GUI environment (deployment console) provided by SystemcastWizard Lite. For information on the procedure, see the *PRIMEQUEST SystemcastWizard Lite User's Guide* (C122-E010EN).

(4) Obtaining resources required for installation

For the resources required for installation using SystemcastWizard Lite, see the *PRIMEQUEST SystemcastWizard Lite User's Guide* (C122-E010EN).

(5) Checking the statuses of the required service functions

Check the service statuses on the deployment server by checking the following:

- Whether you can use TFTP service required for network booting
- Whether you can use FTP service required to install the OS in network environments
- Whether you can use DHCP service to assign an IP address to each PRIMEQUEST partition and whether the service is correctly configured

3.2.3.3 Installing the Linux OS

Create resources on the deployment console, and issue a request to install Linux. For information on the procedure, see the *PRIMEQUEST SystemcastWizard Lite User's Guide* (C122-E010EN).

3.2.3.4 Installing bundled software package

The bundled software is installed by SystemcastWizard Lite after installation of the operating system. PSA is also installed at this time.

3.2.3.5 Work required after installation

- PRIMEQUEST 580A/540A/580/540/480/440

  After installation, set the PCI address mode.

  Set "PCI Segment Mode" as the PCI address mode of the partition in which the operating system has been installed. For the setting method, see Section 2.5.8, "Setting various modes."

  After setting the PCI address mode, perform the installation work for the Linux OS. For details, see Chapter 4, "Work Required After Operating System Installation."

- PRIMEQUEST 520A/520/420

  After installation, perform the work required after Linux OS installation.

  For details on the work, see Chapter 4, "Work Required After Operating System Installation."

  After the OS installation is complete, perform the tasks required after Linux OS installation. For further information, see Chapter 4, "Work Required After Operating System Installation."

3.3 Windows Installation

To implement a highly reliable system environment with the PRIMEQUEST machine, Fujitsu recommends the "SAN boot environment," which uses SAN storage units (e.g., ETERNUS). The workflow for setting up the SAN boot environment is as follows:

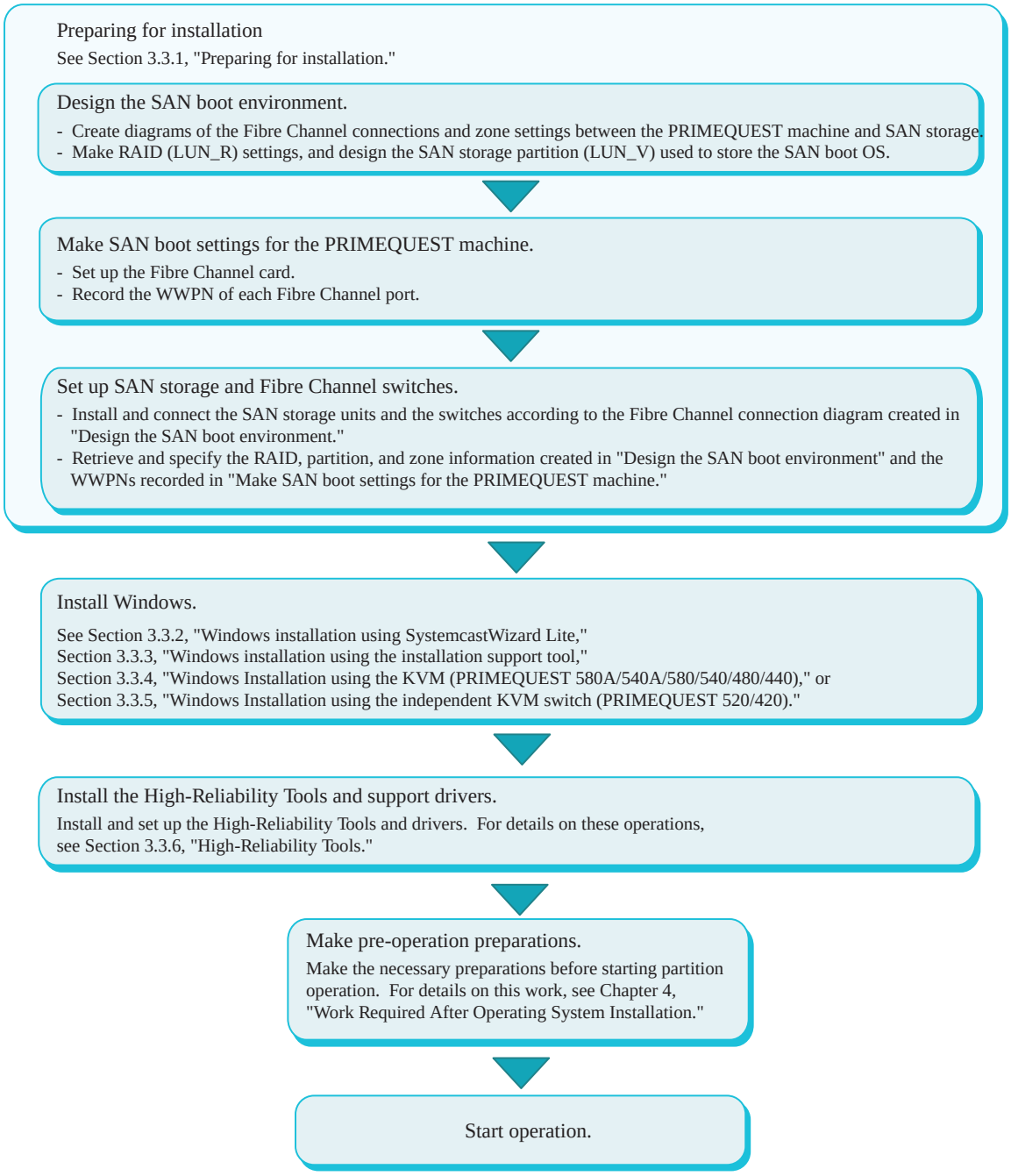


Figure 3.13 Workflow for operation start

This section describes the following types of operations:

- Preparing for installation (→ 3.3.1)
- Windows installation using SystemcastWizard Lite (→ 3.3.2)
- Windows installation using the installation support tool (→ 3.3.3)
- Windows Installation using the KVM (PRIMEQUEST 580A/540A/580/540/480/440)
  (→ 3.3.4)
- Windows Installation using the independent KVM switch (PRIMEQUEST 520A/520/420) (→ 3.3.5)
- High-Reliability Tools (→ 3.3.6)

Note: Use SystemcastWizard Lite to install Windows Server 2003, Enterprise Edition (IA64) purchased with a volume license.

3.3.1 Preparing for installation

This manual describes necessary procedures for the PRIMEQUEST machine. For the configuration and tuning procedures for SAN storage products and Fibre Channel switches, see their respective manuals. A Fujitsu certified service engineer sets up the SAN boot environment. For details, contact your Fujitsu certified service engineer.

3.3.1.1 Setting up a SAN boot environment

The following types of work are required for setting up the SAN boot environment. For details on the procedure, see Appendix D, "Installation in the SAN Boot Environment."

- Designing the SAN boot environment
  The reliability that can be obtained depends greatly on the topologies of the PRIMEQUEST machine, SAN storage, and FC switches.
- Making SAN boot settings for the PRIMEQUEST machine
  Set up the SAN storage units and PRIMEQUEST machine according to the configuration design. The Fibre Channel EFI driver must be configured.
- Set up SAN storage and Fibre Channel switches
  Mount, connect, configure, and tune the SAN storage units and Fibre Channel switches according to the connection diagram prepared during environment design.

3.3.1.2 Connecting a SAN storage unit

To install the operating system on SAN storage, a SAN storage unit must be prepared as described in Section 3.3.1.1. The installation procedures in Section 3.3.2 and 3.3.4 assume that all devices as follows are connected:

In addition, to install Windows on SAN storage, the conditions stated below must be satisfied. After installation, confirm that Windows can start up and configure it for the operating configuration.

- Only the LUNs on which Windows is installed can be identified from the PRIMEQUEST-series machine.
- The PRIMEQUEST-series machine is connected through a single path to the SAN storage.

Installing Windows on SAN storage by using SystemcastWizard Lite

- Deployment server
- Console (keyboard, display, mouse)
- External RAID (e.g., ETERNUS)
- Fibre Channel card
- Optical fiber cable
- LAN cable

Installing Windows on SAN storage by using the KVM

- Console (keyboard, display, mouse)
- External RAID (e.g., ETERNUS)
- Fibre Channel card
- Optical fiber cable
- Floppy disk drive (must be prepared separately)

In addition, the conditions listed below must be satisfied in order to install Windows on SAN storage. When installation is completed, confirm that Windows has started normally, and reconfigure the operating configuration.

- The PRIMEQUEST machine can recognize only the LUN that is the Windows installation destination.
- The PRIMEQUEST machine and SAN storage are connected by a single path.

3.3.1.3 Pre-installation notes (PRIMEQUEST 580A/540A/580/540/480/440)

Note: Windows does not support PCI Segment Mode. When designing partitions with the PRIMEQUEST machine, set PCI Bus Mode by using the MMB Web-UI as described below.

Set it by following the procedure below.

1 In the MMB Web-UI window, click [Partition] → [Partition#x] → [Mode]. The [Mode] window is displayed.

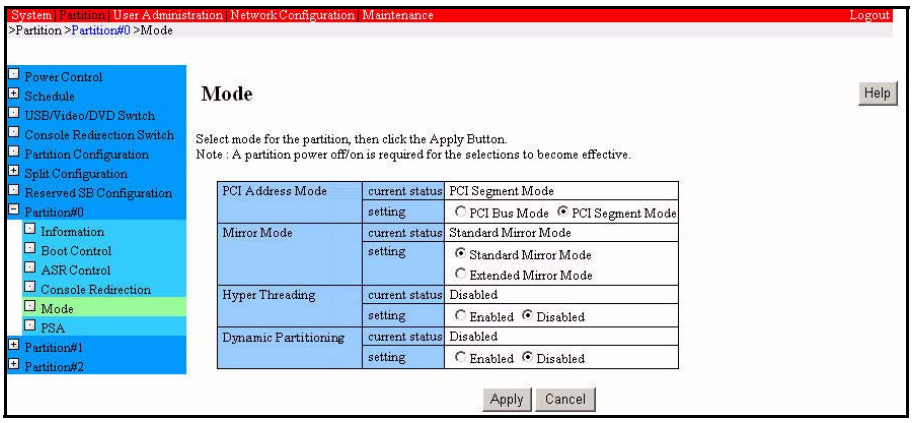


Figure 3.14 [Mode] window (PRIMEQUEST 580A/540A)

2 Select [PCI Bus Mode] and click the [Apply] button.
The message box "A Partition power off/on is required in order to make set..." is displayed, click [OK] to continue processing.

Note: Install Windows when the disk partition is in the appropriate state. If installation is attempted in overwrite mode when Linux is already installed, installation fails. Be sure to initialize the disk before installing Windows in such an environment. For details on SAN disk initialization, see the manual supplied with the SAN storage unit.

3.3.2 Windows installation using SystemcastWizard Lite

3.3.2.1 Hardware requirements and procedure

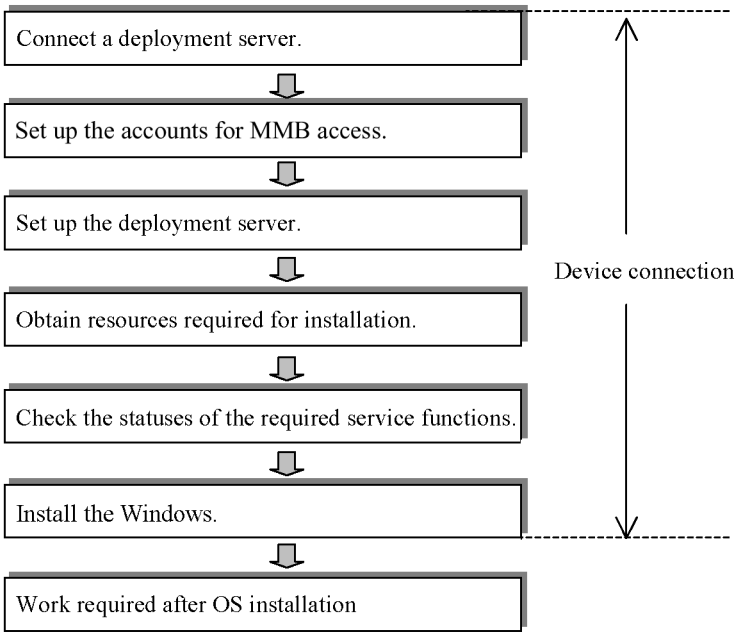
Before you can use SystemcastWizard Lite to install the operating system, a personal computer/server for SystemcastWizard Lite must be prepared. Install SystemcastWizard Lite on this PC/server, and use the PC as a server (deployment server) that can store the registered resources and information required for setup.

The Table 3.7 outlines the system requirements. For details, see the *PRIMEQUEST SystemcastWizard Lite User's Guide* (C122-E010EN).

Table 3.7 Outline of system requirements

Classification	Compatible environment
Hardware	PRIMERGY/FMV series (IA-32) * A DVD ROM drive is required for reading the Windows Server 2003 (IA64) installation DVD. The server OS must be one of the following: • Windows Server 2003, Standard Edition (Service Pack 1 or later) • Windows Server 2003, Enterprise Edition (Service Pack 1 or later) • Windows Server 2003 R2, Standard Edition • Windows Server 2003 R2, Enterprise Edition • Windows XP Professional (Service Pack 2 or later) • Windows Vista Business • Windows Vista Enterprise
	LAN cables
Software	SystemcastWizard Lite, bundled software of PRIMEQUEST

The installation procedure is as follows:



3.3.2.2 Connecting the devices

Perform the following steps to connect the devices:

(1) Connecting a deployment server

1 Connect to the network the deployment server.
To install SystemcastWizard Lite, see the *PRIMEQUEST SystemcastWizard Lite User's Guide* (C122-E010EN).

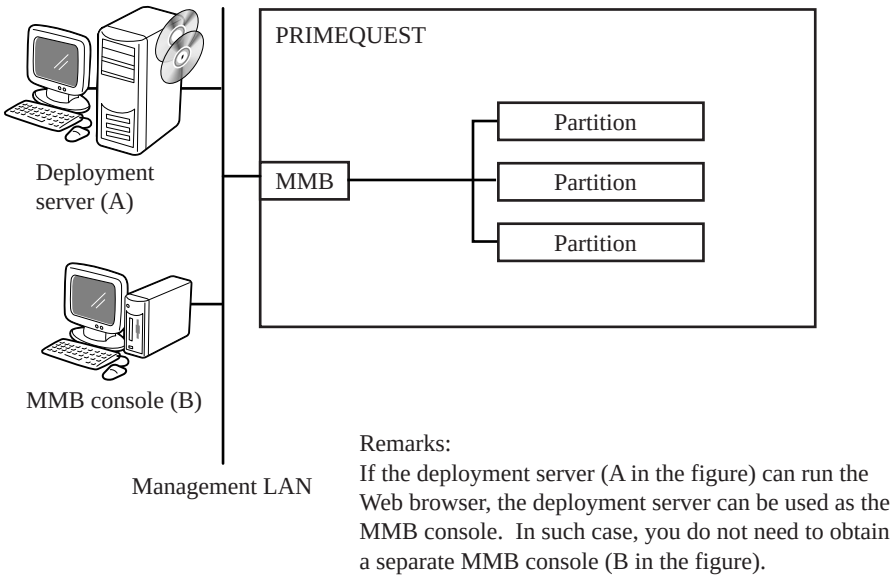


Figure 3.15 Example of connections for installation using SystemcastWizard Lite (Windows)

Notes: Although the PXE function is used to activate the network, you cannot activate the network across a router. Therefore, connect the deployment server to the management LAN to which the PRIMEQUEST machine is connected.
The target partition is started remotely or MMB#0 is used for all communication for backup or restoration. Always perform this operation with MMB#0 connected to the management LAN. However, MMB#0 need not be active.

(2) Setting up the accounts for MMB access

The user information required for remote control of the MMB with SystemcastWizard Lite can be specified.

If following message is displayed, connect the USB floppy disk drive to the KVM USB port, and insert the driver disk created following the remark in Step 3 into the floppy disk drive.

1 Click [Network Configuration] → [Remote Server Management] in the MMB Web-UI window. The [Remote Server Management] window is displayed.

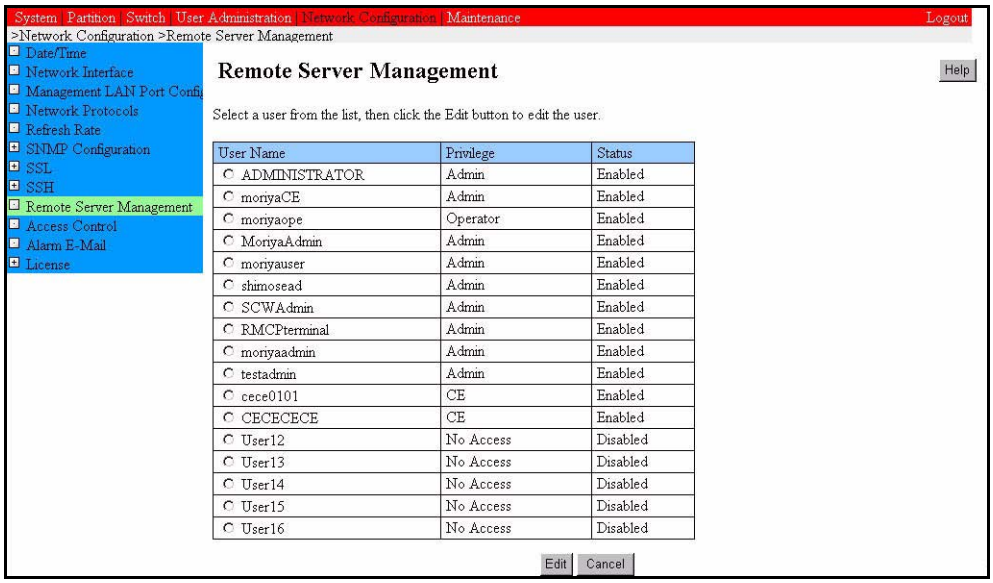


Figure 3.16 [Remote Server Management] window

2 Select the applicable user radio button, and click the [Edit] button.
The [Edit User] window is displayed.

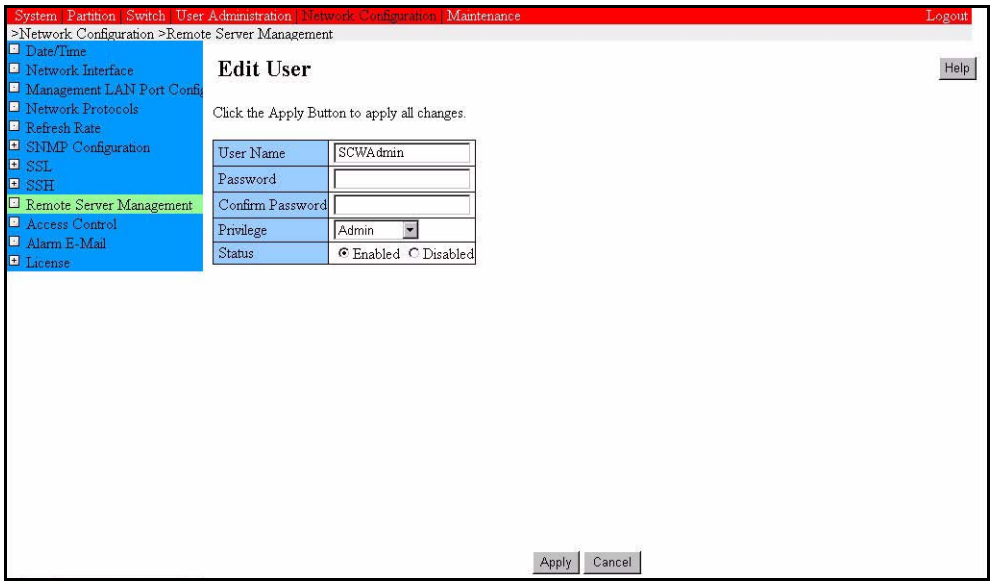


Figure 3.17 [Edit User] window

3 Specify the user management information in the [Edit User] window, and click the [Apply] button.

- User Name: Specify a user name (consisting of at least 8 and up to 16 characters).
- Password: Specify a password (consisting of at least 8 and up to 16 characters).
- Confirm Password: Enter the specified password again for confirmation.
- Privilege: Select Admin.
- Status: Select Enabled.

(3) Setting up the deployment server

1 Register the partition on which you are installing the Linux OS, in the deployment server. For this purpose, use the GUI environment (deployment console) provided by SystemcastWizard Lite. For information on the procedure, see the *PRIMEQUEST SystemcastWizard Lite User's Guide* (C122-E010EN).

(4) Obtaining resources required for installation

For the resources required for installation using SystemcastWizard Lite, see the *PRIMEQUEST SystemcastWizard Lite User's Guide* (C122-E010EN).

3.3.2.3 Installing the Windows

Create resources on the deployment console, and issue a request to install Windows. For information on the procedure, see the *PRIMEQUEST SystemcastWizard Lite User's Guide* (C122-E010EN).

Remarks:

- When installation is completed, perform the work required after operating system installation. For details on this work, see Section 3.1.4, "Work required after operating system installation,"
- The High-Reliability Tools can be installed together with the operating system by SystemcastWizard Lite. For details, see the *PRIMEQUEST SystemcastWizard Lite User's Guide* (C122-E010EN).
- See Table 3.9 for the product ID locations.

3.3.3 Windows installation using the installation support tool

3.3.3.1 Overview

Installation Support Tool for Windows is an automatic Windows installation tool supplied with the PRIMEQUEST server.

Installation Support Tool for Windows requires that the parameters used for installation be entered on a (32-bit) computer running Windows and saved on a floppy disk in advance. This floppy disk is called the "installation floppy disk."

Using the installation floppy disk, Installation Support Tool for Windows enables automatic installation of Windows on the PRIMEQUEST-series machine from the Windows installation DVD. After Windows is installed, the PRIMEQUEST Software Installer runs to install drivers and monitoring tools required for stable operation.

Installation using Installation Support Tool for Windows has the following advantages:

- Using an installation floppy disk that has been verified in advance can prevent procedural mistakes during installation.
- Operations for installing Windows in multiple partitions having the same configuration are easy to perform.
- Compared with installation using SystemcastWizard Lite, equipment handling is easy because a single floppy disk contains the necessary data. No device other than a USB floppy disk drive is required for installation.

Installation Support Tool for Windows is included in the following path on the "PRIMEQUEST Drivers CD for Microsoft® Windows Server® 2003" (C122-E024) (referred to as the Drivers CD, in this document) supplied with the PRIMEQUEST product:

E:\Tools\General\IST (where the CD-ROM drive is Drive E)

For details, see the Readme file and the *PRIMEQUEST Installation Support Tool for Windows User's Guide* (C122-048EN).

3.3.3.2 Preparation

To use Installation Support Tool for Windows to install Windows on the PRIMEQUEST-series machine, the items listed below are required. Prepare them in advance.

- Display/Keyboard/Mouse
  For a terminal connected to the PRIMEQUEST-series machine
- USB floppy disk drive
  USB floppy disk drive connected to the PRIMEQUEST-series machine
- Computer running Windows XP or Windows 2000
  Installation Support Tool for Windows runs on this PC. See Table 3.8 for the system requirements.
- Windows installation DVD
  Windows Server 2003 for Itanium DVD. This DVD has the version to which Service Pack 1 has been applied.
- Drivers CD
  CD-ROM disk containing Installation Support Tool for Windows
- 1.44-MB floppy disk
  Format the floppy disk in Windows in advance.

Table 3.8 System requirements for Installation Support Tool for Windows

Classification	Compatible environment
OS	Japanese or English version of the following operating systems: • Windows® Vista Enterprise • - Windows® Vista Business • Windows® XP Professional (with Service Pack 2 or later) • Windows® XP Home Edition (with Service Pack 2 or later) • Windows® 2000 Professional (with Service Pack 4 or later)
CPU	32-bit CPU The CPU meets the recommended specifications for the OS.
Memory	The memory meets the recommended specifications for the OS.
Disk capacity	Unused space of at least 1 MB for temporary folders must be available.
Other	A CD-ROM drive and floppy disk drive are required.

Note: Restrictions on installing Windows Server 2003, Enterprise Edition
Installation Support Tool for Windows cannot be used to install Windows Server 2003, Enterprise Edition (IA64) purchased with a volume license. Use SystemcastWizard Lite, which is supplied with the PRIMEQUEST product.

3.3.3.3 Creating the installation floppy disk

Start Installation Support Tool for Windows. Insert the Drivers CD into the PC that you have prepared, and run the following program from Explorer:

E:\Tools\General\IST\ISTWin.exe (where the CD-ROM drive is Drive E)

3.3.3.4 Beginning Windows setup

The procedure is as follows:

Set up the device.

1. Remove the storage devices in which Windows is not to be installed.
2. Connect the USB floppy disk drive.
3. Set PCI address mode (PRIMEQUEST 580A/540A/580/540/480/440).
4. Connect the DVD drive, display, mouse, and keyboard.
5. Insert the installation floppy disk and Drivers CD.

Turn on power to partitions.

Execute the installation preparation script.

Begin Windows setup.

1. Start up from the Windows installation DVD.
2. The EMS detection dialog box is displayed
3. Agree to the license agreement.
4. Install components.

Install the High-Reliability Tools.

For details, see the *PRIMEQUEST Installation Support Tool for Windows User's Guide* (C122-048EN).

3.3.4 Windows Installation using the KVM (PRIMEQUEST 580A/540A/580/540/480/440)

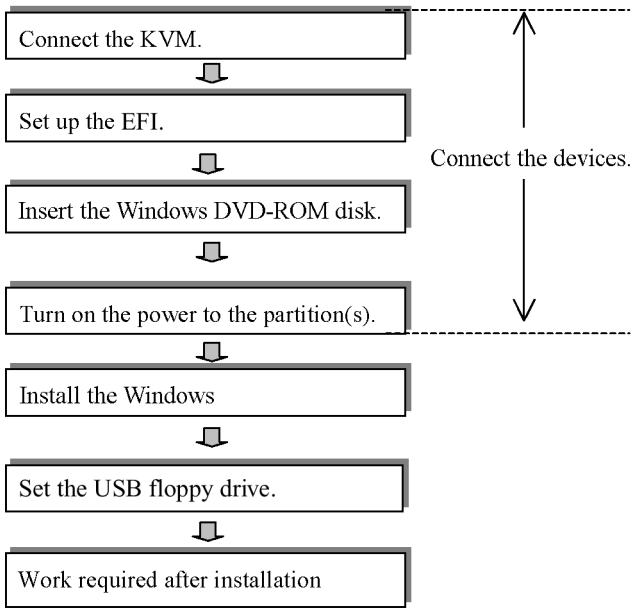
3.3.4.1 Hardware requirements and procedure

The devices listed below must be prepared in order to use the KVM to install Windows on the SAN disk. The installation procedure assumes that all the following devices are connected:

- Keyboard
- Display
- Mouse
- SAN storage unit (e.g., ETERNUS)
- Fibre Channel card
- Optical fiber cable
- Floppy disk drive
  It must be prepared separately. This is connected during the Windows installation procedure.

Remarks: For the connections between the PRIMEQUEST machine and ETERNUS units, see the topologies shown in the SAN storage (e.g., ETERNUS) manuals.

The installation procedure is as follows:



3.3.4.2 Connecting the devices

Perform the following steps to connect the KVM to the partition on which you are installing the Windows OS:

(1) Connecting the KVM

1 Connect a keyboard, a mouse, and a display unit to the KVM interface unit.

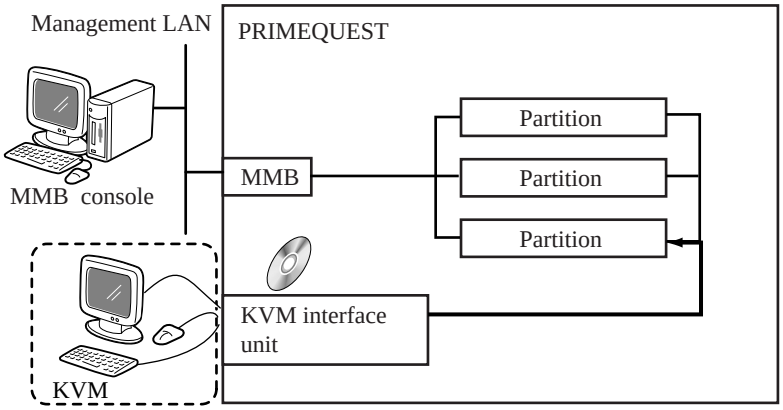


Figure 3.18 Example of connections for installation using the KVM

2 On the MMB Web-UI, click [Partition] → [USB/Video/DVD Switch].
The [USB/Video/DVD Switch] window appears.
Remarks: For information on how to log in to the MMB, see Section 2.2.2.1, "Login to and logout from the MMB Web-UI,"

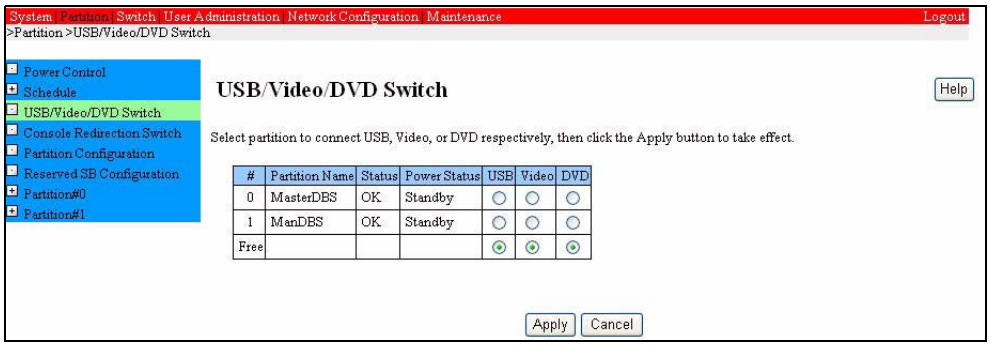


Figure 3.19 [USB/Video/DVD Switch] window

3 Select the USB, Video and DVD radio button for the partition on which you are installing the OS, and click the [Apply] button.

3.3.4.3 Installing Windows

This section describes how to install Windows on a SAN storage disk or internal disk.

1 Insert the Windows Server 2003 DVD-ROM disk into the KVM DVD-ROM drive.

2 In the MMB Web-UI window, click [Partition] → [Power Control].
The [Power Control] window is displayed.

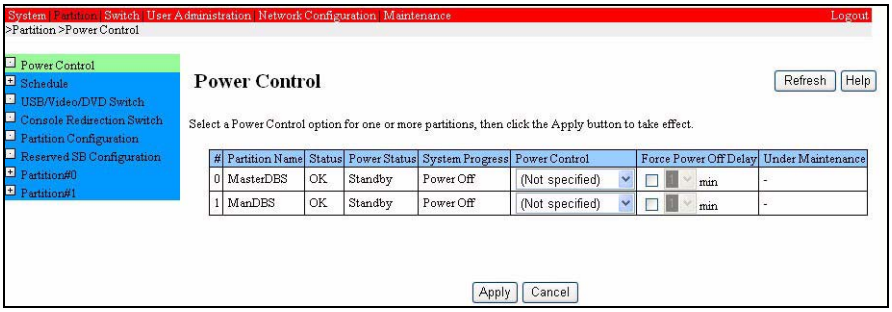


Figure 3.20 [Power Control] window

3 Select [Power On] from [Power Control] of the installation target partition.
Remarks: If power to the partition is already on, select [Reset].

- Installation on a SAN storage unit such as an ETERNUS unit
  Use the Fibre Channel card driver (FC driver) stored on the "PRIMEQUEST Drivers CD for Microsoft® Windows Server® 2003" (C122-E024) (referred to as the Drivers CD, in this document).
  Prepare a driver disk on a separate PC running Windows.
  - Preparing an FC driver disk
    1 Format a floppy disk.
    2 Insert the Drivers CD into the drive of the separate PC.
    3 Using Explorer, access the following folder on the Drivers CD:
      E:\Drivers\FC\Emulex (assuming that E is the CD-ROM drive)
    4 Select all files in the folder, and copy them to the floppy disk.
- Installation on an internal disk
  Use the SCSI driver stored on the "PRIMEQUEST Drivers CD for Microsoft® Windows Server® 2003" (C122-E024) (referred to as the Drivers CD, in this document).
  - Preparing a SCSI driver disk
    1 Format a floppy disk.
    2 Insert the Drivers CD into the drive of the separate PC.
    3 Using Explorer, access the following folder on the Drivers CD:
      E:\Drivers\SCSI\LSILogic (assuming that E is the CD-ROM drive)
    4 Select all files in the folder, and copy them to the floppy disk.

4 Click the [Apply] button.
The [EFI Boot Manager] message is displayed on the display connected to the KVM.

```
EFI Boot Manager  ver 1.xx [xx.xx]

Please Select a boot option
DVD /Acpi(xxxxxxxx)
Network Boot/Pci(1|0|0)/Mac(0007E9D80F36)
EFI Shell [Built in]
Boot option maintenance menu
```

Note: Confirm that the USB floppy disk drive is not installed.
If a floppy disk is inserted into a USB drive, the message shown below may appear.

```
INF file txtsetup is corrupt or missing,status 18.
Setup cannot continue. Press any key to exit.
```

If so, press the [Enter] key to allow Windows to reboot, and disconnect and reconnect the USB floppy disk drive once. Then, resume this installation process from step 4.
If Windows does not reboot after you press the [Enter] key, disconnect and reconnect the USB floppy disk drive once, and resume the installation process from step 2.
Connect the USB floppy disk drive to the PC when manually installing drivers in the installation sequence.

5 Select "DVD /Acpi (xxxxxxxx)," and press the [Enter] key.
If an active area has been allocated to the hard disk, the message shown below appears. While the message is displayed, press any key to boot the system from the DVD-ROM drive.

```
Press any key to boot from CD ... .
```

6 The Windows Server 2003 setup screen is displayed.
The following message is displayed at the bottom of the setup screen immediately after the screen is displayed.
This message is displayed for a short time immediately after the setup screen (blue screen) is displayed. Press the [F6] key promptly after the setup screen (blue screen) is displayed.

```
Press F6 if you need to install third party
SCSI or RAID driver ... .
```

7 Install the driver manually.

1 When the following message appears, press the [S] key.

```
To specify additional SCSI adapters, CD-ROM drivers,
or special disk controllers for use with Windows,
including those for which you have a device support
disk from mass storage device manufacturer, press S
```

2 When the following message appears, connect the USB floppy disk drive to the USB port of the KVM interface unit, and insert the driver disk prepared in Remarks of step 3 into the floppy disk drive.

```
Please insert disk labeled Manufacture-supplied hard-
ware support disk into Drive A:
```

3 Press the [Enter] key. The following message appears.

```
You have chosen to configure a SCSI adapter for use
with Windows, using a device support disk provided by
an adapter manufacturer. Select the SCSI adapter you
want from the following list, or press ESC to return
the previous screen
```

4 Make the following selection, and press the [Enter] key:

```
Emulex LPX000 PCI Fibre Channel HBA
```

Make the following selection for SCSI:

```
LSI Logic PCI Fusion-MPT Driver (Server 2003 IA64)
```

Following on-screen instructions, perform the additional work of installing the FC driver for any mounted FC card in the partition even if its cable is not connected.

Note: Do not remove the USB floppy disk drive until installation is completed.

8 Continue installation by following the instructions from the setup program.
For details, see the OS manual.
When a message requesting a floppy disk appears during installation, insert the driver disk, and press the [Enter] key.

Remarks: The setup program requests a product ID during installation. The product ID location varies depending on the installed operating system and purchase method.

Table 3.9 Product ID locations

Installed operating system	Purchase method	Product ID location
Windows Server 2003, Enterprise Edition for Itanium-based Systems	Volume license	CD case containing operating system media
	Hardware-bundled	CoA sticker that is affixed to the main unit or a supplied item (*1) (*2) (*3)
Windows Server 2003, Datacenter Edition for Itanium-based Systems	Hardware-bundled	CoA sticker that is affixed to the main unit or a supplied item (*1) (*2) (*4)

*1: For the CoA sticker location, see the "Important Notice" that comes with the main unit.

*2: If the CoA sticker is one of the supplied items, be sure to read the bundled "Important Notice" and then affix the sticker to the main unit.

*3: Use a CoA sticker with an "Enterprise" marking. If more than one CoA sticker has that marking, be careful not to use more than one product ID during installation.

*4: Use a CoA sticker of the Datacenter that carries a "4 CPU" marking.

9 Reboot the system. "Windows Server 2003, Datacenter" or "Windows Server 2003, Enterprise Edition" has been added to the EFI Boot Manager screen. Select this added item from the boot menu to start Windows.

10 Install the High-Reliability Tools after Windows startup.
For details, see 3.3.6.1, "Installation using the PRIMEQUEST Software Installer."

3.3.4.4 Headless installation

Headless installation using the emergency management service (EMS) of Windows Server 2003 is possible through the KVM. A COM cable and a notebook PC with a COM port must be prepared in advance of this installation.

Confirm that "COM" is set for the installation target partition in the [Console Redirection Switch] window selected from [Partition] in the MMB Web-UI.

Notes on headless installation

- The COM cable must be connected to the COM port on an IO Unit.
- Key operations for terminal software differ from those for screen display.
  If the installation program prompts you to press the [Fx] (function) key, press the [ESC] key and then the number key corresponding to "x."
  If the installation program prompts you to press the [Page Down] key, press the [ESC] key and then the [/] key.
  If the installation program prompts you to press the [Page Up] key, press the [ESC] key and then the [?] key.

  Note: Press the number key, [/] key, or [?] key promptly after pressing the [ESC] key. If you take too long to press it after pressing the [ESC] key, the system may recognize only the [ESC] key and restart.

- Select the keyboard type by following the procedure below.

1 When the keyboard selection screen for text setup is displayed, press the [s] key.

```
Press one of the following keys to select a keyboard
type:

en-size/em-size key: 106 Japanese keyboard
Space key: 101 English keyboard
"S" key: Other keyboard

-  To quit setup, press the [F3] key.
```

2 Select 101 on the keyboard selection screen.

```
Select a keyboard type from the following list:

-  To continue setup, press the [Enter] key.
-  To quit setup, press the [F3] key.

  +-------------------------------------------------+
  | 106 Japanese Keyboard (Including USB)           |
  | 101 English Keyboard (Including USB)            |
  | NEC 98 Layout USB Keyboard                      |
  | USB Keyboard                                    |
  +--------------------------------(Scroll down  )--+
```

- Use terminal connection software that supports UTF-8.
  If terminal connection software that does not support UTF-8 is used, corrupt characters appear.

Installation

Use terminal connection software to establish a connection. HyperTerminal is supplied as the standard terminal connection software for WindowsXP. This section shows an example of using Tera Term on a PC.

Set up the terminal software as follows.

Table 3.10 Setting items of the terminal software

Setting item	Value
Bits/second	19200
Data bits	8
Parity	None
Stop bit	1
Flow control	None
Emulation	VT100

Prepare and apply driver disks in advance by following steps 3 in Section 3.3.4.3, "Installing Windows," When text setup on the blue screen is completed, follow the procedure below to make the appropriate settings.

1 Start Tera Term. When the following window is displayed, press the [ESC] and [TAB] keys.

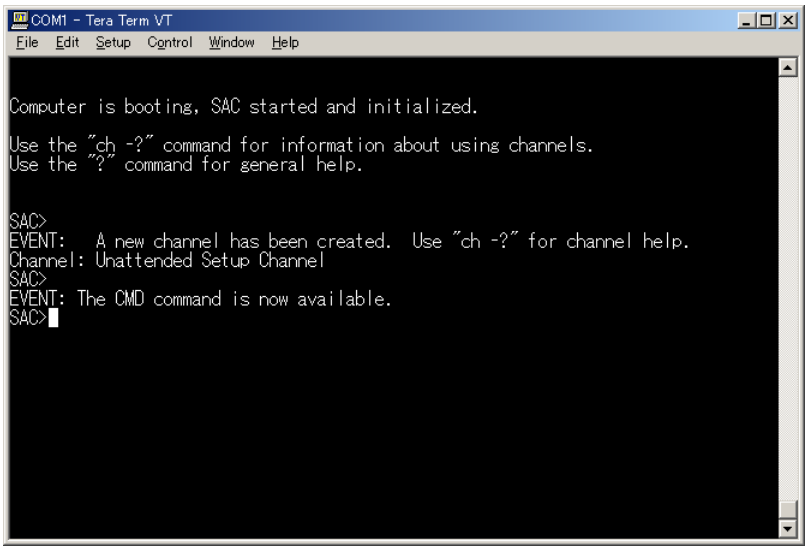


Figure 3.21 Tera Term startup window

2 When the following window is displayed, press the [Enter] key.

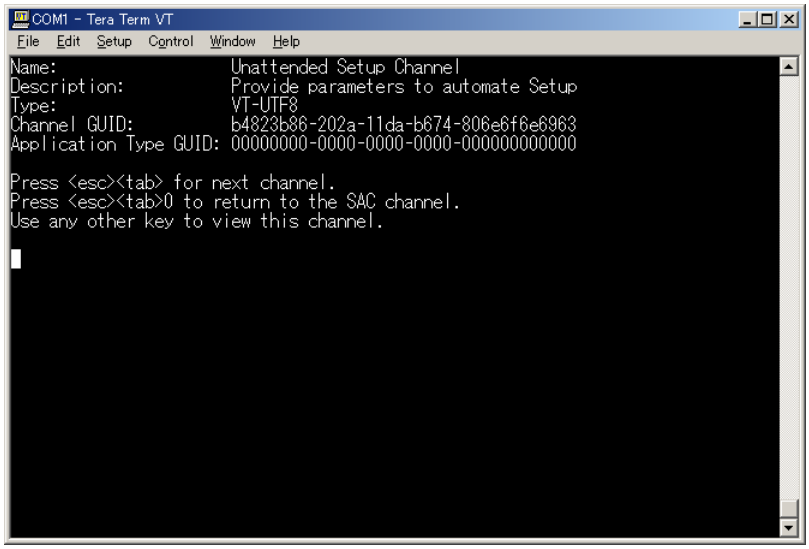


Figure 3.22 Setup window

3 When the following window is displayed, confirm the displayed contents, press the [ESC] key and then the [8] key.

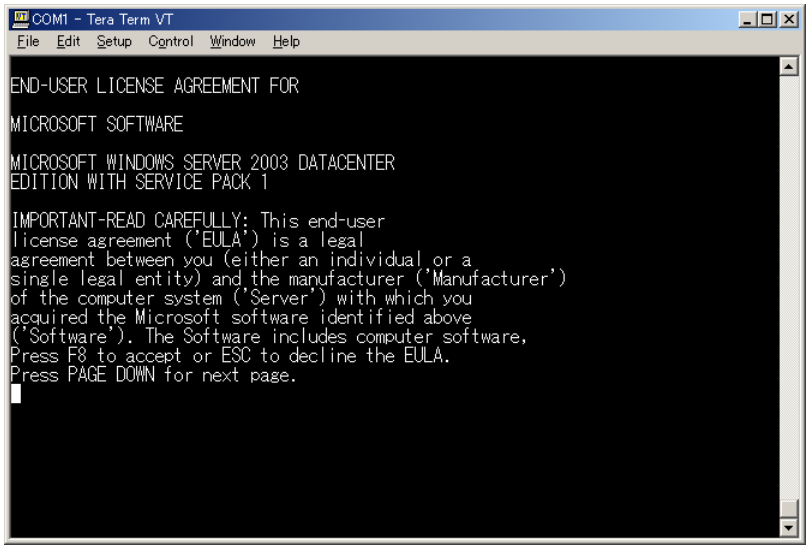


Figure 3.23 Software license agreement window

4 When the following window is displayed, enter the product key, and press the [Enter] key.
Next, when the password input window is displayed, enter a password, and press the [Enter] key. (The password input window is displayed only in custom installation.)

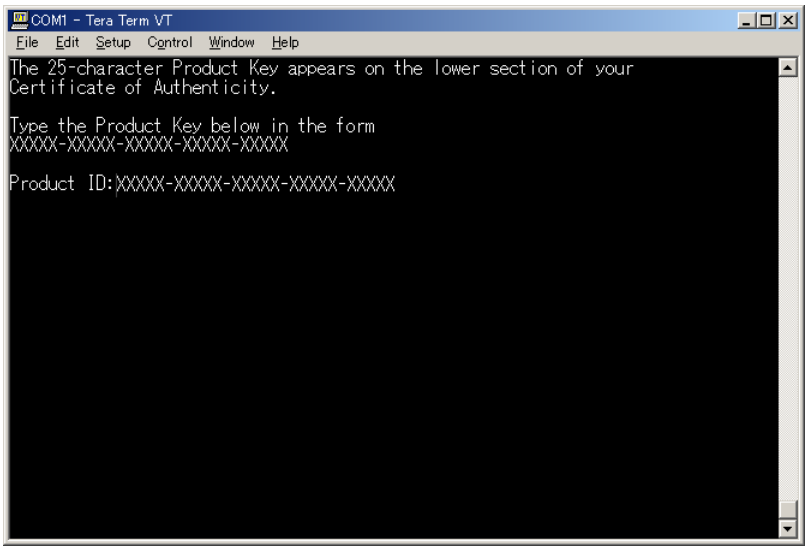


Figure 3.24 Product key input window

5 When the following window is displayed, the operating system restarts.
Do not press any key for key input until it restarts, though the restart takes about 15 minutes.

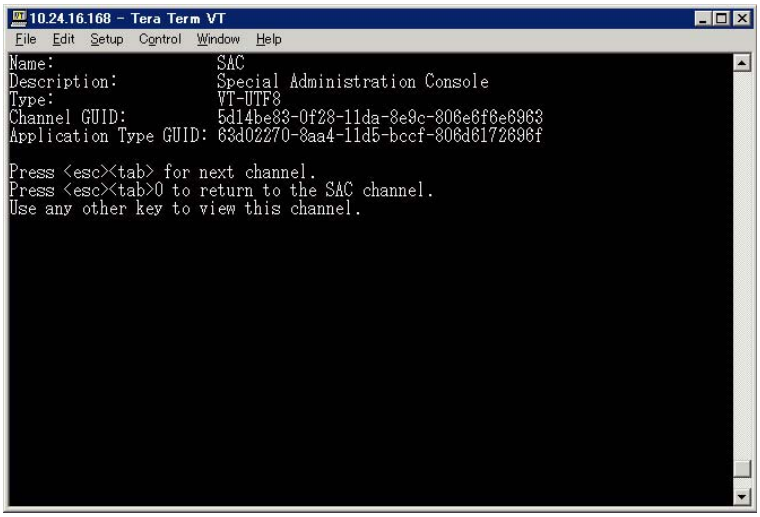


Figure 3.25 OS restart window

3.3.5 Windows Installation using the independent KVM switch (PRIMEQUEST 520A/520/420)

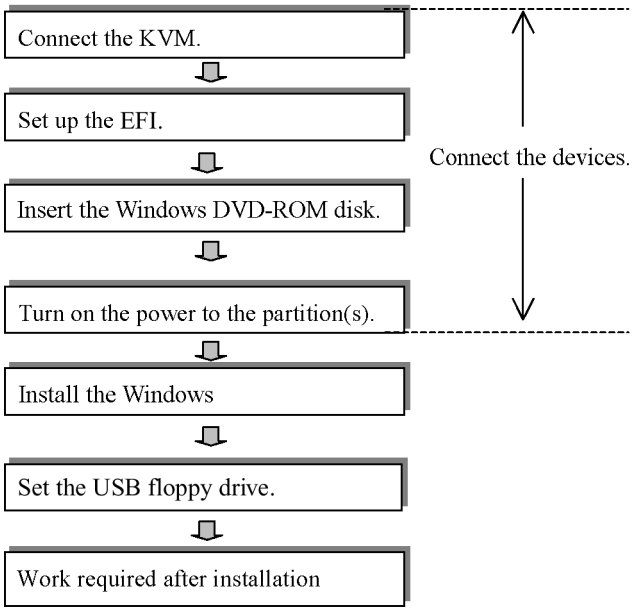
3.3.5.1 Hardware requirements and procedure

The devices listed below must be prepared in order to use the independent KVM switch to install Windows on the SAN disk. The installation procedure assumes that all the following devices are connected:

- Independent KVM switch
- Keyboard
- Display
- Mouse
- SAN storage unit (e.g., ETERNUS)
- Fibre Channel card
- Optical fiber cable
- Floppy disk drive
  It must be prepared separately. This is connected during the Windows installation procedure.

Remarks: For the connections between the PRIMEQUEST machine and ETERNUS units, see the topologies shown in the SAN storage (e.g., ETERNUS) manuals.

The installation procedure is as follows:



3.3.5.2 Connecting the devices

Connect the independent KVM switch to the IO Unit or IOX in the partition in which the Windows OS is to be installed as described below.

(1) Connecting the KVM

1 Connect the independent KVM switch to the USB port and VGA interface of the IO Unit.

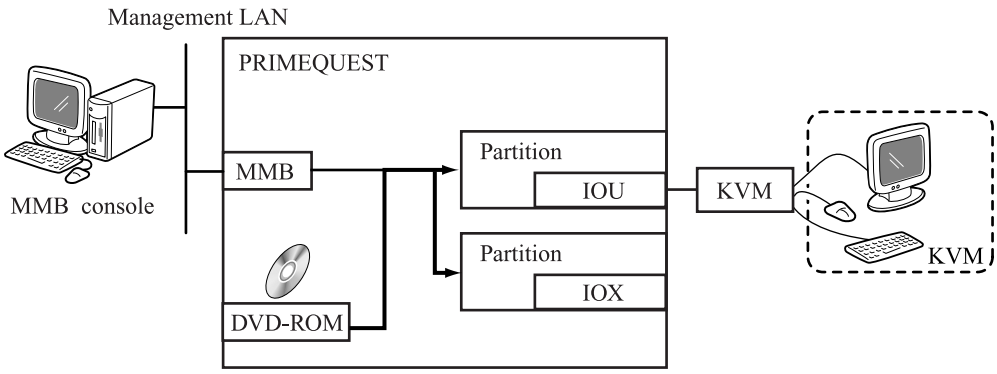


Figure 3.26 Example of connections for installation using the independent KVM switch

2 On the MMB Web-UI, click [Partition] → [DVD Switch].
The [DVD Switch] window appears.
Remarks: For information on how to log in to the MMB, see Section 2.2.2.1, "Login to and logout from the MMB Web-UI,"

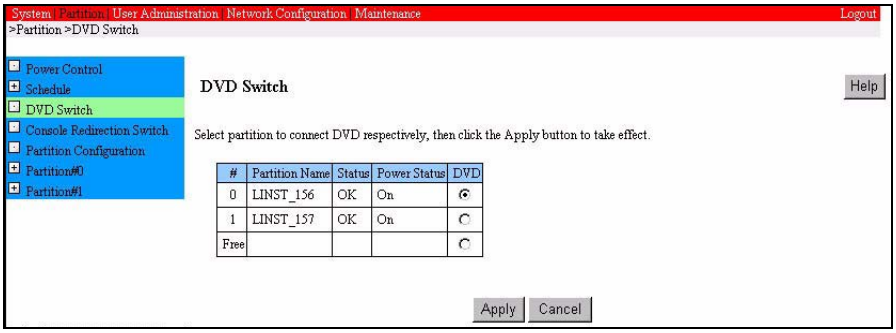


Figure 3.27 [DVD Switch] window

3 Select the radio button of the partition on which you are installing the OS, and click the [Apply] button.

3.3.5.3 Installing Windows

This section describes how to install Windows on a SAN storage disk or internal disk.

1 Insert the Windows Server 2003 DVD-ROM disk into the OPL DVD-ROM drive.
2 In the MMB Web-UI window, click [Partition] → [Power Control].
The [Power Control] window is displayed.

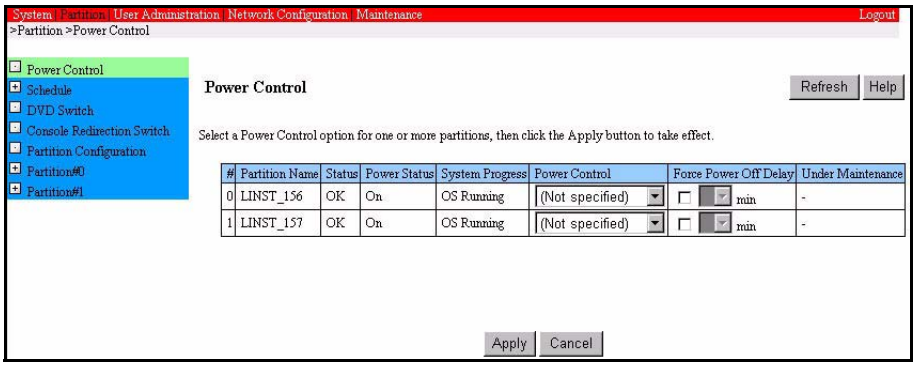


Figure 3.28 [Power Control] window

3 Select [Power On] from [Power Control] of the installation target partition.
Remarks: If power to the partition is already on, select [Reset].

- Installation on a SAN storage unit such as an ETERNUS unit
  Use the Fibre Channel card driver (FC driver) stored on the "PRIMEQUEST Drivers CD for Microsoft® Windows Server® 2003" (C122-E024) (referred to as the Drivers CD, in this document).
  Prepare a driver disk on a separate PC running Windows.
  - Preparing an FC driver disk
    1 Format a floppy disk.
    2 Insert the Drivers CD into the drive of the separate PC.
    3 Using Explorer, access the following folder on the Drivers CD:
    E:\Drivers\FC\Emulex (assuming that E is the CD-ROM drive)
    4 Select all files in the folder, and copy them to the floppy disk.
- Installation on disk connected via SCSI
  Use the SCSI driver stored on the "PRIMEQUEST Drivers CD for Microsoft® Windows Server® 2003 (C122-E024) (referred to as the Drivers CD, in this document).
  Prepare a driver disk on a separate PC running Windows.

- Preparing a SCSI driver disk
  1. Format a floppy disk.
  2. Insert the Drivers CD into the drive of the separate PC.
  3. Using Explorer, access the following folder on the Drivers CD:
     E:\Drivers\SCSI\LSILogic (assuming that E is the CD-ROM drive)
  4. Select all files in the folder, and copy them to the floppy disk.
- Installation on a built-in SAS disk

  Use the SAS driver stored on the "PRIMEQUEST Drivers CD for Microsoft® Windows Server® 2003 (C122-E024) (referred to as the Drivers CD, in this document).

  Prepare a driver disk on a separate PC running Windows.
  - Preparing a SAS driver disk
    1. Format a floppy disk.
    2. Insert the Drivers CD into the drive of the separate PC.
    3. Using Explorer, access the following folder on the Drivers CD:
       E:\Drivers\SAS\LSILogic (assuming that E is the CD-ROM drive)
    4. Select all files in the folder, and copy them to the floppy disk.

4. Click the [Apply] button.

   The [EFI Boot Manager] message is displayed on the display connected to the KVM.

```
EFI Boot Manager  ver 1.xx [xx.xx]

Please Select a boot option
DVD /Acpi(xxxxxxxx)
Network Boot/Pci(1|0|0)/Mac(0007E9D80F36)
EFI Shell [Built in]
Boot option maintenance menu
```

   Note: Confirm that the USB floppy disk drive is not installed.
   If a floppy disk is inserted into a USB drive, the message shown below may appear.

```
INF file txtsetup is corrupt or missing,status 18.
Setup cannot continue. Press any key to exit.
```

   If so, press the [Enter] key to allow Windows to reboot, and disconnect and reconnect the USB floppy disk drive once. Then, resume this installation process from step 4.

If Windows does not reboot after you press the [Enter] key, disconnect and reconnect the USB floppy disk drive once, and resume the installation process from step 2.
Connect the USB floppy disk drive to the PC when manually installing drivers in the installation sequence.

5 Select "DVD /Acpi (xxxxxxxx)," and press the [Enter] key.
If an active area has been allocated to the hard disk, the message shown below appears. While the message is displayed, press any key to boot the system from the DVD-ROM drive.

```
Press any key to boot from CD ... .
```

6 The Windows Server 2003 setup screen is displayed.
The following message is displayed at the bottom of the setup screen immediately after the screen is displayed. This message is displayed for a short time immediately after the setup screen (blue screen) is displayed. Press the [F6] key promptly after the setup screen (blue screen) is displayed.

```
Press F6 if you need to install third party
SCSI or RAID driver ... .
```

7 Install the driver manually.

1 When the following message appears, press the [S] key.

```
To specify additional SCSI adapters, CD-ROM drivers,
or special disk controllers for use with Windows,
including those for which you have a device support
disk from mass storage device manufacturer, press S
```

2 When the following message appears, connect the USB floppy disk drive.

```
Please insert disk labeled Manufacture-supplied hard-
ware support disk into Drive A:
```

To connect the drive to an IOU, connect it to the USB port on the left side as viewed from the back of the main unit.
To connect it to an IOX, connect it to the lower USB port.

3 Insert the driver disk created in step 3 into the floppy disk drive.

4 Press the [Enter] key. The following message appears.

```
You have chosen to configure a SCSI adapter for use
with Windows, using a device support disk provided by
an adapter manufacturer. Select the SCSI adapter you
want from the following list, or press ESC to return
the previous screen
```

5 Make the following selection, and press the [Enter] key:

- FC

```
Emulex LPX000 PCI Fibre Channel HBA
```

- SCSI

```
LSI Logic PCI Fusion-MPT Driver (Server 2003 IA64)
```

- SAS

```
LSI Logic Fusion-MPT SAS Driver (Server 2003 IA64)
```

Note: Do not remove the USB floppy disk drive until installation is completed.

8 Continue installation by following the instructions from the setup program.
For details, see the OS manual.
When a message requesting a floppy disk appears during installation, insert the driver disk, and press the [Enter] key.

Remarks: The setup program requests a product ID during installation. The product ID location varies depending on the installed operating system and purchase method.

Table 3.11 Product ID locations

Installed operating system	Purchase method	Product ID location
Windows Server 2003, Enterprise Edition for Itanium-based Systems	Volume license	CD case containing operating system media
	Hardware-bundled	CoA sticker that is affixed to the main unit or a supplied item (*1) (*2) (*3)
Windows Server 2003, Datacenter Edition for Itanium-based Systems	Hardware-bundled	CoA sticker that is affixed to the main unit or a supplied item (*1) (*2) (*4)

*1: For the CoA sticker location, see the "Important Notice" that comes with the main unit.

*2: If the CoA sticker is one of the supplied items, be sure to read the bundled "Important Notice" and then affix the sticker to the main unit.

*3: Use a CoA sticker with an "Enterprise" marking. If more than one CoA sticker has that marking, be careful not to use more than one product ID during installation.

*4: Use a CoA sticker of the Datacenter that carries a "4 CPU" marking.

9 Reboot the system. "Windows Server 2003, Datacenter" or "Windows Server 2003, Enterprise Edition" has been added to the EFI Boot Manager screen. Select this added item from the boot menu to start Windows.

3.3.5.4 Headless installation

Headless installation using the emergency management service (EMS) of Windows Server 2003 is possible through the independent KVM switch. A COM cable and a notebook PC with a COM port must be prepared in advance of this installation.

Confirm that "COM" is set for the installation target partition in the [Console Redirection Switch] window selected from [Partition] in the MMB Web-UI.

Notes on headless installation

- The COM cable must be connected to the COM port on an IO Unit.
- Key operations for terminal software differ from those for screen display.
  If the installation program prompts you to press the [Fx] (function) key, press the [ESC] key and then the number key corresponding to "x."
  If the installation program prompts you to press the [Page Down] key, press the [ESC] key and then the [/] key.
  If the installation program prompts you to press the [Page Up] key, press the [ESC] key and then the [?] key.

  Note: Press the number key, [/] key, or [?] key promptly after pressing the [ESC] key. If you take too long to press it after pressing the [ESC] key, the system may recognize only the [ESC] key and restart.

- Select the keyboard type by following the procedure below.

1 When the keyboard selection screen for text setup is displayed, press the [s] key.

```
Press one of the following keys to select a keyboard
type:

en-size/em-size key: 106 Japanese keyboard
Space key: 101 English keyboard
"S" key: Other keyboard

-  To quit setup, press the [F3] key.
```

2 Select 101 on the keyboard selection screen.

```
Select a keyboard type from the following list:

-  To continue setup, press the [Enter] key.
-  To quit setup, press the [F3] key.

  +-------------------------------------------------+
  | 106 Japanese Keyboard (Including USB)           |
  | 101 English Keyboard (Including USB)            |
  | NEC 98 Layout USB Keyboard                      |
  | USB Keyboard                                    |
  +--------------------------------(Scroll down  )--+
```

- Use terminal connection software that supports UTF-8.
  If terminal connection software that does not support UTF-8 is used, corrupt characters appear.

Installation

Use terminal connection software to establish a connection. HyperTerminal is supplied as the standard terminal connection software for WindowsXP. This section shows an example of using Tera Term on a PC.

Set up the terminal software as follows.

Table 3.12 Setting items of the terminal software

Setting item	Value
Bits/second	19200
Data bits	8
Parity	None
Stop bit	1
Flow control	None
Emulation	VT100

Prepare and apply driver disks in advance by following steps 3 in Section 3.3.4.3, "Installing Windows," When text setup on the blue screen is completed, follow the procedure below to make the appropriate settings.

1 Start Tera Term. When the following window is displayed, press the [ESC] and [TAB] keys.

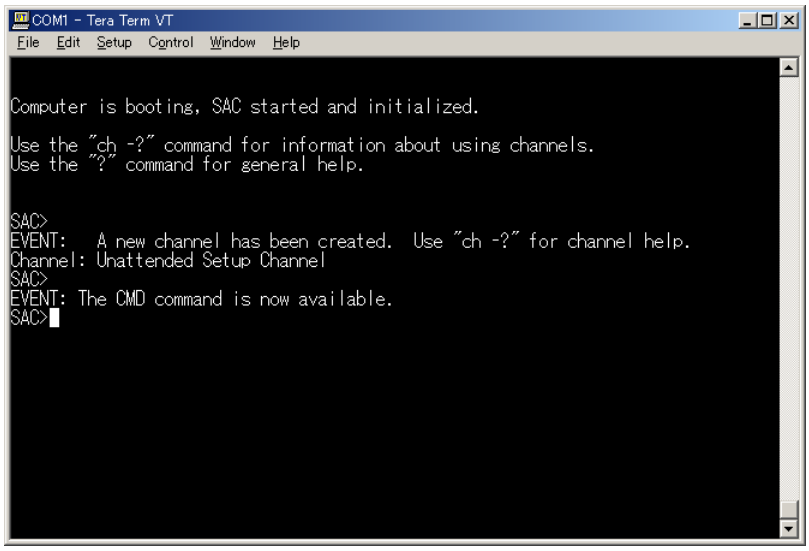


Figure 3.29 Tera Term startup window

2 When the following window is displayed, press the [Enter] key.

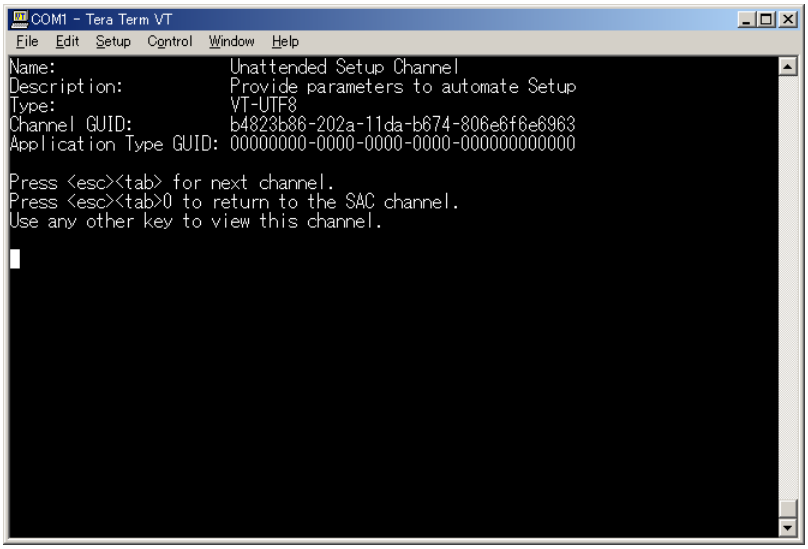


Figure 3.30 Setup window

3 When the following window is displayed, press the [ESC] key and [8] key.

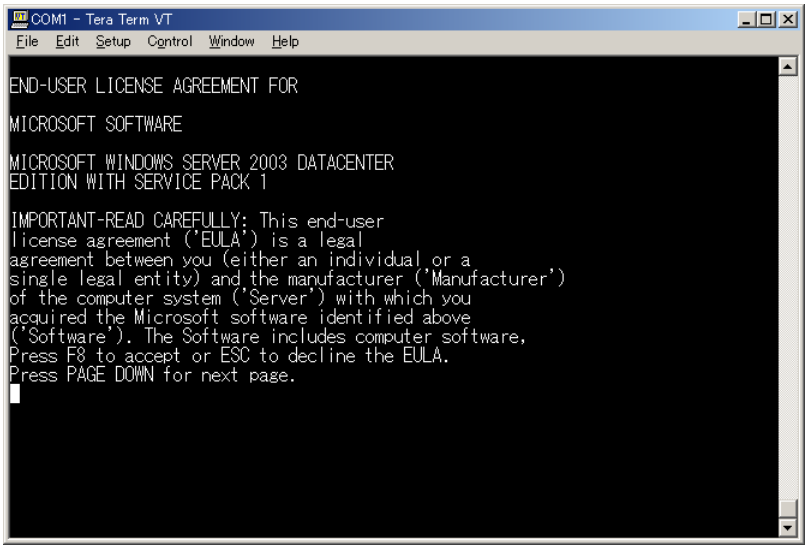


Figure 3.31 Software license agreement window

4 When the following window is displayed, enter the product key, and press the [Enter] key.
Next, when the password input window is displayed, enter a password, and press the [Enter] key. (The password input window is displayed only in custom installation.)

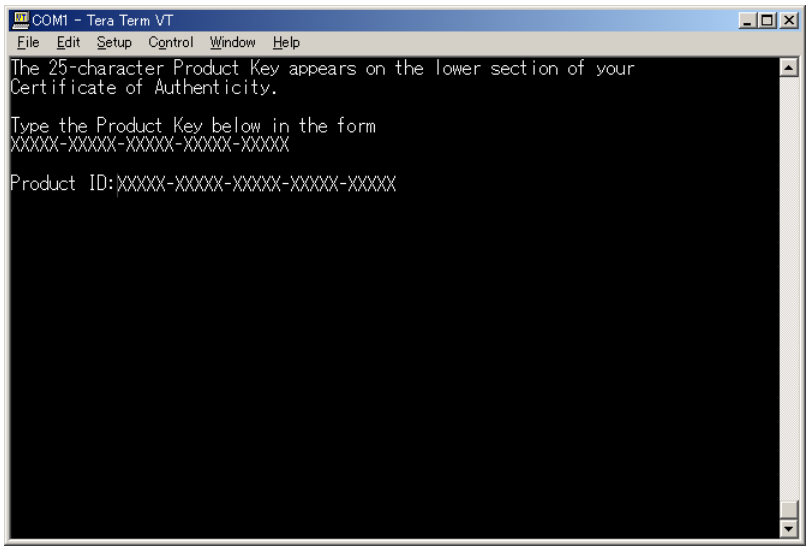


Figure 3.32 Product key input window

5 When the following window is displayed, the operating system restarts.
Do not press any key for key input until it restarts, though the restart takes about 15 minutes.

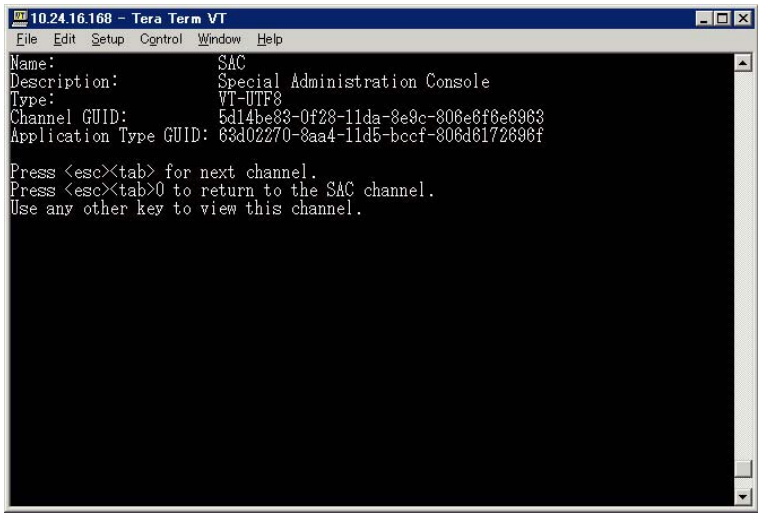


Figure 3.33 OS restart window

3.3.6 High-Reliability Tools

The Drivers CD contains drivers and applications providing stable operation. These drivers and applications are referred to as the High-Reliability Tools.

The High-Reliability Tools can be installed in different ways depending on how Windows is installed:

- Installing Windows by using SystemcastWizard Lite
  The High-Reliability Tools are automatically installed.
- Installing Windows by using Installation Support Tool for Windows
  The Drivers CD containing the High-Reliability Tools needs to be manually inserted into the DVD-ROM drive after Windows is installed. The High-Reliability Tools are then automatically installed.
- Installing Windows using the KVM
  The High-Reliability Tools need to be manually installed after Windows is installed.

3.3.6.1 Installation using the PRIMEQUEST Software Installer

The PRIMEQUEST Software Installer automatically checks whether the applicable tools are installed, and it automatically installs the tools that have not been installed. The installer applies the latest drivers. This section describes the installation procedure using the PRIMEQUEST Software Installer.

1. Log in as a user (e.g., administrator) with the administrator privilege to the applicable partition running Windows.
2. Insert the Drivers CD into the DVD-ROM drive.
   Depending on the server model, the DVD-ROM drive can be found at the following locations:
   - PRIMEQUEST 580A/540A/580/540/480/440: KVM interface unit
   - PRIMEQUEST 520A/520/420: OPL unit
3. Click [Start] → [Run]. The [Run] dialog box opens.
4. Enter the following in the [Name] field, and click [Run]:
   DVD-ROM drive:\pqsetup.exe

The PRIMEQUEST Software Installer starts, and the following window is displayed.

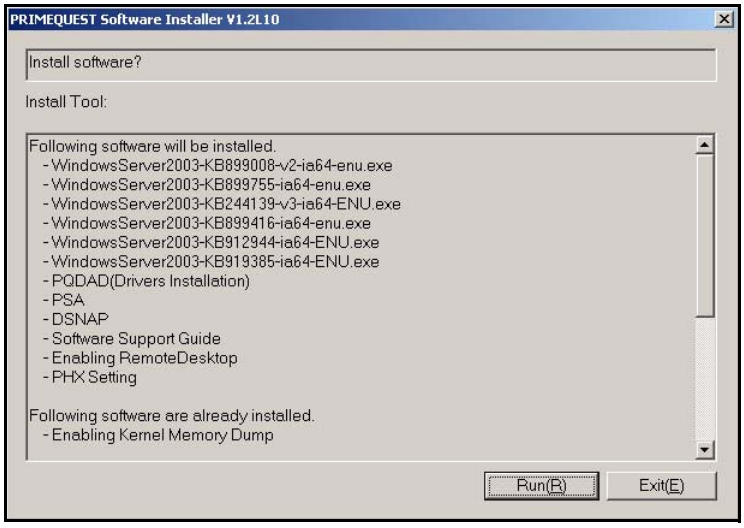


Figure 3.34 High-Reliability Tools Installer startup window

5 Confirm the tools and drivers listed under [Install Tool:], and click the [Run] button.
Installation of the High-Reliability Tools and drivers begins.
A confirmation message may be displayed. If so, give confirmation to the message to continue installation.

6 When an installation completion message appears, click the [Exit] button.

7 To complete installation, restart the partition.
At this point, installation using the PRIMEQUEST Software Installer is completed.

Remarks: Log files are created at the following locations:

- Software installation results
  %systemroot%\system32\LogFiles\PQSetup.log
- Driver installation results
  %systemroot%\system32\LogFiles\pqdad-yyyymmdd.log
  yyyymmdd: Year-month-day when the driver is installed

Table 3.13 Installer software and setting items for installation with the PRIMEQUEST Software Installer

Software product name / Item to be installed	Description
Tool	
PSA	SNMP must be installed in advance. For details, see Section 3.3.6.2, "Notes on using the PRIMEQUEST Software Installer,"
SIRMS	Installed only under a Japanese version of Windows. For details, see Section 3.3.6.2, "Notes on using the PRIMEQUEST Software Installer,"
SIRMS MNS	Installed only under a Japanese version of Windows. For details, see Section 3.3.6.2, "Notes on using the PRIMEQUEST Software Installer,"
DSNAP	Support tool
HRM/server	Maintenance support tool
Software Support Guide	Tool that collects the necessary support information.
Driver	
Intel LAN Driver	Supported Intel LAN driver
Broadcom LAN Driver	On-board LAN driver
Neterion LAN Driver	Supported Neterion LAN driver
Emulex FC Driver	Fibre Channel card driver
LSI Logic SCSI Driver	SCSI driver
LSI Logic SAS Driver	SAS driver
HP DAT72 Driver	DAT72 driver
TANDBERG LTO2 Driver	LTO2 driver
Quantum LTO3 Driver	LTO3 driver
Driver management tool	
Intel PROSet	Provides the Intel LAN load balance function, etc.
Broadcom Advanced Controller Suite (BACS)	Provides an on-board LAN driver with load balance function, etc.
Xframe Control Panel	Provides the Neterion LAN driver with load balance function, etc.
Emulex HBAnyware	Can monitor the LUN status via a Fibre Channel connection.
Windows patch	
KB899008	Patch for Windows Server 2003, Enterprise Edition for Itanium-based Systems.
KB899755	IA32-EL patch
KB244139	Adds a function for collecting a memory dump through keyboard operation.
KB899416	Patch for correcting the infrequent problem of a damaged event log
KB919385	Patch for support of the dual-core Intel Itanium2 processor
KB932755	Storport driver patch

Software product name / Item to be installed	Description
Setup	
Enabling RemoteDesktop	Automatically sets up a remote desktop to enable remote management.
Enabling Kernel Memory Dump	Automatically makes dump settings in preparation for failures.
PXH setting change	Makes PXH settings.
PEX setting change	Makes PXH settings.

3.3.6.2 Notes on using the PRIMEQUEST Software Installer

- The Windows Server 2003 DVD-ROM is required for PSA installation.
  SNMP must already be installed for PSA installation. If SNMP is not installed, the PRIMEQUEST Software Installer displays a message prompting the user to insert the Windows Server 2003 DVD-ROM and install SNMP. Prepare the Windows Server 2003 DVD-ROM in advance.
- Intel PROSet and Xframe Control Panel are not automatically installed.
  Intel PROSet and Xframe Control Panel are not automatically installed. Intel PROSet is stored in the "Not_installed" folder on the desktop. Install it manually.
- Drivers/tools are installed only when their devices are recognized.
  Drivers and corresponding tools are not installed unless their devices (LAN cards, Fibre Channel cards, etc.) are mounted in the IO Unit of the partition.
- SIRMS and HRM/server are installed only under a Japanese version of Windows
  SIRMS, SIRMS MNS, and HRM/server are installed only under a Japanese version of Windows.
- Some messages may appear during the installation process.
  When a dialog box with warning that a driver has not passed Windows logo testing is displayed during installation, click [Yes] to continue the installation process.
- Some installed tools may again be installation targets.
  Though the PRIMEQUEST software installer has already installed these tools, they may again be installation targets. They will be installed again, but this is not a problem.

3.3.7 Work required after installation

3.3.7.1 Setting the display adapter (PRIMEQUEST 500A/500 series)

If the ATI RAGE XL display driver supplied in the same package as Microsoft® Windows Server® 2003 Enterprise Edition is used with a PRIMEQUEST 500A/500 series machine, the same problem as described in Microsoft Technical Information KB924897 will probably occur. Follow the procedure below to use the standard VGA driver. If high resolution is required, such as for application installation, use the remote desktop function.

1. Click [Control Panel] → [System].
2. Select the [Hardware] tab, and then start Device Manager.
3. Select and right-click "RAGE XL PCI Family" from Display Adapter, and then select [Disable] from the menu.
4. Restart the system according to the popup instruction.

3.3.7.2 Installing the multipath driver

After setting up the operating system in a single-path environment, make Fibre Channel cable settings in a multipath environment. Install the multipath driver, and then make the cable settings in the multipath environment.

Notes:

- Do not establish a multipath connection between the PRIMEQUEST machine and SAN storage before installing the multipath driver. Doing so may result in data destruction. For details on multipath driver installation and the multipath connection, see the *ETERNUS Multipath Driver V2.0 User's Guide for Windows(R)*.
- To use the system in a single-path environment, install the ETERNUS device driver. For details, see the information available under the following URL.
  ETERNUS device driver, GR device driver:
  http://storage-system.fujitsu.com/jp/download/grdvdr/

3.3.7.3 Restoring the disk drive

If the SCSI/SAS disk drive used for data was removed before operating system installation, return it back to its original location. Start the operating system when the environment designed for the system has been configured.

This ends installation of Windows.

To use the system in a single-path environment, install the ETERNUS device driver. For details, see the information available under the following URL.

CHAPTER 4 Work Required After Operating System Installation

4.1 Types of Tasks Required

This chapter describes the tasks that need to be performed after operating system installation.
The table below indicates the tasks required after operating system installation is complete.

Table 4.1 Tasks required

Task	Description	OS installed	Model	Section
PSA installation	Install the PSA.	Linux (Red Hat)	PRIMEQUEST 580A/ 540A/580/540/480/440	4.2
			PRIMEQUEST 520A/ 520/420	4.3
		Linux(SUSE)	PRIMEQUEST 500A/ 500/400 series common	4.4
		Windows	PRIMEQUEST 580A/ 540A/580/540/480/440	4.5
			PRIMEQUEST 520A/ 520/420	4.6
PSA monitoring setup	Set up S.M.A.R.T. Set up Watchdog.	Linux or Windows	PRIMEQUEST 500A/ 500/400 series common	4.8
Dump environment setup	Set up a dump environment.	Linux (Red Hat only)	PRIMEQUEST 500A/ 500/400 series common	4.9
		Windows	PRIMEQUEST 500A/ 500/400 series common	4.10
NTP client setup	Set up NTP clients.	Linux or Windows	PRIMEQUEST 500A/ 500/400 series common	4.12
OS backup	Specify Linux OS backup settings.	Linux (Red Hat only)	PRIMEQUEST 500A/ 500/400 series common	4.12.1
	Specify Windows OS backup settings.	Windows	PRIMEQUEST 500A/ 500/400 series common	4.12.2
Settings saving	Save PSA settings and EFI configuration information.	Linux or Windows	PRIMEQUEST 500A/ 500/400 series common	4.13

Remarks: The components required by REMCS functions on the OS side are installed when PSA is installed under Linux (Red Hat) or Windows.
REMCS configuration will be performed by the certified service engineer in charge.
PSA installation and PSA monitoring setting are required.

4.2 PSA Installation (Linux: Red Hat) (PRIMEQUEST 580A/540A/580/540/480/440)

This section describes the items that must be checked before PSA installation.

Required tasks:

- Checking the management LAN settings (→ 4.2.1)
- Checking the SELinux function settings (→ 4.2.2)
- Checking the firewall function (releasing ports) (→ 4.2.3)
- Installing FJSVfefpcl (→ 4.2.4)

Optional tasks:

- Setting the destination of trap sending from the partition (→ 4.2.5)
- Setting the destinations of trap and e-mail sending via the MMB (→ 4.2.6)
- Other settings (→ 4.2.7)

Remarks:

- Use the PRIMEQUEST installation support tool, bundled-software package installer, or SystemcastWizard Lite to install PSA. If you want to manually install PSA, see Chapter 4, "Manual PSA Installation" in the *PRIMEQUEST 500A/500/400 Series Reference Manual: Tools/Operation Information* (C122-E074EN).
  For details on the installation support tool, see the *PRIMEQUEST Installation Support Tool User's Guide (Red Hat)* (C122-E005EN).
  For details on the bundled-software package installer, see the *PRIMEQUEST Bundled-Software Package Installer User's Guide* (C122-E006EN).
  For details on SystemcastWizard, see the *PRIMEQUEST SystemcastWizard Lite User's Guide* (C122-E010EN).
- During PSA installation, the following modifications required for PSA operation are automatically put into effect:
  - Adding of settings to syslog.conf
  - Adding of settings to snmpd.conf
  - snmptrapd.conf file setup
  - Disabling of salinfo or salinfo_decode automatic startup setting (*1)
  - Disabling of smartd automatic startup setting

- Adding of description to the services file (*2)

*1 These automatic startup settings are disabled because of conflicts with some PSA functions.

*2 Added Port:
Port numbers are not checked for duplication when contents are added to the fj-webgate (24450) services file. Change them as necessary.

Note: If the IP address of the MMB or the IP address of the management LAN on the partition side has been changed, be sure to restart the PSA. Otherwise, a display error on the PSA window of the MMB Web-UI may occur, and errors detected by the PSA are not reported.

4.2.1 Checking the management LAN settings

This section describes how to check the management LAN settings.
For communication of PSA with the MMB via the management LAN, the NIC connected to the management LAN on the partition side must be active.

(1) Checking the settings for the NIC of the management LAN

Execute the following command to check the interface name assigned to the NIC of the management LAN.

1 Enter the ifconfig command to list the network interfaces recognized by the system and confirm the relevant interface name.
Command syntax:

```
/sbin/ifconfig –a
```

Example: eth0, eth1, and lo displayed on the left side are interface names.

```
# /sbin/ifconfig –a
eth0      Link encap:Ethernet  HWaddr 00:D0:B7:53:89:C3
          inet addr:10.24.17.149  Bcast:10.24.17.255  Mask:255.255.255.0
          inet6 addr: fe80::2d0:b7ff:fe53:89c3/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:1107704 errors:0 dropped:0 overruns:0 frame:0
          TX packets:2653820 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:390009908 (371.9 MiB)  TX bytes:809006934 (771.5 MiB)

eth1      Link encap:Ethernet  HWaddr 00:0E:0C:21:83:97
          inet addr:192.168.0.162  Bcast:10.24.17.255  Mask:255.255.255.0
          inet6 addr: fe80::20e:cff:fe21:8397/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:1538726 errors:0 dropped:0 overruns:0 frame:0
          TX packets:356 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:341051195 (325.2 MiB)  TX bytes:22862 (22.3 KiB)
          Base address:0x5cc0 Memory:fbfe0000-fc000000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:3865 errors:0 dropped:0 overruns:0 frame:0
```

2 Use the ethtool command to find two network interface controllers (NIC) for the management LAN. Enter the command for each interface displayed in step 1 as shown below.

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

Command syntax:

```
/sbin/ethtool –i <interface-name>
```

Example: As the result of command execution for eth0 and eth1, these two interfaces match the NICs for the management LAN.

```
# /sbin/ethtool -i eth0
     driver: e100
     version: 3.0.27-k2-NAPI
     firmware-version: N/A
     bus-info: 0000:01:00.0 (Matches a NIC for the management LAN)

# /sbin/ethtool -i eth1
     driver: e100
     version: 3.0.27-k2-NAPI
     firmware-version: N/A
     bus-info: 0000:01:08.0(Matches a NIC for the management LAN)
```

(2) Duplicating the two NICs for the management LAN

To duplicate the management LAN, activate the two NICs for the management LAN in the partition and use them. The duplication software (that controls LAN duplication) directs the send packets to the appropriate transmission line considering the status of the candidate transmission lines, thus achieving redundancy. When you specify duplication, a virtual interface is created to make the two NICs logically work as one NIC. PSA and other TCP/IP application programs use the IP address specified for this virtual interface as the local system IP address to ensure that they can communicate with the remote system without having to consider the redundant physical configuration.

There are two choices of duplication software: Bonding or PRIMECLUSTER GLS. Either one monitors the transmission line that extends to the external switch and, if it detects an error, switches the transmission line.

As shown in Figure 4.1, PRIMEQUEST achieves duplication of the transmission line from the partition to the external switch by including the external switch connected to the MMB user port in the target of monitoring by the duplication software.

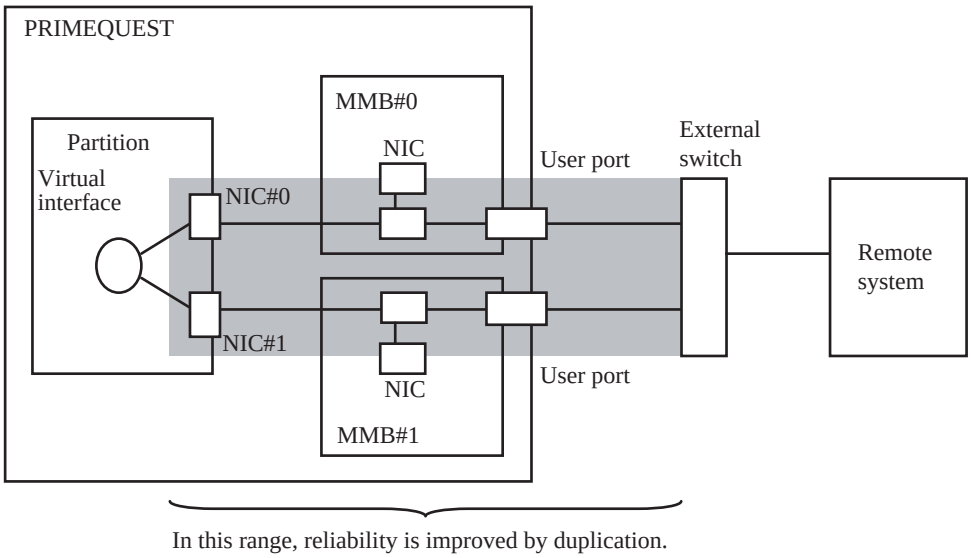


Figure 4.1 Concept of management LAN duplication in PRIMEQUEST

In addition, you can design further reliable transmission lines by duplicating the external switch and the transmission lines from the remote system to the external switch as shown in Figure 4.48. The settings for duplication of the transmission line from the remote system to the external switch must be configured on the remote system.

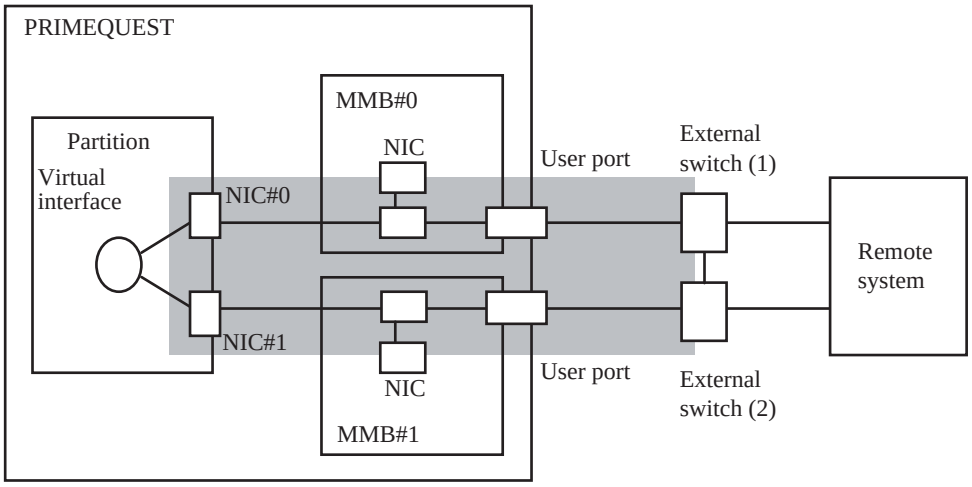


Figure 4.2 Concept of management LAN duplication in PRIMEQUEST (a configuration characterized by improved reliability)

- Using Bonding

Note: Change the VLAN setting of the MMB management LAN hub to "VLAN Mode." (For details, see 2.2.4.5, Setting a management LAN hub.)

1 Add the following to the /etc/modprobe.conf file.
Assign a name (bondN, where N is 0, 1, 2, ... in ascending order) to the Bonding interface.

```
# vi /etc/modprobe.conf

alias <management LAN NIC interface name 1> e100
alias <management LAN NIC interface name 2> e100
Add the following:
alias <Bonding interface name> bonding
options <Bonding interface name> max_bonds=N+1          //note
options <Bonding interface name> mode=1
options <Bonding interface name> arp_interval=1000
options <Bonding interface name> arp_ip_target=<external switch IP address>
```

Notes:

1. If more than one Bonding interface is required, specify the number of Bonding interfaces required by including "max_bonds" in the bond0 options. The default value of this parameter is max_bonds=1.
2. For a configuration as shown in Figure 4.1, specify one IP address. For a configuration as shown in Figure 4.2, specify two IP addresses, as indicated below.

```
options <Bonding interface name> arp_ip_target=< external switch(1) IP address>,
< external switch(2) IP address>
```

Example1: Creating a Bonding interface

The following example of the /etc/modprobe.conf file assumes that the management LAN interface names are eth0 and eth1. In the configuration shown in Figure 4.2, the IP address of external switch (1) is 10.20.100.10 and the IP address of external switch (2) is 10.20.100.11.

```
alias eth0 e100
alias eth1 e100
alias bond0 bonding
options bond0 mode=1
options bond0 arp_interval=1000
options bond0 arp_ip_target=10.20.100.10, 10.20.100.11
```

Example 2: Adding a Bonding interface

The following example of the /etc/modprobe.conf file assumes that the management LAN interface names are eth0 and eth1. In the configuration shown in Figure 4.2, the IP address of external switch (1) is 10.20.100.10 and the IP address of external switch (2) is 10.20.100.11.

```
alias bond0 bonding
options bond0 mode=0
options bond0 miimon=100
```

Add the following lines after the above lines.

```
options bond0 max_bonds=2
alias bond1 bonding
options bond1 mode=1
options bond1 arp_interval=1000
options bond1 arp_ip_target=10.20.100.10, 10.20.100.11
```

2 Edit the ifcfg file corresponding to the relevant interface under /etc/sysconfig/network-scripts. If the file does not exist, create it

Note: If network settings have already been made for the management LAN, assign the IP addresses in the ifcfg file as the IP addresses for Bonding. Modify the ifcfg file by rewriting it as described for duplication setting in this item.

- Management LAN NIC interface 0: ifcfg-<interface name 1> Example: ifcfg-eth0
- Management LAN NIC interface 1: ifcfg-<interface name 2> Example: ifcfg-eth1
- Bonding interface: ifcfg-<Bonding interface name> Example: ifcfg-bond0

A hardware address is required for setting the ifcfg file for the management LAN NIC interface.

If the address is not confirmed, use the ifconfig command to confirm it.

Command syntax:

```
/sbin/ifconfig -a
```

Example: The hardware address for the eth0 interface is 00:D0:B7:53:89:C3.

```
# /sbin/ifconfig –a
eth0      Link encap:Ethernet  HWaddr 00:D0:B7:53:89:C3
          inet addr:10.24.17.149  Bcast:10.24.17.255  Mask:255.255.255.0
          inet6 addr: fe80::2d0:b7ff:fe53:89c3/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:1107704 errors:0 dropped:0 overruns:0 frame:0
          TX packets:2653820 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:390009908 (371.9 MiB)  TX bytes:809006934 (771.5 MiB)
```

Edit or create the ifcfg file for each interface.

- Editing the ifcfg file for the management LAN NIC interface

```
# vi /etc/sysconfig/network-scripts/ifcfg-<NIC interface name>

Change or add the subsequent lines as shown below (you can arrange the lines in any order).
DEVICE=<NIC interface name>
BOOTPROTO=none
HWADDR=<hardware address>
ONBOOT=yes
MASTER=<Bonding interface name>
SLAVE=yes
```

- Editing the ifcfg file for the Bonding interface

```
# vi /etc/sysconfig/network-scripts/ifcfg-<Bonding interface name>

Change or add the subsequent lines as shown below (you can arrange the lines in any order).
DEVICE=<Bonding interface name>
BOOTPROTO=static
ONBOOT=yes
BROADCAST=<management LAN BROADCAST address>
IPADDR=<management LAN IP address>
NETMASK=<management LAN subnet mask>
```

Example: The following shows an example of the ifcfg file on the assumption that the management LAN interfaces are eth0 and eth1, and that the Bonding interface is bond0.

- ifcfg-eth0

```
DEVICE=eth0
BOOTPROTO=none
HWADDR=00:04:23:AB:94:5E
ONBOOT=yes
MASTER=bond0
SLAVE=yes
```

- ifcfg-eth1

```
DEVICE=eth1
BOOTPROTO=none
HWADDR=00:04:23:AB:94:5F
ONBOOT=yes
MASTER=bond0
SLAVE=yes
```

- ifcfg-bond0

```
DEVICE=bond0
BOOTPROTO=static
ONBOOT=yes
BROADCAST=192.168.0.255
IPADDR=192.168.0.1
NETMASK=255.255.255.0
```

Then, restart the network service to activate the Bonding interface.

Command syntax:

```
/sbin/service network restart
```

Note: To make the management LAN NIC settings effective, PSA need to be restarted.

Command syntax:

```
/sbin/service y30FJSVpsa stop
/sbin/service y30FJSVpsa start
```

- Using PRIMECLUSTER GLS

For information on how to make the settings to duplicate the management LAN using PRIMECLUSTER GLS, see the PRIMECLUSTER GLS manuals.

Only the "NIC switching method" can be used for the duplication of the management LAN.

At this time, specify the external switches connected to the MMB user ports shown in Figure 4.1 and Figure 4.2 as the monitored hubs.

Note: If a network has already been configured for the management LAN, use the IP address specified in the ifcfg file as the IP address for PRIMECLUSTER GLS and configure the duplication settings by following the instructions in the PRIMECLUSTER GLS manuals.
After configuring the duplication settings by the GLS, restart the network service and then restart the PSA.

Command syntax:

```
/sbin/service y30FJSVpsa stop
/sbin/service y30FJSVpsa start
```

4.2.2 Checking the SELinux function settings

On the OS (redhat Linux) running in the partition on which you are installing the PSA, check whether SELinux functions are enabled. If they are, disable them.

The PRIMEQUEST system runs with the SELinux functions disabled.

Do as follows to verify whether the SELinux function is disabled. If not, disable it by editing the config file (/etc/selinux/config).

- Checking the setting

```
#cd /etc/selinux/
#more config

.........
SELINUX=disabled
.........
```

- Changing the setting

```
# vi /etc/selinux/config
Change the following definition:
.........
SELINUX=disabled
```

4.2.3 Checking the firewall function (releasing ports)

If the partition port has not been released during the firewall setting, release the ports required for PSA operation. Specifically, release the following ports for the management LAN interfaces that have been set:

- snmp port : udp / snmp or 161
- snmptrap port : udp / snmptrap or 162 (*1) (to the physical IP address of the MMB (both systems))
- web-mmb communication port : tcp / fj-webgate or 24450 (*2) (to the virtual IP address of the MMB)
- rmcp+ port : udp/7000 to 7100 (*1) (to the physical IP address of the MMB (both systems))
- localhost snmp port : udp/1025-65535
- psa-mmb communication port : tcp/MMB side 5000 (Note 3) (to the virtual IP address of the MMB)
  icmp/icmp-type0, icmp-type8 (to the virtual IP address of the MMB)

*1 Release the port only when a PCL linkage is used.
Use the iptables command for checking the firewall setting.

*2 web-mmb communication port

*3 This is communication for the MMB 5000 port.
Because the partition operates as the client under this communication, the port number used at the partition side is undefined. (Any number from tcp/1025 to 65535 is selected for one port.)
Moreover, as indicated in the example below, no setting is required for port number 5000 when connection startup from the partition is enabled, or when communication is enabled for connection with the partition that has been established.

(Example)iptables -A OUTPUT -m state --state NEW,ESTABLISH -j ACCEPT
iptables -A INPUT -m state --state ESTABLISH -j ACCEPT

Command syntax:

```
/sbin/iptables –L
```

Use the iptables command or another command to release the port. For the usage, see command man.

Command syntax:

```
/usr/bin/man iptables
```

4.2.4 Installing FJSVfefpcl

Remarks: FJSVfefpcl is supported only in Japan.

4.2.5 Setting the destination of trap sending from the partition

Notes:

- Make this setting only if required.
- The setting is required if partitions are managed with operation management software.

When sending SNMP traps from the partition, you must set the trap send destination on the partition. Add the trap send destination to the snmpd.conf file.

- Editing snmpd.conf

```
# vi /etc/snmp/snmpd.conf

Add the following lines for the SNMP version to be used. The lines can be provided in any order.
trapsink HOST [COMMUNITY [PORT]]   # SNMPv1 trap setting
trap2sink HOST [COMMUNITY [PORT]]  # SNMPv2 trap setting
trapsess SNMPCMD_ARGS HOST[:PORT]  # SNMPv3 trap setting
```

The settings are detailed below:

- Setting SNMPv1/SNMPv2 traps

```
trapsink HOST [COMMUNITY [PORT]]   # SNMPv1 trap setting
trap2sink HOST [COMMUNITY [PORT]]  # SNMPv2 trap setting
```

Define the host that receives the traps (to which traps are sent).

- With this setting made, a cold start trap is sent when snmpd is started. If SNMP trap sending from the partition is defined, a trap is also sent when authentication fails.
- Multiple destinations can be defined by specifying multiple pairs of the trapsink and trap2sink lines.
- If COMMUNITY is not specified, the character string previously specified by the trapcommunity directive is used.
  The trapcommunity command sets the default community string used to send traps. When using trapcommunity to set the community string, specify the string before the pair of trapsink-trap2sink lines.

```
trapcommunity STRING                    #COMMUNITY name setting
```

- If PORT is not specified, the default SNMP trap port (162) is used.

Example: When you want to send traps with the community name "public" to port 162 of the manager with IP address 192.168.0.162

```
trapsink  192.168.0.162  public  162          ##SNMPv1 trap setting
trap2sink  192.168.0.162  public  162         ##SNMPv2 trap setting
```

● SNMPv3 trap setting

```
trapsess SNMPCMD_ARGS HOST[:PORT]    #SNMPv3 trap setting
```

Define the host that receives the traps (to which traps are sent). If PORT is not specified, the default SNMP trap port (162) is used.

The major options that can be specified for SNMPCMD_ARGS are as follows:

-v version: Specifies the SNMP version. Specify 3 for SNMPv3.

-e engineID: Specifies the value of oldEngineID in the /var/net-snmp/snmpd.conf file in the trap sender.

-u secName: Specifies the SNMPv3 account. It must be the same as the setting in the manager.

-l secLevel: Specifies one of the following according to the security level of SNMPv3 messages:

Table 4.2 secLevel settings

Setting	Authentication	Encryption
noAuthNoPriv	No	No
authNoPriv	Yes	No
authPriv	Yes	Yes

-a authProtocol: Specifies MD5 or SHA as the protocol used to authenticate SNMPv3 messages. If SHA is to be used, a package must be created using openssl that is installed. This option is valid when authentication is included in the security level specified by the -l option. It can be omitted if authentication is not included.

-A authPassword: Specifies an authentication password (eight or more characters). The password must be the same as the setting in the manager. This option is valid when authentication is included in the security level specified by the -l option. It can be omitted if the authentication is not included.

-x privProtocol: Specifies the protocol used to encrypt SNMPv3 messages. Currently, only DES is supported as a privacy protocol. If encryption is included in the security level specified by the -l option, this option is valid; otherwise, it may be omitted.

-X privPassword: Specifies an encryption password (eight or more characters). The password must be the same as the setting in the manager. If encryption is included in the security level specified by the -l option, this option is valid; otherwise, it may be omitted.

Example: When you want to send SNMPv3 traps with the "PRIMEQUEST" account, with authentication and encryption enabled, to port 162 of the manager with IP address 192.168.0.162

```
#trapsess –v 3 -e 0x800007e58026577a9f421950a4 -u PRIMEQUEST -l authPriv
-a MD5 -A 00000000
-x DES -X 11111111 192.168.0.162:162      ##SNMPv3 trap setting
```

After setting the trap transfer destination, restart snmpd by executing the following command:

```
#/etc/rc.d/init.d/snmpd restart
```

After snmpd has been reactivated, activate PSA.

```
#/sbin/service y30FJSVpsa stop
#/sbin/service y30FJSVpsa start
```

Verifying the trap transfer destination setting

To verify the trap transfer destination setting, use the standard net-snmp trap that would be used to restart snmpd. Check the reception of this trap to verify the transfer destination setting.

Remarks: A trap receipt application or trap manager must be active at the trap transfer destination to ensure that net-snmp standard traps can be received.

Restart snmpd by executing the following command on the trap transfer source machine:

```
# /etc/rc.d/init.d/snmpd restart
```

As a result, the trap receipt application at the trap transfer destination receives the "ColdStart" standard net-snmp trap.

For example, if the trap transfer destination is a Linux machine, the following message is added to syslog when snmptrapd receives the trap, and this indicates that the trap transfer destination can correctly receive such traps.

Aug 17 12:00:53 shaka snmptrapd[2600]: 2005-08-17 12:00:53 pq-server.fujitsu.com [192.168.0.162] (via 192.168.0.162) TRAP, SNMP v1, community public NET-SNMP-MIB::netSnmpAgentOIDs.10 Cold Start Trap (0) Uptime: 0:00:00.17

4.2.6 Setting the destinations of trap and e-mail sending via the MMB

Notes:

- Make this setting only if required.
- The setting is required if partitions are managed with operation management software (such as Systemwalker).

The destinations of trap and e-mail sending via the MMB can be set with the MMB Web UI.

See Section 5.1.2, "System SNMP setting." for the MMB trap destination. See Section 2.2.3.5, "SMTP settings." for the e-mail destination.

4.2.7 Other settings

Remarks:Make this setting only if required.

- Setting required when a replicated disk is used
  You can build a new partition by using a disk copied from a partition in the same cabinet, such as disk copy. In this case, you need to manually change the EngineID of SNMPv3 used for the PSA internal communication.
  You can change the EngineID with root authority as follows:

1 Use the ps command to check whether PSA is active.

Command syntax:

```
ps ax | grep psa
```

Example: PSA is active if the following processes under /opt/FJSVpsa/bin/ are displayed.

```
# ps ax | grep psa
 4562 ?        S       0:00 /opt/FJSVpsa/bin/pm -o 70 /etc/opt/FJSVpsa/
global/pmpsa.conf
 4563 ?        S       0:18 /opt/FJSVpsa/bin/loggetd -p /
 4564 ?        S       0:06 /opt/FJSVpsa/bin/sisp -p /
 4565 ?        S       0:00 /opt/FJSVpsa/bin/mmbm -p /
 4566 ?        S       0:01 /opt/FJSVpsa/bin/mmbs -p /
 4567 ?        S       0:02 /opt/FJSVpsa/bin/fs -p /
 4568 ?        S       0:00 /opt/FJSVpsa/bin/ciipmi -p /
 4569 ?        S       7:40 /opt/FJSVpsa/bin/cilog -p /
 4570 ?        S       8:47 /opt/FJSVpsa/bin/cios -p /
        .
        .
 4578 ?        S       0:00 /opt/FJSVpsa/bin/cisalchild 1 /
 4819 ?        Sl      0:00 /opt/FJSVpsa/bin/webgate -p /
 21670 pts/5   S+      0:00 grep psa
```

2 If PSA is active, use the service command to stop PSA.

Command syntax:

```
/sbin/service y30FJSVpsa stop
```

3 Enter the ps command to check whether snmpd is active.

Command syntax:

```
ps ax | grep snmpd
```

Example: snmpd is active if /usr/sbin/snmpd is displayed.

```
# ps ax | grep snmpd
32611 ?        S      0:04 /usr/sbin/snmpd -Lsd -Lf /dev/null -p /var/run/
snmpd -a
```

4 If snmpd is active, enter the service command to stop snmpd.

Command syntax:

```
/sbin/service snmpd stop
```

5 Change the value of oldEngineID defined in the /var/net-snmp/snmpd.conf file.

Remarks: You can change to any value in up to 34 hexadecimal digits, provided that it is unique throughout the partitions in the same cabinet.

Example: To change the value of oldEngineID to 0x19760523

```
#vi /var/net-snmp/snmpd.conf
oldEngineID 0x19760523
```

6 Enter the service command to start snmpd.

Command syntax:

```
/sbin/service snmpd start
```

7 Change the current directory to /opt/FJSVpsa/sh/ to regenerate the snmpv3 password used for the PSA internal communication.

Command syntax:

```
cd /opt/FJSVpsa/sh/
```

8 Execute snmpsetup.sh in the above directory.
Executing this command automatically generates the snmpv3 password used for the PSA internal communication.

Command syntax:

```
./snmpsetup.sh install
```

9 Start PSA.

Command syntax:

```
/sbin/service y30FJSVpsa start
```

4.2.8 PSA update installation

Using the following commands in the order shown, stop the PSA service, and perform update installation for the PSA package.

Note: If the PEXU has been mounted, use PSA-1.10 or later.

Command syntax:

Update from PSA-1.2.X-X or later

```
/sbin/service y30FJSVpsa stop
/bin/rpm -Uvh FJSVpsa-X.X.X-X.ia64.rpm
/sbin/service y30FJSVpsa start
```

Update from PSA-1.1.X-X

```
/sbin/service y30FJSVpsa stop
/bin/rpm -Uvh FJSVpsa-X.X.X-X.ia64.rpm
/sbin/service y10FJSVpsa start
/sbin/service y30FJSVpsa start
```

* X.X.X-X indicates the PSA version.

4.2.9 SIRMS update installation

Using the following commands, perform update installation for the two SIRMS packages.

Command syntax:

```
/bin/rpm -Uvh sirms-X.X.X-X.ia64.rpm
/bin/rpm -Uvh FJSVsoftmsg-X.X.X-X.ia64.rpm
```

* X.X.X-X indicates the version.

4.2.10 PSA uninstallation

Using the following commands in the order shown, stop the PSA service, and uninstall the PSA package.

Command syntax:

```
/sbin/service y30FJSVpsa stop
/bin/rpm -e FJSVpsa
```

4.2.11 SIRMS uninstallation

Using the following commands, uninstall the two SIRMS packages.

Command syntax:

```
/bin/rpm -e sirms
/bin/rpm -e FJSVsoftmsg
```

Note: SIRMS is a function to collect software configuration information when REMCS is in use. It must be installed at the time of PSA installation. However, you do not need to install it if you perform batch installation using the PRIMEQUEST installation support tool or bundled-software package installer.

4.3 PSA Installation (Linux: Red Hat) (PRIMEQUEST 520A/520/420)

This section describes the items that must be checked before PSA installation.

Required tasks:

- Checking the management LAN settings (→ 4.3.1)
- Checking the SELinux function settings (→ 4.3.2)
- Checking the firewall function (releasing ports) (→ 4.3.3)
- Installing FJSVfefpcl (→ 4.3.4)

Optional tasks:

- Setting the destination of trap sending from the partition (→ 4.3.5)
- Setting the destinations of trap and e-mail sending via the MMB (→ 4.3.6)
- Other settings (→ 4.3.7)

Notes:

- Use the PRIMEQUEST installation support tool, bundled-software package installer, or SystemcastWizard Lite to install PSA. If you want to manually install PSA, see Chapter 4 "Manual PSA Installation" in the *PRIMEQUEST 500A/500/400 Series Reference Manual: Tools/Operation Information* (C122-E074EN).
  For details on the installation support tool, see the *PRIMEQUEST Installation Support Tool User's Guide (Red Hat)* (C122-E005EN).
  For details on the bundled-software package installer, see the *PRIMEQUEST Bundled-Software Package Installer User's Guide* (C122-E006EN).
  For details on SystemcastWizard, see the *PRIMEQUEST SystemcastWizard Lite User's Guide* (C122-E010EN).
- During PSA installation, the following modifications required for PSA operation are automatically put into effect:
  - Adding of settings to syslog.conf
  - Adding of settings to snmpd.conf
  - snmptrapd.conf file setup
  - Disabling of salinfo or salinfo_decode automatic startup setting (*1)
  - Disabling of smartd automatic startup setting

- Adding of description to the services file (*2)

*1 These automatic startup settings are disabled because of conflicts with some PSA functions.

*2 Added Port:
Port numbers are not checked for duplication when contents are added to the fj-webgate (24450) services file. Change them as necessary.

Note: If the IP address of the MMB or the IP address of the management LAN has been changed, be sure to restart the PSA. Otherwise, a display error on the PSA window of the MMB Web-UI may occur, and errors detected by the PSA are not reported.

4.3.1 Checking the management LAN settings

This section describes how to check the management LAN settings.
For communication of PSA with the MMB via the management LAN, the NIC connected to the management LAN must be active.

(1) Checking the settings for the NIC of the management LAN

Execute the following command to check the interface name assigned to the NIC of the management LAN.

1 Enter the ifconfig command to list the network interfaces recognized by the system and confirm the relevant interface name.
Command syntax:

```
/sbin/ifconfig –a
```

Example: eth0, eth1, and lo displayed on the left side are interface names.

```
# /sbin/ifconfig –a
eth0      Link encap:Ethernet  HWaddr 00:D0:B7:53:89:C3
          inet addr:10.24.17.149  Bcast:10.24.17.255  Mask:255.255.255.0
          inet6 addr: fe80::2d0:b7ff:fe53:89c3/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:1107704 errors:0 dropped:0 overruns:0 frame:0
          TX packets:2653820 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:390009908 (371.9 MiB)  TX bytes:809006934 (771.5 MiB)

eth1      Link encap:Ethernet  HWaddr 00:0E:0C:21:83:97
          inet addr:192.168.0.162  Bcast:10.24.17.255  Mask:255.255.255.0
          inet6 addr: fe80::20e:cff:fe21:8397/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:1538726 errors:0 dropped:0 overruns:0 frame:0
          TX packets:356 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:341051195 (325.2 MiB)  TX bytes:22862 (22.3 KiB)
          Base address:0x5cc0 Memory:fbfe0000-fc000000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:3865 errors:0 dropped:0 overruns:0 frame:0
```

2 Use the ethtool command to find a network interface controller (NIC) for the management LAN. Enter the command for each interface displayed in step 1 as shown below.
The NICs for the management LAN have bus-info (SEG:BUS:DEV.FUNC number) 0000:01:08.0 and 0000:01:00.0.
Command syntax:

```
/sbin/ethtool –i <interface-name>
```

Example: As the result of command execution for eth0, the interface matches the NIC for the management LAN.

```
# /sbin/ethtool -i eth0
     driver: e100
     version: 3.0.27-k2-NAPI
     firmware-version: N/A
     bus-info: 0000:01:08.0 (Matches a NIC for the management LAN)
```

(2) Setting the NIC for the management LAN

1 Edit the ifcfg file corresponding to the relevant interface under /etc/sysconfig/network-scripts. If the file does not exist, create it.

- Management LAN NIC interface: ifcfg-<interface name> Example: ifcfg-eth0

A hardware address is required for setting the ifcfg file for the management LAN NIC interface.

If the address is not confirmed, use the ifconfig command to confirm it.

Command syntax:

```
/sbin/ifconfig –a
```

Example: The hardware address for the eth0 interface is 00:D0:B7:53:89:C3.

```
# /sbin/ifconfig –a
eth0     Link encap:Ethernet  HWaddr 00:D0:B7:53:89:C3
         inet addr:10.24.17.149  Bcast:10.24.17.255  Mask:255.255.255.0
         inet6 addr: fe80::2d0:b7ff:fe53:89c3/64 Scope:Link
         UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
         RX packets:1107704 errors:0 dropped:0 overruns:0 frame:0
         TX packets:2653820 errors:0 dropped:0 overruns:0 carrier:0
         collisions:0 txqueuelen:1000
         RX bytes:390009908 (371.9 MiB)  TX bytes:809006934 (771.5 MiB)
```

Edit or create the ifcfg file for each interface.

- Editing the ifcfg file for the management LAN NIC interface

```
# vi /etc/sysconfig/network-scripts/ifcfg-<NIC interface name>

Change or add the subsequent lines as shown below (you can arrange the lines in any order).
DEVICE=<NIC interface name>
BOOTPROTO=none
HWADDR=<hardware address>
ONBOOT=yes
MASTER=<Bonding interface name>
SLAVE=yes
BROADCAST=<management LAN BROADCAST address>
IPADDR=<management LAN IP address>
NETMASK=<management LAN subnet mask>
```

Example: The following shows an example of the ifcfg file on the assumption that the management NIC LAN interface is eth0.

- ifcfg-eth0

```
DEVICE=eth0
BOOTPROTO=static
HWADDR=00:D0:B7:53:89:C3
ONBOOT=yes
BROADCAST=192.168.0.255
IPADDR=192.168.0.1
NETMASK=255.255.255.0
```

Then, restart the network service to activate the network interface.

Command syntax:

```
/sbin/service network restart
```

To make the management LAN NIC settings effective, PSA need to be restarted.

Command syntax:

```
/sbin/service y30FJSVpsa stop
/sbin/service y30FJSVpsa start
```

4.3.2 Checking the SELinux function settings

On the OS (redhat Linux) running in the partition on which you are installing the PSA, check whether SELinux functions are enabled. If they are, disable them.

The PRIMEQUEST system runs with the SELinux functions disabled.

Do as follows to verify whether the SELinux function is disabled. If not, disable it by editing the config file (/etc/selinux/config).

- Checking the setting

```
#cd /etc/selinux/
#more config

.........
SELINUX=disabled
.........
```

- Changing the setting

```
# vi /etc/selinux/config
Change the following definition:
.........
SELINUX=disabled
```

4.3.3 Checking the firewall function (releasing ports)

If the partition port has not been released during the firewall setting, release the ports required for PSA operation. Specifically, release the following ports for the management LAN interfaces that have been set:

- snmp port : udp / snmp or 161
- snmptrap port : udp / snmptrap or 162 (*1)
  (to the IP address of the MMB)
- web-mmb communication port : tcp / fj-webgate or 24450 (*2)
  (to the IP address of the MMB)
- rmcp+ port : udp/7000 to 7100 (*1)
  (to the IP address of the MMB)
- localhost snmp port : udp/1025-65535
- psa-mmb communication port : tcp/MMB side 5000 (Note 3) (to the virtual IP address of the MMB)
  icmp/icmp-type0, icmp-type8 (to the virtual IP address of the MMB)

*1 Release the port only when a PCL linkage is used.
Use the iptables command for checking the firewall setting.

*2 web-mmb communication port

*3 This is communication for the MMB 5000 port.
Because the partition operates as the client under this communication, the port number used at the partition side is undefined. (Any number from tcp/1025 to 65535 is selected for one port.)
Moreover, as indicated in the example below, no setting is required for port number 5000 when connection startup from the partition is enabled, or when communication is enabled for connection with the partition that has been established.

(Example)iptables -A OUTPUT -m state --state NEW,ESTABLISH -j ACCEPT
iptables -A INPUT -m state --state ESTABLISH -j ACCEPT

Command syntax:

```
/sbin/iptables –L
```

Use the iptables command or another command to release the port. For the usage, see command man.

Command syntax:

```
/usr/bin/man iptables
```

4.3.4 Installing FJSVfefpcl

Remarks: FJSVfefpcl is supported only in Japan.

4.3.5 Setting the destination of trap sending from the partition

Notes:

- Make this setting only if required.
- The setting is required for linkage with operation management software.

When sending SNMP traps from the partition, you must set the trap send destination. Add the trap send destination to the snmpd.conf file.

- Editing snmpd.conf

```
# vi /etc/snmp/snmpd.conf

Add the following lines for the SNMP version to be used.  The lines can be provided in any order.
trapsink HOST [COMMUNITY [PORT]]   # SNMPv1 trap setting
trap2sink HOST [COMMUNITY [PORT]]  # SNMPv2 trap setting
trapsess SNMPCMD_ARGS HOST[:PORT]  # SNMPv3 trap setting
```

The settings are detailed below:

- Setting SNMPv1/SNMPv2 traps

```
trapsink HOST [COMMUNITY [PORT]]   # SNMPv1 trap setting
trap2sink HOST [COMMUNITY [PORT]]  # SNMPv2 trap setting
```

Define the host that receives the traps (to which traps are sent).

- With this setting made, a cold start trap is sent when snmpd is started. If SNMP trap sending from the partition is defined, a trap is also sent when authentication fails.
- Multiple destinations can be defined by specifying multiple pairs of the trapsink and trap2sink lines.
- If COMMUNITY is not specified, the character string previously specified by the trapcommunity directive is used.
  The trapcommunity command sets the default community string used to send traps. When using trapcommunity to set the community string, specify the string before the pair of trapsink-trap2sink lines.

```
trapcommunity STRING                    #COMMUNITY name setting
```

- If PORT is not specified, the default SNMP trap port (162) is used.

Example: When you want to send traps with the community name "public" to port 162 of the manager with IP address 192.168.0.162

```
trapsink  192.168.0.162  public  162          ##SNMPv1 trap setting
trap2sink  192.168.0.162  public  162         ##SNMPv2 trap setting
```

- SNMPv3 trap setting

```
trapsess SNMPCMD_ARGS HOST[:PORT]    #SNMPv3 trap setting
```

Define the host that receives the traps (to which traps are sent). If PORT is not specified, the default SNMP trap port (162) is used.

The major options that can be specified for SNMPCMD_ARGS are as follows:

-v version: Specifies the SNMP version. Specify 3 for SNMPv3.

-e engineID: Specifies the value of oldEngineID in the /var/net-snmp/snmpd.conf file in the trap sender.

-u secName: Specifies the SNMPv3 account. It must be the same as the setting in the manager.

-l secLevel: Specifies one of the following according to the security level of SNMPv3 messages:

Table 4.3 secLevel settings

Setting	Authentication	Encryption
noAuthNoPriv	No	No
authNoPriv	Yes	No
authPriv	Yes	Yes

-a authProtocol: Specifies MD5 or SHA as the protocol used to authenticate SNMPv3 messages. If SHA is to be used, a package must be created using openssl that is installed. This option is valid when authentication is included in the security level specified by the -l option. It can be omitted if authentication is not included.

-A authPassword: Specifies an authentication password (eight or more characters). The password must be the same as the setting in the manager. This option is valid when authentication is included in the security level specified by the -l option. It can be omitted if the authentication is not included.

-x privProtocol: Specifies the protocol used to encrypt SNMPv3 messages. Currently, only DES is supported as a privacy protocol. If encryption is included in the security level specified by the -l option, this option is valid; otherwise, it may be omitted.

-X privPassword: Specifies an encryption password (eight or more characters). The password must be the same as the setting in the manager. If encryption is included in the security level specified by the -l option, this option is valid; otherwise, it may be omitted.

Example: When you want to send SNMPv3 traps with the "PRIMEQUEST" account, with authentication and encryption enabled, to port 162 of the manager with IP address 192.168.0.162

```
trapsess –v 3 -e 0x800007e58026577a9f421950a4 -u PRIMEQUEST -l authPriv -a
MD5 -A 00000000
-x DES -X 11111111 192.168.0.162:162      ##SNMPv3 trap setting
```

After setting the trap transfer destination, restart snmpd by executing the following command:

```
#/etc/rc.d/init.d/snmpd restart
```

After restart of snmpd is completed, restart PSA.

```
#/sbin/service y30FJSVpsa stop
#/sbin/service y30FJSVpsa start
```

Verifying the trap transfer destination setting

To verify the trap transfer destination setting, use the standard net-snmp trap that would be used to restart snmpd. Check the reception of this trap to verify the transfer destination setting.

Remarks: A trap receipt application or trap manager must be active at the trap transfer destination to ensure that net-snmp standard traps can be received.

Restart snmpd by executing the following command on the trap transfer source machine:

```
# /etc/rc.d/init.d/snmpd restart
```

As a result, the trap receipt application at the trap transfer destination receives the "ColdStart" standard net-snmp trap.

For example, if the trap transfer destination is a Linux machine, the following message is added to syslog when snmptrapd receives the trap, and this indicates that the trap transfer destination can correctly receive such traps.

Aug 17 12:00:53 shaka snmptrapd[2600]: 2005-08-17 12:00:53 pq-server.fujitsu.com [192.168.0.162] (via 192.168.0.162) TRAP, SNMP v1, community public NET-SNMP-MIB::netSnmpAgentOIDs.10 Cold Start Trap (0) Uptime: 0:00:00.17

4.3.6 Setting the destinations of trap and e-mail sending via the MMB

Notes:

- Make this setting only if required.
- The setting is required for linkage with operation management software (such as Systemwalker).

The destinations of trap and e-mail sending via the MMB can be set with the MMB Web UI.

See Section 5.1.2, "System SNMP setting." for the MMB trap destination. See Section 2.2.3.5, "SMTP settings." for the e-mail destination.

4.3.7 Other settings

Remarks:Make this setting only if required.

- Setting required when a replicated disk is used
  You can build a new partition by using a disk copied from a partition in the same cabinet, such as disk copy. In this case, you need to manually change the EngineID of SNMPv3 used for the PSA internal communication.
  You can change the EngineID with root authority as follows:

1 Use the ps command to check whether PSA is active.

Command syntax:

```
ps ax | grep psa
```

Example: PSA is active if the following processes under /opt/FJSVpsa/bin/ are displayed.

```
# ps ax | grep psa
 4562 ?        S       0:00 /opt/FJSVpsa/bin/pm -o 70 /etc/opt/FJSVpsa/
global/pmpsa.conf
 4563 ?        S       0:18 /opt/FJSVpsa/bin/loggetd -p /
 4564 ?        S       0:06 /opt/FJSVpsa/bin/sisp -p /
 4565 ?        S       0:00 /opt/FJSVpsa/bin/mmbm -p /
 4566 ?        S       0:01 /opt/FJSVpsa/bin/mmbs -p /
 4567 ?        S       0:02 /opt/FJSVpsa/bin/fs -p /
 4568 ?        S       0:00 /opt/FJSVpsa/bin/ciipmi -p /
 4569 ?        S       7:40 /opt/FJSVpsa/bin/cilog -p /
 4570 ?        S       8:47 /opt/FJSVpsa/bin/cios -p /
        .
        .
 4578 ?        S       0:00 /opt/FJSVpsa/bin/cisalchild 1 /
 4819 ?        Sl      0:00 /opt/FJSVpsa/bin/webgate -p /
 21670 pts/5   S+      0:00 grep psa
```

2 If PSA is active, use the service command to stop PSA.

Command syntax:

```
/sbin/service y30FJSVpsa stop
```

3 Enter the ps command to check whether snmpd is active.

Command syntax:

```
ps ax | grep snmpd
```

Example: snmpd is active if /usr/sbin/snmpd is displayed.

```
# ps ax | grep snmpd
32611 ?        S      0:04 /usr/sbin/snmpd -Lsd -Lf /dev/null -p /var/run/
snmpd -a
```

4 If snmpd is active, enter the service command to stop snmpd.

Command syntax:

```
/sbin/service snmpd stop
```

5 Change the value of oldEngineID defined in the /var/net-snmp/snmpd.conf file.

Remarks: You can change to any value in up to 34 hexadecimal digits, provided that it is unique throughout the partitions in the same cabinet.

Example: To change the value of oldEngineID to 0x19760523

```
#vi /var/net-snmp/snmpd.conf
oldEngineID 0x19760523
```

6 Enter the service command to start snmpd.

Command syntax:

```
/sbin/service snmpd start
```

7 Change the current directory to /opt/FJSVpsa/sh/ to regenerate the snmpv3 password used for the PSA internal communication.

Command syntax:

```
cd /opt/FJSVpsa/sh/
```

8 Execute snmpsetup.sh in the above directory.
Executing this command automatically generates the snmpv3 password used for the PSA internal communication.

Command syntax:

```
./snmpsetup.sh install
```

9 Start PSA.

Command syntax:

```
/sbin/service y30FJSVpsa start
```

4.3.8 PSA update installation

Using the following commands in the order shown, stop the PSA service, and perform update installation for the PSA package.

Note: If the PEXU has been mounted, use PSA-1.10 or later.

Command syntax:

```
/sbin/service y30FJSVpsa stop
/bin/rpm -Uvh FJSVpsa-X.X.X-X.ia64.rpm
/sbin/service y30FJSVpsa start
```

* X.X.X-X indicates the PSA version.

4.3.9 SIRMS update installation

Using the following commands, perform update installation for the two SIRMS packages.

Command syntax:

```
/bin/rpm -Uvh sirms-X.X.X-X.ia64.rpm
/bin/rpm -Uvh FJSVsoftmsg-X.X.X-X.ia64.rpm
```

* X.X.X-X indicates the version.

4.3.10 PSA uninstallation

Using the following commands in the order shown, stop the PSA service, and uninstall the PSA package.

Command syntax:

```
/sbin/service y30FJSVpsa stop
/bin/rpm -e FJSVpsa
```

4.3.11 SIRMS uninstallation

Using the following commands, uninstall the two SIRMS packages.

Command syntax:

```
/bin/rpm -e sirms
/bin/rpm -e FJSVsoftmsg
```

Note: SIRMS is a function to collect software configuration information when REMCS is in use. It must be installed at the time of PSA installation. However, you do not need to install it if you perform batch installation using the PRIMEQUEST installation support tool or bundled-software package installer.

4.4 PSA Installation (Linux: SUSE) (PRIMEQUEST 500A/500/400 series common)

This section describes the items that must be checked before PSA installation.

Required tasks:

- Checking the management LAN settings (→ 4.4.1)
- Checking the firewall function (releasing ports) (→ 4.4.4)

Optional tasks:

- Setting the destination of trap sending from the partition (→ 4.4.5)
- Setting the destinations of trap and e-mail sending via the MMB (→ 4.4.6)
- Other settings (→ 4.4.7)

Remarks:

- Use the PRIMEQUEST installation support tool, bundled-software package installer, or SystemcastWizard Lite to install PSA. If you want to manually install PSA, see Chapter 4, "Manual PSA Installation" in the *PRIMEQUEST 500A/500/400 Series Reference Manual: Tools/Operation Information* (C122-E074EN).
  For details on the installation support tool, see the *PRIMEQUEST Installation Support Tool User's Guide (SUSE)* (C122-E047EN).
  For details on the bundled-software package installer, see the *PRIMEQUEST Bundled-Software Package Installer User's Guide* (C122-E006EN).
  For details on SystemcastWizard, see the *PRIMEQUEST SystemcastWizard Lite User's Guide* (C122-E010EN).
- During PSA installation, the following modifications required for PSA operation are automatically put into effect:
  - Adding of settings to syslog.conf
  - Adding of settings to snmpd.conf
  - snmptrapd.conf file setup.
  - Disabling of salinfo_decode automatic startup setting (*1)
  - Disabling of smartd automatic startup setting

- Adding of description to the services file (*2)

*1 These automatic startup settings are disabled because of conflicts with some PSA functions.

*2 Added Port:
Port numbers are not checked for duplication when contents are added to the fj-webgate (24450) services file. They may need to be changed.

Note: If the IP address of the MMB or the IP address of the management LAN on the partition side has been changed, be sure to restart the PSA. Otherwise, a display error on the PSA window of the MMB Web-UI may occur, and errors detected by the PSA are not reported.

4.4.1 Checking the management LAN settings

This section describes how to check the management LAN settings.
For communication of PSA with the MMB via the management LAN, the NIC connected to the management LAN on the partition side must be active.

(1) Checking the settings for the NIC of the management LAN

Execute the following command to check the interface name assigned to the NIC of the management LAN.

1 Enter the ifconfig command to list the network interfaces recognized by the system and confirm the relevant interface name.
Command syntax:

```
/sbin/ifconfig –a
```

Example: eth0, eth1, and lo displayed on the left side are interface names.

```
# /sbin/ifconfig –a
eth0      Link encap:Ethernet  HWaddr 00:D0:B7:53:89:C3
          inet addr:192.168.1.10  Bcast:192.168.1.255  Mask:255.255.255.0
          inet6 addr: fe80::2d0:b7ff:fe53:89c3/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:1107704 errors:0 dropped:0 overruns:0 frame:0
          TX packets:2653820 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:390009908 (371.9 MiB)  TX bytes:809006934 (771.5 MiB)

eth1      Link encap:Ethernet  HWaddr 00:0E:0C:21:83:97
          inet addr:192.168.1.12  Bcast:192.168.1.255  Mask:255.255.255.0
          inet6 addr: fe80::20e:cff:fe21:8397/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:1538726 errors:0 dropped:0 overruns:0 frame:0
          TX packets:356 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:341051195 (325.2 MiB)  TX bytes:22862 (22.3 KiB)
          Base address:0x5cc0 Memory:fbfe0000-fc000000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:3865 errors:0 dropped:0 overruns:0 frame:0
```

2 Use the ethtool command to find the network interface controller (NIC) for the management LAN. (One NIC for management LAN for PRIMEQUEST 580A/540A/580/540/480/440 and two NICs for management LAN for PRIMEQUEST 520A/520/420)
Enter the command for each interface displayed in step 1 as shown below.
The NICs for the management LAN have bus info (SEG:BUS:DEV:FUNC number) as follows:

PRIMEQUEST 580A/540A/580/540/480/440: 0000:01:08.0 and 0000:01:00.0
PRIMEQUEST 520A/520/420: 0000:01:08.0

Command syntax:

```
/usr/sbin/ethtool –i <interface-name>
```

Example: As the result of command execution for eth0 and eth1, these two interfaces match the NICs for the management LAN.

Note: The following example assumes that a PRIMEQUEST 580A/540A/580/540/480/440 is used.

```
# /usr/sbin/ethtool -i eth0
     driver: e100
     version: 3.0.27-k2-NAPI
     firmware-version: N/A
     bus-info: 0000:01:00.0 (Matches a NIC for the management LAN)

# /usr/sbin/ethtool -i eth1
     driver: e100
     version: 3.0.27-k2-NAPI
     firmware-version: N/A
     bus-info: 0000:01:08.0(Matches a NIC for the management LAN)
```

3 Execute the following command for the found NIC for the management LAN, and record the hardware address:
Command syntax

```
/sbin/ifconfig  <interface-name>
```

Example: Command execution for eth0 and eth1

```
#/sbin/ifconfig  eth0
Link encap:Ethernet HWaddr 00:D0:B7:53:89:C3
inet addr:192.168.1.10 Bcast:192.168.1.255 Mask:255.255.255.0
inet6 addr: fe80::2d0:b7ff:fe53:89c3/64 Scope:Link
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:1107704 errors:0 dropped:0 overruns:0 frame:0
TX packets:2653820 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:390009908 (371.9 MiB) TX bytes:809006934 (771.5 MiB)

#/sbin/ifconfig  eth1
Link encap:Ethernet HWaddr 00:0E:0C:21:83:97
inet addr:192.168.1.12 Bcast:192.168.1.255 Mask:255.255.255.0
inet6 addr: fe80::20e:cff:fe21:8397/64 Scope:Link
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:1538726 errors:0 dropped:0 overruns:0 frame:0
TX packets:356 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:341051195 (325.2 MiB) TX bytes:22862 (22.3 KiB)
Base address:0x5cc0 Memory:fbfe0000-fc000000
```

In this example, the hardware addresses of eth0 and eth1 are as follows:

- Hardware address of eth0: 00:D0:B7:53:89:C3
- Hardware address of eth1: 00:0E:0C:21:83:97

Then, configure each NIC for the management LAN. See one of the following sections:

- For the PRIMEQUEST 580A/540A/580/540/480/440:
  → (2) Duplicating the two NICs for the management LAN (PRIMEQUEST 580A/540A/580/540/480/440)
- For the PRIMEQUEST 520A/520/420:
  → (3) Configuring the NIC for the management LAN (PRIMEQUEST 520A/520/420)

(2) Duplicating the two NICs for the management LAN (PRIMEQUEST 580A/540A/580/540/480/440)

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To duplicate the management LAN, activate the two NICs for the management LAN in the partition and use them. The duplication software (that controls LAN duplication) directs the send packets to the appropriate transmission line considering the status of the candidate transmission lines, thus achieving redundancy. When you specify duplication, a virtual interface is created to make the two NICs logically work as one NIC. PSA and other TCP/IP application programs use the IP address specified for this virtual interface as the local system IP address to ensure that they can communicate with the remote system without having to consider the redundant physical configuration.

The duplication software monitors the transmission line that extends to the external switch and, if it detects an error, switches the transmission line.

As shown in Figure 4.3, PRIMEQUEST achieves duplication of the transmission line from the partition to the external switch by including the external switch connected to the MMB user port in the target of monitoring by the duplication software.

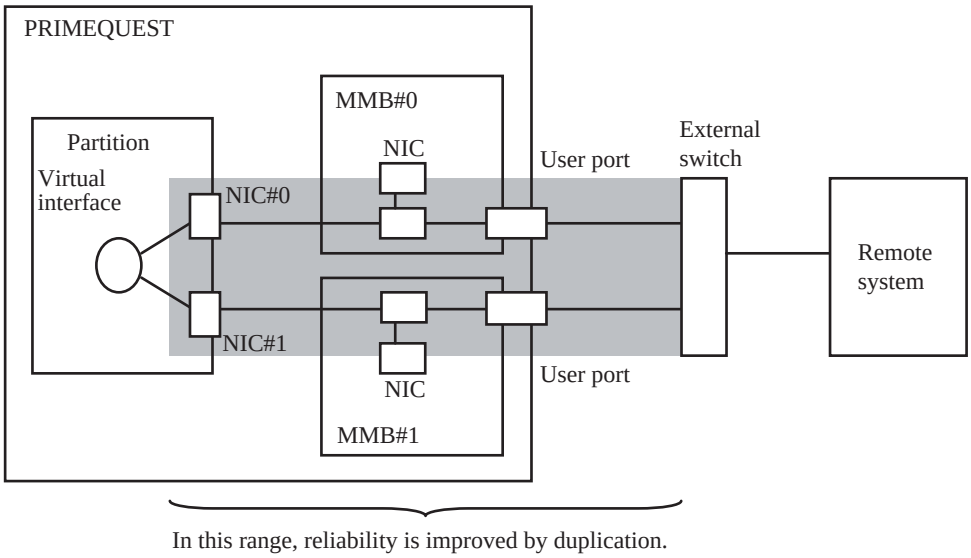

Figure 4.3 Concept of management LAN duplication in PRIMEQUEST

In addition, you can design further reliable transmission lines by duplicating the external switch and the transmission lines from the remote system to the external switch as shown in Figure 4.4. The settings for duplication of the transmission line from the remote system to the external switch must be configured on the remote system.

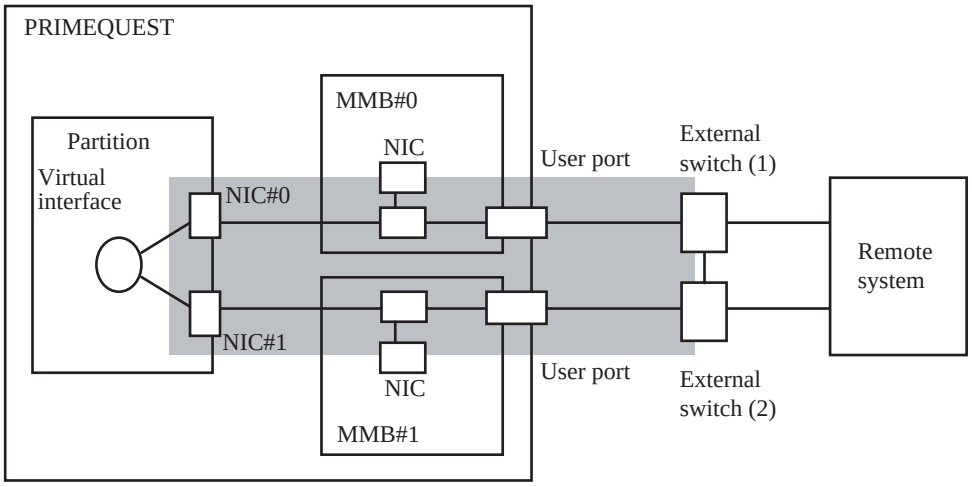

Figure 4.4 Concept of management LAN duplication in PRIMEQUEST
(a configuration characterized by improved reliability)

- Using Bonding

Note: Change the VLAN setting of the MMB management LAN hub to "VLAN Mode." (For details, see 2.2.4.5, Setting a management LAN hub.)

1 Edit the ifcfg file for the relevant interface in /etc/sysconfig/network/. If the file does not exist, create it. To edit the file, first stop the network.

- Bonding interface: ifcfg-<bonding-interface-name> Example: ifcfg-bond0

  Remarks: If the relevant interfaces for the management LAN are in /etc/sysconfig/network/, disable them by deleting them.

- File name of the ifcfg file of the interface for the management LAN: ifcfg-eth-id-<hardware-address>

● Editing the ifcfg file of the NIC interface for the management LAN

```
# rcnetwork stop
# rm /etc/sysconfig/network/ifcfg-eth-id-<hardware-address>
..
# vi /etc/sysconfig/network/ifcfg- <bonding-interface-name>
```

Change or add lines as shown below.

Example: The editing of the ifcfg file shown in the following example assumes that the Bonding interface is ifcfg-bond0.

```
ifcfg-bond0:
   BOOTPROTO='static'
   MTU=''
   REMOTE_IPADDR=''
   IPADDR='192.168.16.138'      # Same subnet as the MMB
   NETMASK='255.255.255.0'
   BROADCAST='192.168.16.255'
   STARTMODE='onboot'
   BONDING_MASTER=yes
   BONDING_SLAVE_0='bus-pci-0000:01:08.0'
   # bus-info number for management LAN NIC#0
   BONDING_SLAVE_1='bus-pci-0000:01:00.0'
   # bus-info number for management LAN NIC#1
   BONDING_MODULE_OPTS='arp_interval=1000 arp_ip_target=192.168.16.111,
   192.168.16.112 mode=1'
   # external switch IP address
```

Then, enter "start" for the network service to activate the Bonding interface.

Command syntax:

```
rcnetwork start
```

To make the management LAN NIC settings effective, PSA need to be restarted.
Command syntax:

```
/etc/init.d/y30FJSVpsa stop
/etc/init.d/y30FJSVpsa start
```

- Using PRIMECLUSTER GLS
  For the settings to duplicate the management LAN using PRIMECLUSTER GLS, see the PRIMECLUSTER GLS manual. To use PRIMECLUSTER GLS, specify the external switches connected to the MMB user ports shown in Figure 4.3 and Figure 4.4 as the monitored hubs.

  Note: If a network has already been configured for the management LAN, use the IP address specified in the ifcfg file as the IP address for PRIMECLUSTER GLS and configure the duplication settings by following the instructions in the PRIMECLUSTER GLS manuals.

  After configuring the duplication settings by the GLS, restart the network service and then restart the PSA.
  Command syntax:

```
/etc/init.d/y30FJSVpsa stop
/etc/init.d/y30FJSVpsa start
```

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1. Add the line shown below to the end of /etc/modprobe.conf.local.
   Name the Bonding interface (bondN, where N is a number assigned in ascending order, such as 0, 1, 2...).

```
# vi /etc/modprobe.conf.local

Add the following line to the end of the file:
alias <Bonding interface-name> bonding
options <Bonding interface-name> mode=1 arp_interval=1000
arp_ip_target=<external-switch-IP-address>// (*1)
```

*1 For the configuration shown in Figure 4.5, specify one IP address. For the configuration shown in Figure 4.6, specify two IP addresses.

```
options <Bonding interface-name> arp_ip_target=<external-switch-IP-
address(1)>,<external-switch-IP-address(2)>
```

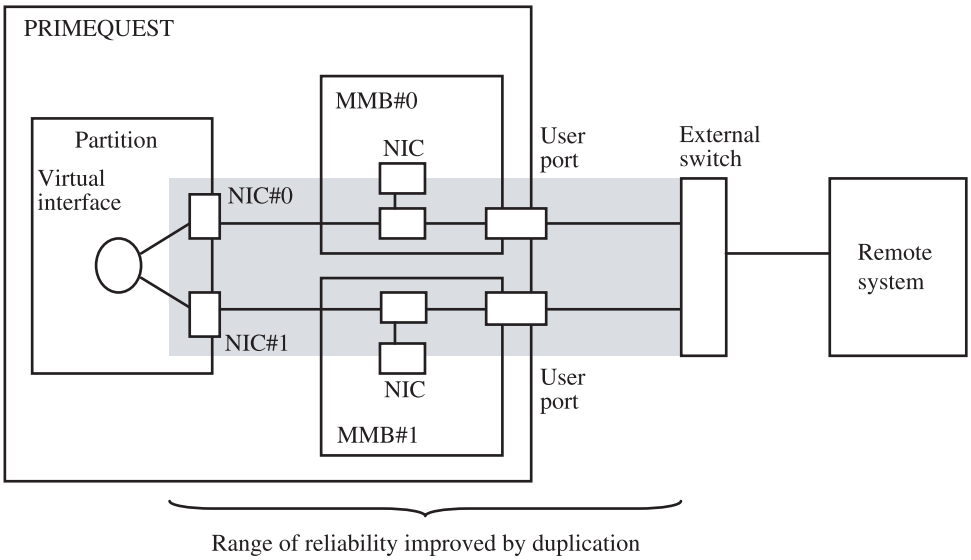


Figure 4.5 Concept of management LAN duplication in PRIMEQUEST

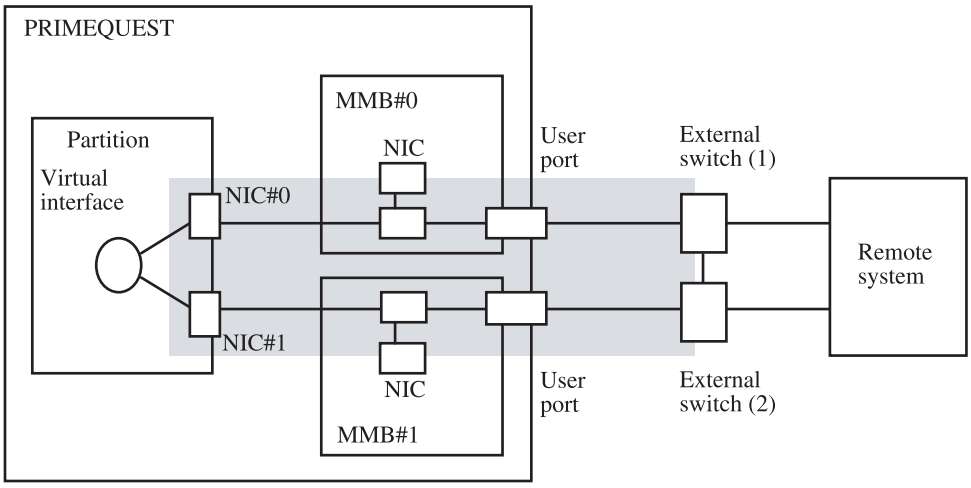


Figure 4.6 Concept of management LAN duplication in PRIMEQUEST
(configuration characterized by improved reliability)

2 Edit the ifcfg file for the relevant interface in /etc/sysconfig/network/. If the file does not exist, create it. To edit the file, first stop the network.

- Bonding interface-name: ifcfg-<Bonding interface-name> Example: ifcfg-bond0

Remarks:If the relevant interface for the management LAN is in /etc/sysconfig/network/, disable it by deleting it.

- File name of the ifcfg file of the interface for the management LAN: ifcfg-eth-id-<hardware-address>

- Editing the ifcfg file of the NIC interface for the management LAN

```
# rcnetwork stop
# rm /etc/sysconfig/network/ifcfg-eth-id-<hardware-address>
..
# vi /etc/sysconfig/network/ifcfg-<Bonding interface-name>
```

Change or add lines as shown below.

Example:The editing of the ifcfg file shown in the following examples assumes that the Bonding interface is ifcfg-bond0.

```
ifcfg-bond0:
BOOTPROTO='static'
MTU=''
REMOTE_IPADDR=''
IPADDR='192.168.16.138'  # Same subnet as the MMB
NETMASK='255.255.255.0'
BROADCAST='192.168.16.255'
STARTMODE='onboot'
BONDING_MASTER=yes
BONDING_SLAVE_0='bus-pci-0000:01:08.0'
# bus-info number of the NIC for management LAN#0
BONDING_SLAVE_1='bus-pci-0000:01:00.0'
# bus-info number of the NIC for management LAN#1
```

The Bonding interface is activated with the restart of the network service.

Command syntax

```
/sbin/service network restart
```

To make the NIC settings for the management LAN effective, PSA needs to be restarted.

Command syntax

```
/etc/init.d/y30FJSVpsa stop
/etc/init.d/y30FJSVpsa start
```

(3) Configuring the NIC for the management LAN (PRIMEQUEST 520A/520/420)

The connected management LAN NIC must be activated on the partition side for communication with the MMBs via the management LAN. Configure the NIC by following the procedure below. Use YaST to configure it.

1 Execute the following command, and record the card name of the NIC for the management LAN:
Command syntax

```
/sbin/lspci -s 0000:01:08.0
```

Example: In this example, the card name is "Intel Corporation 82562ET/EZ/GT/GZ - PRO/100 VE (LOM) Ethernet Controller".

```
# /sbin/lspci -s 0000:01:08.0
01:08.0 Ethernet controller: Intel Corporation 82562ET/EZ/
GT/GZ - PRO/100 VE (LOM) Ethernet Controller (rev 04)
```

2 Execute the following command to activate YaST.
Command syntax:

```
# yast
```

3 Select [Network Devices] - [Network Card] from the menu, and proceed to the network card selection window.

4 From the network cards displayed in the [Network Card Configuration] window, select the card (NIC for the management LAN) that has the name recorded in step 1.

Note: The name that is recorded in step 1 may not be displayed completely according to YaST specifications. As shown in Figure 4.7, "Fujitsu" may be added in front of the card name, and only the last part of the card name may be displayed. In such cases, select the name whose displayed character strings excluding "Fujitsu" matches the last part of the name recorded in step 1.

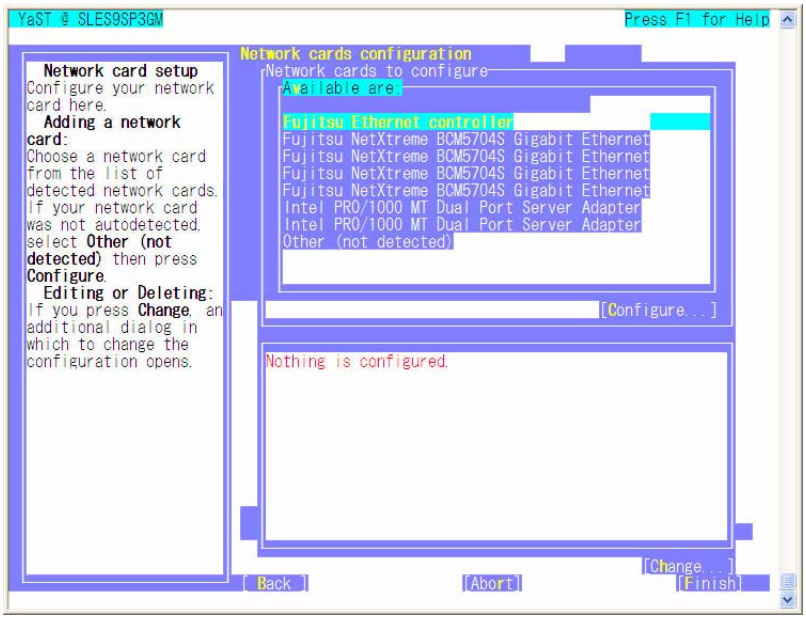


Figure 4.7 YaST window

* This example is an SUSE9 window. The displayed contents may vary depending on the version of the OS.

* In the example, the second choice (Fujitsu Ethernet controller) matches the last part of the name recorded in step 1.

5 Go to the [Network Address Setup] window to set up the network card. Confirm that the value of [Configuration Name] includes the hardware address that was checked in (1), "Checking the settings for the NIC of the management LAN." Check [Static address setup], and specify the IP address and the subnet mask.

Note: The specified IP address and the IP address of the MMB must have the same subnet mask.

6 Quit YaST.

4.4.2 Procedures for monitoring syslog

When using SUSE™ Linux Enterprise Server 10, you must make the addition settings below.

Note: If you fail to make the settings below before installing PSA, the following message may be output when you install PSA and PSA may not be able to monitor driver messages.
syslogd: /var/opt/FJSVpsa/path/syslogd.fifo: Operation not permitted

Remarks: Use the [↑] and [↓] keys to move the cursor up and down on the YaST screen.

1 Enter the following command to confirm the active syslog daemon.

```
# grep SYSLOG_DAEMON /etc/sysconfig/syslog
```

If SYSLOG_DAEMON = If "syslog-ng" is displayed for SYSLOG_DAEMON, /sbin/syslog-ng is running as the syslog daemon.
If SYSLOG_DAEMON = If "syslog" is displayed for SYSLOG_DAEMON, /sbin/syslogd is running as the syslog daemon.
Record the name of the running syslog daemon.

2 Change the AppArmor settings by following the procedure below:

1 Start YaST.

```
# yast
```

Figure 4.8 YaST start screen

2 From the left-side menu in Figure 4.9, select "Novell AppArmor" and press the [Tab] key.
Next, from the right-side menu, select "Edit Profile" and press the [Enter] key.

Figure 4.9 Novell AppArmor- select screen

3 Use the [Tab] key to move to "Profile Name," and check for the active syslog daemon under "Profile Name." The active syslog daemon is the one that was confirmed in step 1.
If you do not find the active syslog daemon under "Profile Name," the subsequent settings need not be made. In this case, select "Abort" from the bottom menu, and press the [Enter] key to exit from this window. Then, select "Quit" from the bottom menu, and press the [Enter] key to quit YaST.
If you find the active syslog daemon under "Profile Name," select the name of the syslog daemon. Then, press the [Tab] key to select "Next" from the bottom menu, and press the [Enter] key.

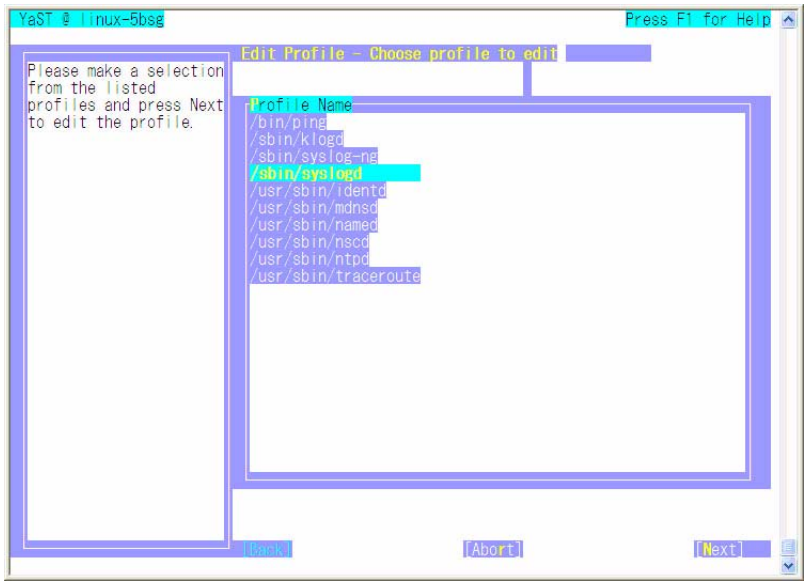
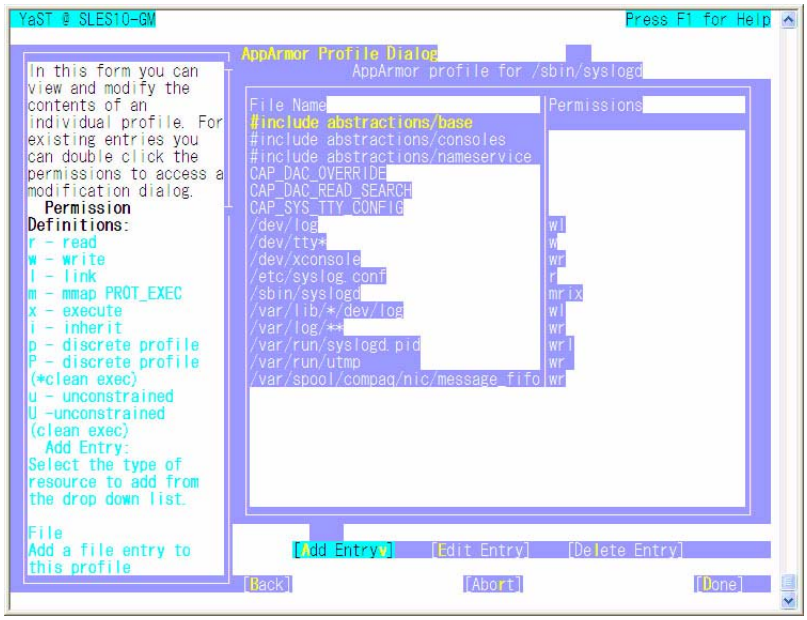


Figure 4.10 AppArmor Profile select screen

4 Press the [Tab] key to select "Add Entry" from the bottom menu, and press the [Enter] key.



Select "File" from the displayed list, and press the [Enter] key.

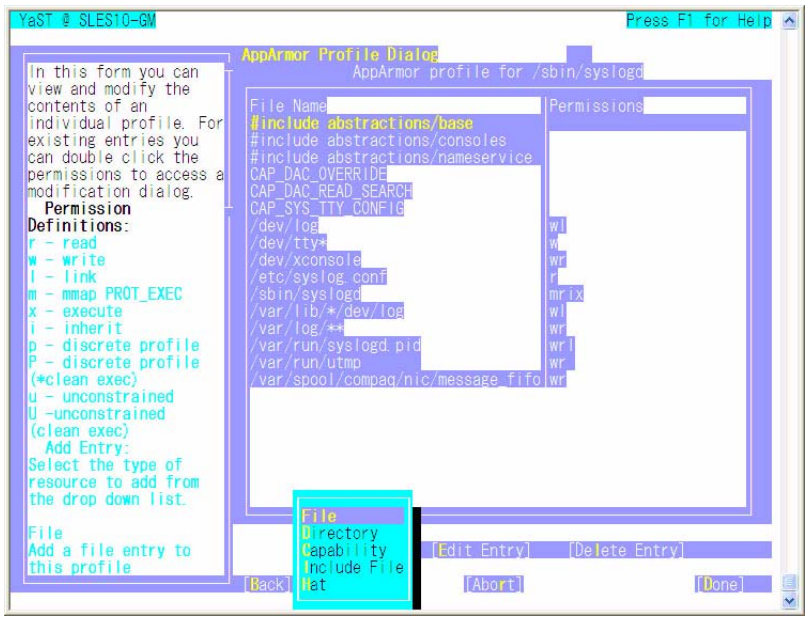


Figure 4.11 Entry addition and selection screen

5 Enter "/var/opt/FJSVpsa/path/syslog_fifo" at the "Enter or modify Filename" field and press the [Tab] key.
Next, in the "Permissions" field, use the [Space] key to mark the "Read" and "Write" checkboxes.
Press the [Tab] key to select OK and press the [Enter] key.

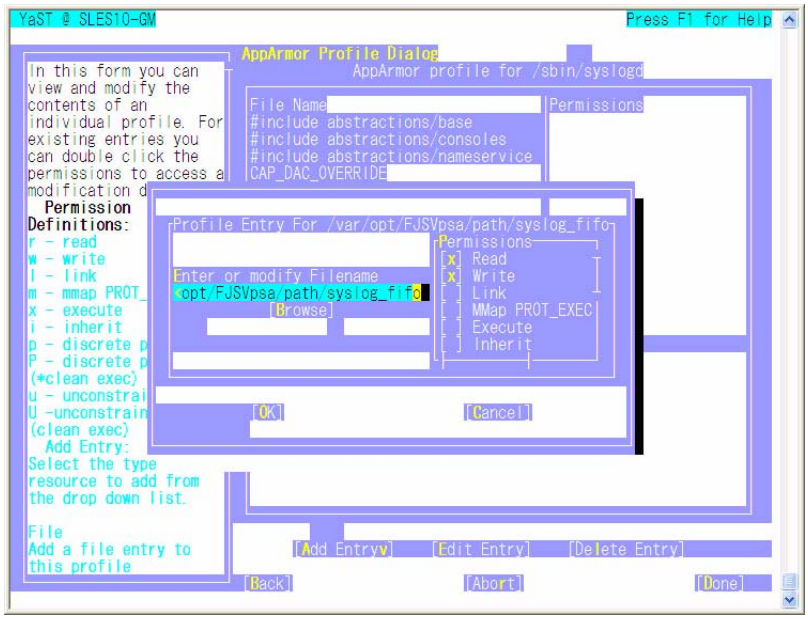


Figure 4.12 Adding the Profiles Entry screen

6 Confirm that the changes made in step 5 have been applied.

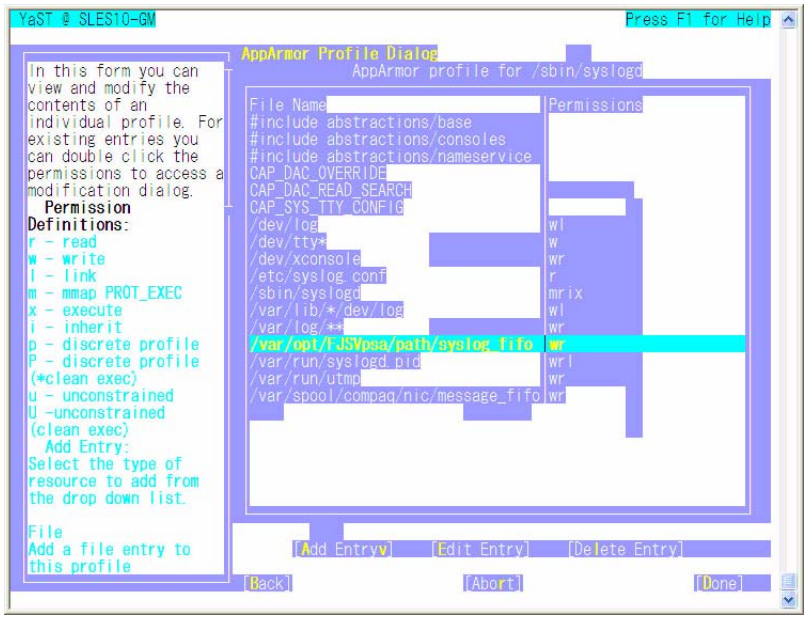


Figure 4.13 Entry list screen

7 Press the [Tab] key to select "Done" from the bottom menu. The [Save changes to the Profile] screen is then displayed.
From the [Save changes to the Profile] screen, select [Yes] and press the [Enter] key.

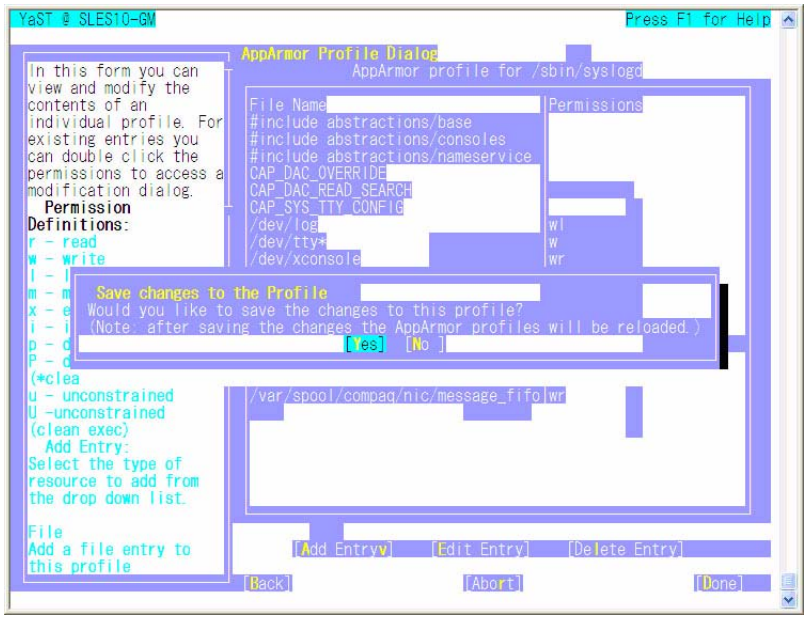


Figure 4.14 Saving the profiles screen

8 Press the [Tab] key to select "Quit" from the bottom menu and press the [Enter] key to quit YaST.

9 Restart AppArmor.

```
# /etc/init.d/boot.apparmor restart
Reloading AppArmor profiles                          done
```

10 Restart the syslog services.

```
# /etc/init.d/syslog restart
Shutting down syslog services                        done
Starting syslog services                             done
```

4.4.3 SELinux function

By default, the SELinux function is disabled on the PRIMEQUEST-series machine after OS installation. Do not use the SELinux function.

4.4.4 Checking the firewall function (releasing ports)

If the port has not been released during the firewall setting, release the ports required for PSA operation. Specifically, release the following ports for the management LAN interfaces that have been set:

- snmp port : udp / snmp or 161
- snmptrap port : udp / snmptrap or 162 (*1) (to the physical IP address of the MMB (both systems))
- web-mmb communication port : tcp / fj-webgate or 24450 (*2) (to the virtual IP address of the MMB)
- rmcp+ port : udp/7000 to 7100 (*1) (to the physical IP address of the MMB (both systems))
- localhost snmp port : udp/1025-65535
- psa-mmb communication port : tcp/MMB side 5000 (Note 3) (to the virtual IP address of the MMB)
  icmp/icmp-type0, icmp-type8 (to the virtual IP address of the MMB)

*1 Release the port only when a PCL linkage is used.
Use the iptables command for checking the firewall setting.

*2 web-mmb communication port

*3 This is communication for the MMB 5000 port.
Because the partition operates as the client under this communication, the port number used at the partition side is undefined. (Any number from tcp/1025 to 65535 is selected for one port.)
Moreover, as indicated in the example below, no setting is required for port number 5000 when connection startup from the partition is enabled, or when communication is enabled for connection with the partition that has been established.

(Example)iptables -A OUTPUT -m state --state NEW,ESTABLISH -j ACCEPT
iptables -A INPUT -m state --state ESTABLISH -j ACCEPT

Command syntax:

```
/sbin/iptables –L
```

Use the iptables command or another command to release the port. For the usage, see command man.

Command syntax:

```
/usr/bin/man iptables
```

4.4.5 Setting the destination of trap sending from the partition

Notes:

- Make this setting only if required.
- The setting is required for linkage with operation management software.

When sending SNMP traps from the partition, you must set the trap send destination. Add the trap send destination to the snmpd.conf file.

- Editing snmpd.conf

```
# vi /etc/snmpd.conf

Add the following lines for the SNMP version to be used.  The lines can be provided in any order.
trapsink HOST [COMMUNITY [PORT]]   # SNMPv1 trap setting
trap2sink HOST [COMMUNITY [PORT]]  # SNMPv2 trap setting
trapsess SNMPCMD_ARGS HOST[:PORT]  # SNMPv3 trap setting
```

The settings are detailed below:

- Setting SNMPv1/SNMPv2 traps

```
trapsink HOST [COMMUNITY [PORT]]   # SNMPv1 trap setting
trap2sink HOST [COMMUNITY [PORT]]  # SNMPv2 trap setting
```

Define the host that receives the traps (to which traps are sent).

- With this setting made, a cold start trap is sent when snmpd is started. If SNMP trap sending is defined, a trap is also sent when authentication fails.
- Multiple destinations can be defined by specifying multiple pairs of the trapsink and trap2sink lines.
- If COMMUNITY is not specified, the character string previously specified by the trapcommunity directive is used.
  The trapcommunity command sets the default community string used to send traps. When using trapcommunity to set the community string, specify the string before the pair of trapsink-trap2sink lines.

```
trapcommunity STRING                    #COMMUNITY name setting
```

- If PORT is not specified, the default SNMP trap port (162) is used.

Example: When you want to send traps with the community name "public" to port 162 of the manager with IP address 192.168.1.10

```
trapsink  192.168.1.10  public  162          ##SNMPv1 trap setting
trap2sink  192.168.1.10  public  162         ##SNMPv2 trap setting
```

● SNMPv3 trap setting

```
trapsess SNMPCMD_ARGS HOST[:PORT]    #SNMPv3 trap setting
```

Define the host that receives the traps (to which traps are sent). If PORT is not specified, the default SNMP trap port (162) is used.

The major options that can be specified for SNMPCMD_ARGS are as follows:

-v version: Specifies the SNMP version. Specify 3 for SNMPv3.

-e engineID: Specifies the value of oldEngineID in the /var/net-snmp/snmpd.conf file in the trap sender.

-u secName: Specifies the SNMPv3 account. It must be the same as the setting in the manager.

-l secLevel: Specifies one of the following according to the security level of SNMPv3 messages:

Table 4.4 secLevel settings

Setting	Authentication	Encryption
noAuthNoPriv	No	No
authNoPriv	Yes	No
authPriv	Yes	Yes

-a authProtocol: Specifies MD5 or SHA as the protocol used to authenticate SNMPv3 messages. If SHA is to be used, a package must be created using openssl that is installed. This option is valid when authentication is included in the security level specified by the -l option. It can be omitted if authentication is not included.

-A authPassword: Specifies an authentication password (eight or more characters). The password must be the same as the setting in the manager. This option is valid when authentication is included in the security level specified by the -l option. It can be omitted if the authentication is not included.

-x privProtocol: Specifies the protocol used to encrypt SNMPv3 messages. Currently, only DES is supported as a privacy protocol. If encryption is included in the security level specified by the -l option, this option is valid; otherwise, it may be omitted.

-X privPassword: Specifies an encryption password (eight or more characters). The password must be the same as the setting in the manager. If encryption is included in the security level specified by the -l option, this option is valid; otherwise, it may be omitted.

Example: When you want to send SNMPv3 traps with the "PRIMEQUEST" account, with authentication and encryption enabled, to port 162 of the manager with IP address 192.168.1.10

```
#trapsess 3 -e 0x800007e58026577a9f421950a4 -u PRIMEQUEST -l authPriv
-a MD5 -A 00000000
-x DES -X 11111111 192.168.1.10:162      ##SNMPv3 trap setting
```

After setting the trap transfer destination, restart snmpd by executing the following command:

```
#/etc/init.d/snmpd restart
```

After snmpd has been reactivated, activate PSA.

```
#/etc/init.d/y30FJSVpsa y30FJSVpsa stop
#/etc/init.d/y30FJSVpsa y30FJSVpsa start
```

Verifying the trap transfer destination setting

To verify the trap transfer destination setting, use the standard net-snmp trap that would be used to restart snmpd. Check the reception of this trap to verify the transfer destination setting.

Remarks: A trap receipt application or trap manager must be active at the trap transfer destination to ensure that net-snmp standard traps can be received.

Restart snmpd by executing the following command on the trap transfer source machine:

```
# /etc/init.d/snmpd restart
```

As a result, the trap receipt application at the trap transfer destination receives the "ColdStart" standard net-snmp trap.

For example, if the trap transfer destination is a Linux machine, the following message is added to syslog when snmptrapd receives the trap, and this indicates that the trap transfer destination can correctly receive such traps.

Aug 17 12:00:53 pq-server snmptrapd[2600]: 2005-08-17 12:00:53 pq-server.fujitsu.com [192.168.1.10](via 192.168.1.10) TRAP, SNMP v1, community public NET-SNMP-MIB::netSnmpAgentOIDs.10 Cold Start Trap (0) Uptime: 0:00:00.17

Note: If the operating system is SUSE™ Linux Enterprise Server 9 Service Pack 2 and direct reporting of traps to the SNMP manager has been set, "0.0.0.0" is reported as the Agent Address value in the SNMP layer in reported trap data. Consequently, the SNMP manager cannot identify the IP address of the trap transfer source from the Agent Address value. However, the transfer source of a PSA expansion trap can be identified, since its trap data is accompanied by a host name.
IP addresses are reported in the IP layer. To use a trap transfer source IP address for the purpose of identification, the "%b" option can be added to the initial parameters in snmptrapd, such as for reception of the IP address by the SNMP manager using snmptrapd. This method can output information including the trap transfer IP source address, so the transfer source can be identified.
For details on the initial parameters in snmptrapd, see the man page for snmptrapd.

4.4.6 Setting the destinations of trap and e-mail sending via the MMB

Notes:

- Make this setting only if required.
- The setting is required for linkage with operation management software (such as Systemwalker).

The destinations of trap and e-mail sending via the MMB can be set with the MMB Web UI.

See Section 5.1.2, "System SNMP setting." for the MMB trap destination. See Section 2.2.3.5, "SMTP settings." for the e-mail destination.

4.4.7 Other settings

Remarks:Make this setting only if required.

- Setting required when a replicated disk is used
  You can build a new partition by using a disk copied from a partition in the same cabinet, such as disk copy. In this case, you need to manually change the EngineID of SNMPv3 used for the PSA internal communication.
  You can change the EngineID with root authority as follows:

1 Use the ps command to check whether PSA is active.

Command syntax:

```
ps ax | grep psa
```

Example: PSA is active if the following processes under /opt/FJSVpsa/bin/ are displayed.

```
# ps ax | grep psa
 4562 ?        S       0:00 /opt/FJSVpsa/bin/pm -o 70 /etc/opt/FJSVpsa/
global/pmpsa.conf
 4563 ?        S       0:18 /opt/FJSVpsa/bin/loggetd -p /
 4564 ?        S       0:06 /opt/FJSVpsa/bin/sisp -p /
 4565 ?        S       0:00 /opt/FJSVpsa/bin/mmbm -p /
 4566 ?        S       0:01 /opt/FJSVpsa/bin/mmbs -p /
 4567 ?        S       0:02 /opt/FJSVpsa/bin/fs -p /
 4568 ?        S       0:00 /opt/FJSVpsa/bin/ciipmi -p /
 4569 ?        S       7:40 /opt/FJSVpsa/bin/cilog -p /
 4570 ?        S       8:47 /opt/FJSVpsa/bin/cios -p /
 4578 ?        S       0:00 /opt/FJSVpsa/bin/cisalchild 1 /
 4819 ?        Sl      0:00 /opt/FJSVpsa/bin/webgate -p /
 21670 pts/5   S+      0:00 grep psa
```

2 If PSA is active, use the following command to stop PSA.

Command syntax:

```
/etc/init.d/y30FJSVpsa stop
```

3 Enter the ps command to check whether snmpd is active.

Command syntax:

```
ps ax | grep snmpd
```

Example: snmpd is active if /usr/sbin/snmpd is displayed.

```
# ps ax | grep snmpd
32611 ?        S      0:04 /usr/sbin/snmpd -Lsd -Lf /dev/null -p /var/run/
snmpd -a
```

4 If snmpd is active, enter the following command to stop snmpd.

Command syntax:

```
/etc/init.d/snmpd stop
```

5 Change the value of oldEngineID defined in the /var/lib/net-snmp/snmpd.conf file.

Remarks: You can change to any value in up to 34 hexadecimal digits, provided that it is unique throughout the partitions in the same cabinet.

Example: To change the value of oldEngineID to 0x19760523

```
#vi /var/lib/net-snmp/snmpd.conf
oldEngineID 0x19760523
```

6 Enter the following command to start snmpd.

Command syntax:

```
/etc/init.d/snmpd start
```

7 Change the current directory to /opt/FJSVpsa/sh/ to regenerate the snmpv3 password used for the PSA internal communication.

Command syntax:

```
cd /opt/FJSVpsa/sh/
```

8 Execute snmpsetup.sh in the above directory.
Executing this command automatically generates the snmpv3 password used for the PSA internal communication.

Command syntax:

```
./snmpsetup.sh install
```

9 Start PSA.

Command syntax:

```
/etc/init.d/y30FJSVpsa start
```

4.4.8 PSA update installation

Using the following commands in the order shown, stop the PSA service, and perform update installation for the PSA package.

Note: If the PEXU has been mounted, use PSA-1.10 or later.

Command syntax:

Update from PSA-1.2.X-X or later

```
/etc/init.d/y30FJSVpsa stop
/bin/rpm -Uvh FJSVpsa-X.X.X-X.ia64.rpm
/etc/init.d/y30FJSVpsa start
```

Update from PSA-1.1.X-X

```
/etc/init.d/y30FJSVpsa stop
/bin/rpm -Uvh FJSVpsa-X.X.X-X.ia64.rpm
/etc/init.d/y10FJSVpsa start
/etc/init.d/y30FJSVpsa start
```

* X.X.X-X indicates the PSA version.

4.4.9 PSA uninstallation

Using the following commands in the order shown, stop the PSA service, and uninstall the PSA package.

Command syntax:

```
/etc/init.d/y30FJSVpsa stop
/bin/rpm -e FJSVpsa
```

4.5 PSA Installation (Windows Server 2003) (PRIMEQUEST 580A/540A/580/540/480/440)

This section describes procedure for installing PSA.

Required tasks:

- Checking the management LAN settings (→ 4.5.1)

Optional tasks:

- Setting the destination of trap sending from the partition (→ 4.5.2)
- Setting the destinations of trap and e-mail sending via the MMB (→ 4.5.3)
- Windows firewall setting (→ 4.5.4)
- Setting Watchdog monitoring after a STOP error (a fatal system error) occurs (→ 4.5.5)

Remarks:

- Use the PRIMEQUEST Software Installer or SystemcastWizard Lite to install PSA. If you want to manually install the PSA, see Chapter 4, "Manual PSA Installation" in the *PRIMEQUEST 500A/500/400 Series Reference Manual: Tools/Operation Information* (C122-E074EN).
  For details on installation using the PRIMEQUEST Software Installer, see Section 3.3.6.1, "Installation using the PRIMEQUEST Software Installer."
  For details on installation using SystemcastWizard Lite, see the *PRIMEQUEST SystemcastWizard Lite User's Guide* (C122-E010EN).
- When PSA is installed, the following setup tasks are automatically performed for PSA operation:

  1 Service setting
  - PRIMEQUEST Server Agent
  - PRIMEQUEST PEM Command Service
  - PRIMEQUEST PSA Environment Control Service

  2 Environment variable setting
  - PATH variable
    Value for use by PSA is added to the existing PATH variable.
  - FJSVpsa_INSTALLPATH variable
    This is a new variable added.

  3 Port setting
  The parameter is set to ensure that PSA uses the TCP:24450 port.

4 SNMP security setting

Make SNMP Service security settings because PSA must receive SNMP packets from the MMB.

The subsequent operations varies as follows depending on the parameter selected on the [Security tab] in the [Properties] dialog box of [SNMP Service] during PSA installation:

- If [Accept SNMP packets from any host] was selected:
  The SNMP security settings need not be made.
- If [Accept SNMP packets from these hosts] was selected:
  Make sure SNMP security settings unless the IP address of the MMB and localhost parameter are not specified.

Note:To change the SNMP Service security setting from [Accept SNMP packets from any host] to [Accept SNMP packets from these hosts] after PSA installation, or to change the IP address of the MMB, execute the SNMP security setting command (setsnmpsec). For details on this command, see the *PRIMEQUEST 580A/540A/520A/500/400 Series Reference Manual: Basic Operation/GUI/Commands* (C122-E003EN).

5 Window Management Instrumentation (WMI) setting

PSA collects information on PCI cards and SCSI devices by using WMI, which is installed as standard with Windows.

If the amount of memory and the number of internal handles that WMI uses to collect this information are insufficient because there are many LUNs, such as in RAIDs, change settings to the following values:

- Maximum amount of memory used: 536,870,912 bytes
- Maximum number of internal handles: 65,536

6 Task scheduler settings

To monitor for errors involving the power supply of the expansion file unit and FANs, make the following task scheduler settings:

Task name: File Unit Status Check

Activation interval: 5 minutes

The configuration information is collected when the PSA is started. Error monitoring is then performed based on the collected information until the next time the PSA is started. If an expansion file unit is not connected, configuration information is collected according to the schedule, but the process is completed immediately without error monitoring performed. Therefore, no additional workload is imposed on the system.

Notes:

- In the first attempt to open the PSA window from the Web-UI after the system restart following PSA installation, the error message "E_33077 PSA is Not Active. (01:0000)" may be displayed. This may occur because PSA requires a certain amount of time to acquire sensor information for the system. Wait a few minutes, then try to open the window again.
- After changing the IP address of an MMB or management LAN on the partition side, be sure to restart PSA. Otherwise, a PSA screen display error occurs in the Web-UI and detectable errors in PSA cannot be reported.
- For PSA setup in Windows, the following points must be noted:
  - Do not enable Visual Notification in the Dr. Watson options. Otherwise, if a PSA error occurs and a message box opens, PSA cannot be restarted until the message box is closed.
  - Do In the properties for the system log of the event viewer of the application log, do not change the operation that is performed when the maximum log size is reached to "Do not overwrite events (clear log manually). Otherwise, any error that occurs when the maximum log size is reached is not output to the log.
  - Do not stop the Windows service, print spooler service.
    The operating system information collection function uses the Windows Management Instrumentation (WMI) to collect the configuration information. However, when the print spooler service is stopped, an error is reported to WMI and configuration information is not collected correctly.
  - If the following registry is set to under 20000 (this means 20 seconds), Windows OS may become hung-up at OS Shutdown. Therefore, be sure to set more than 20000 (this means 20 seconds). (Default value: 20000)
    HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\WaitToKillServiceTimeout
    (This registry determines how long the system waits after OS shutdown before stopping services.)
  - The following message may be displayed when PSA starts up, but this dose not cause any problems.
    "PM child process abnormal end [6:750] (tagt) 1:0x00000000"
    FJSVpsa Event ID 62

4.5.1 Checking the management LAN settings

This section describes how to check the management LAN settings.
For communication of PSA with the MMB via the management LAN, the NIC connected to the management LAN on the partition side must be active.

Note: If you perform batch installation using the batch installer included in the High-Reliability Tools, configure the management LAN after the batch installation is completed.

(1) Verifying the NIC for the management LAN

In Device Manager, display the properties of the network adapters (Intel PRO/100 VE Network Connection and Intel PRO/100 M Network Connection) assigned to the management LAN, and check the settings in [Location] on the [General] tab.

Connect the network adapters for the management LAN to MMB#0 and MMB#1 as follows:

- MMB#0: PCI Bus 1, Device 8, Function 0
- MMB#1: PCI Bus 1, Device 0, Function 0

Use the teaming function of Intel PROSet to configure the above network adapters for duplicated communication with the management LAN.

For Intel PROSet teaming, specify the IP addresses of the devices for the management LAN that are configured for duplicated communication.

(2) Configuring the two network adapters for the management LAN so that the adapters are duplicated

Use the teaming function of Intel PROSet to configure the network adapter for the management LAN to guarantee management LAN operation for duplicated communication.

Install Intel PROSet beforehand.

Note:

- Change the VLAN setting of the MMB management LAN hub to "VLAN Mode." (For details, see 2.2.4.5, Setting a management LAN hub.)
- The Spanning Tree Protocol (STP) function of the switch connected to the user port (management LAN) of the MMB must be disabled.
- To make settings through a connection to a remote desktop, a console session connection must be established. Establish this type of connection according to the following procedure:

1Select [Start], and click [Run]. The [Run] dialog box opens.

2Enter "mstsc /v:<servername/ip address> /console" in the [Open] input box, and click the [OK] button.

Note:Using the teaming function for the management LAN may change the IP address of the management LAN because it is identified as a new device. If the IP address of the management LAN is changed, a connection established from a remote desktop to the management LAN may be terminated.

In this event, establish a connection by using the KVM and specifying the correct IP address.

For the connection to the server, specify an actual server name and IP address in <servername/ip address>. (A virtual IP address in the cluster cannot be specified.)

* For details on the options for mstsc, you can enter "mstsc /?".

1 Click [Control Panel] → [Administrative Tools] → [Computer Management] → [Device Manager].

2 Open [Network Adapter], and click [Inter(R) PRO/100 VE Network Connection] to select it.

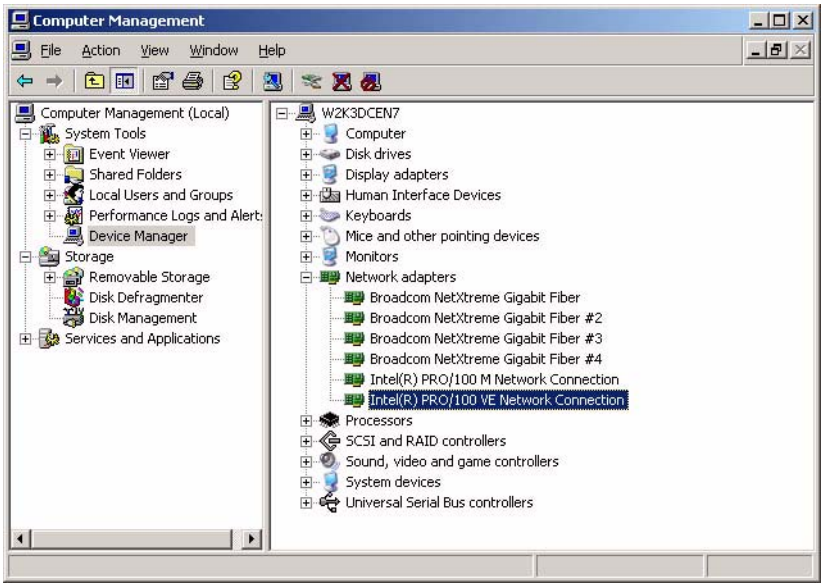


Figure 4.15 [Computer Management] window

3 The [Intel(R) PRO/100 VE Network Connection Properties] dialog box opens. Click the [Teaming] tab, select [Team with other adapters], and click the [New Team] button.

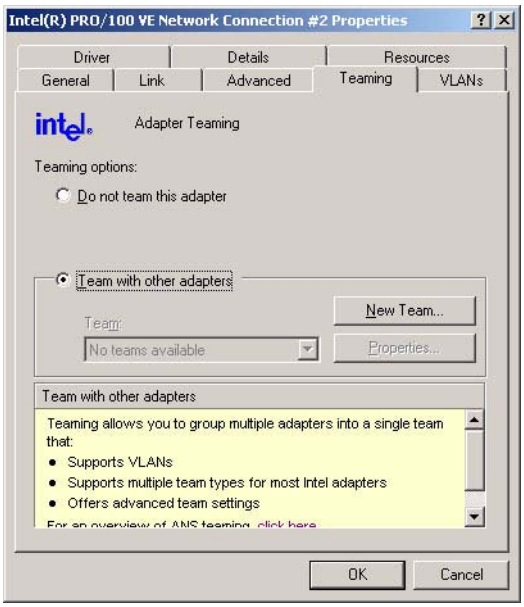


Figure 4.16 [Teaming] tab

4 The [New Team Wizard] window is displayed. Enter a team name (the default team name is Team #n), and click the [Next] button.

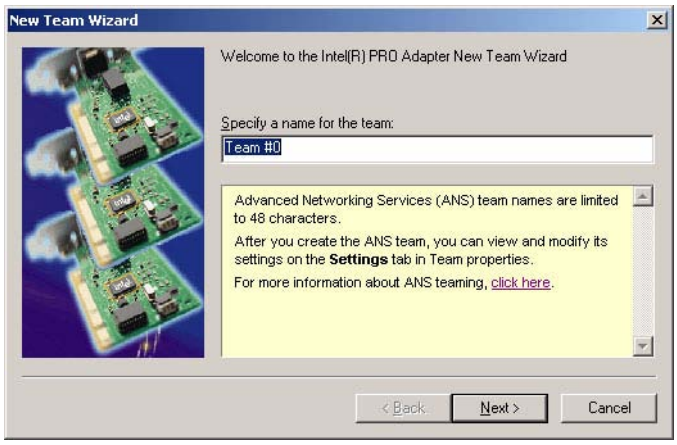


Figure 4.17 [New Team Wizard] dialog box

5 A list of network adapters is displayed for teaming.
Select [Intel(R) PRO/100 VE Network Connection] and [Intel(R) Pro/100 M Network Connection] check boxes, and click the [Next] button.

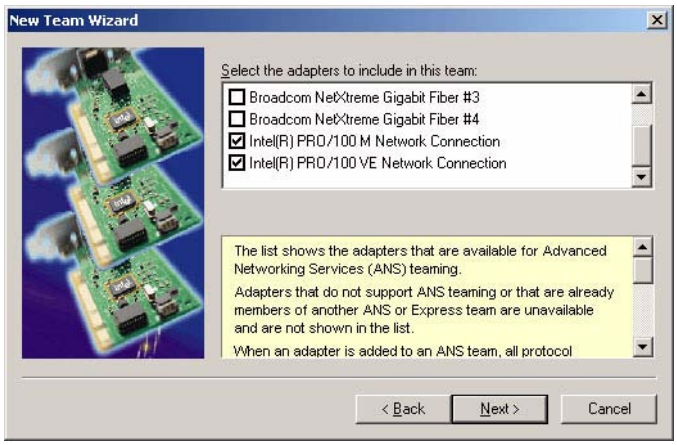


Figure 4.18 List of network adapters

6 Select [Adapter Fault Tolerance] from the mode list, and click the [Next] button.

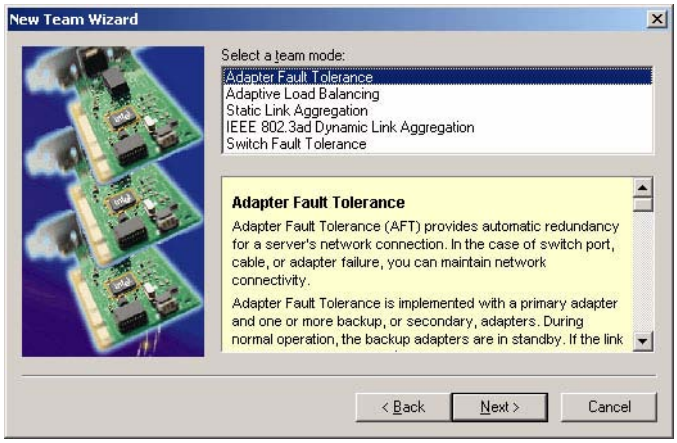


Figure 4.19 List of team mode

7 The following window is displayed. Teaming configuration processing starts when you click the [Finish] button.

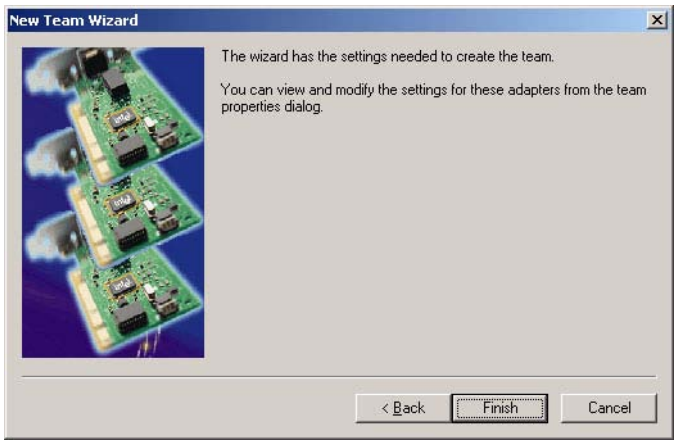


Figure 4.20 Selection Completed window

8 When the configuration processing for Teaming is finished, a Teaming device is created, and Team properties are displayed.
Click the [Settings] tab, and confirm that the displayed adapter information is correct. If the information is correct, click the [OK] button to exit. Otherwise, click the [Remove Team] button to delete the Teaming device, and start again from step 2 of this procedure.

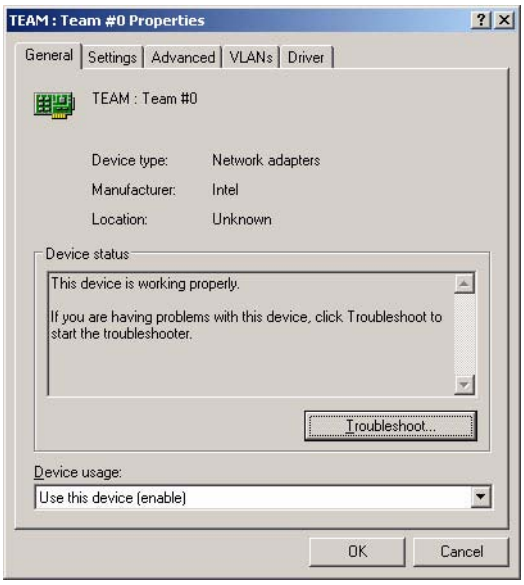


Figure 4.21 Team Number 0 Properties window

9 The [Intel(R) PRO/100 VE Network Connection Properties] dialog box opens again.
Click the [OK] button to finish processing, and close [Computer Management].

10 Click [Control Panel] and [Network Connections].
A list of networks is displayed.

11 Select the network whose device name is the specified Team name (e.g., Team #0), and select [Properties] from the right-click menu.

12 Select [Internet Protocol (TCP/IP)], click the [Properties] button, and specify the IP address, subnet mask, default gateway, and other parameters in the [Internet Protocol (TCP/IP) Properties] dialog box.

13 Click the [Configure] button to display the Team properties.

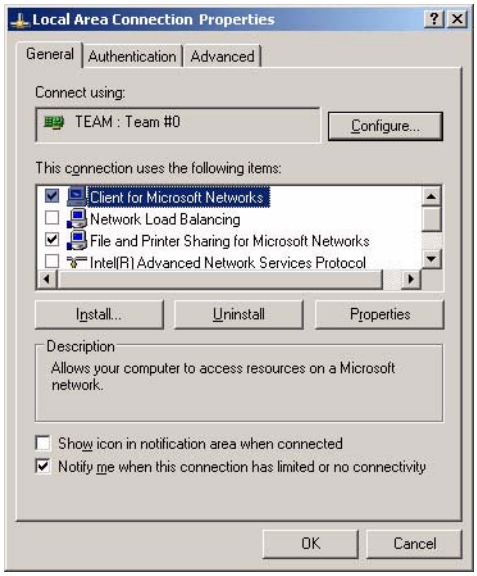


Figure 4.22 [Local Area Connection Properties] dialog box

14 Click the [Advanced] tab, select [Probe] in [Settings], select [Enable] in [Value], and click the [OK] button.
As a result, the adapter activates its link monitoring function, thereby setting management LAN duplication.
Reboot to make the Teaming settings effective.

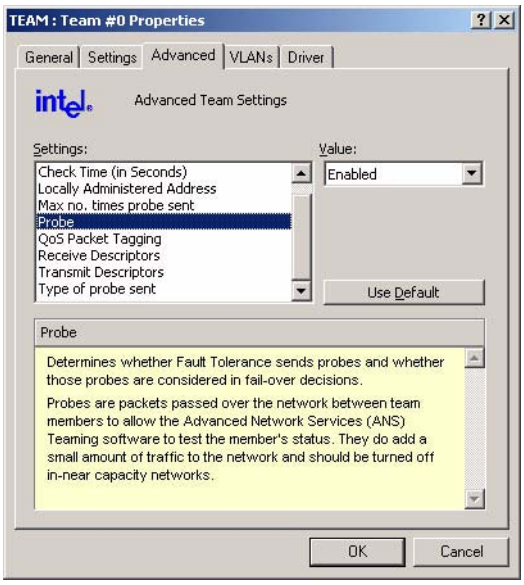


Figure 4.23 [Advanced] tab

4.5.2 Setting the destination of trap sending from the partition

Note:

- SNMP v.3 is not supported in Windows.
- Perform the tasks for this setting only if the setting is required.
- If partitions are managed by operation management software, this setting is required.

1 Click [Control Panel] → [Administrative Tools].
2 Click [Computer Management].
3 In the left tree, click [Services and Applications] → [Services].
4 In the right pane, click [SNMP Service].
The [SNMP Service] dialog box appears.
5 Click the [Trap] tab.
6 Enter the desired community name in the [Community Name] field, and click [Add to List].
7 Click [Add] in the [Trap Send Destination] area.

8 Enter the host name or IP address of the server that will receive traps (for notification), and click [Add].
9 Click [OK].
10 Click the [Action] menu → [Restart] to restart the SNMP service.

Verifying the trap transfer destination setting

To verify the trap transfer destination setting, use the standard SNMP Service trap that is normally used during the SNMP Service restart in step 10. Check the reception of this trap to verify the transfer destination setting.

Remarks:A trap receipt application or trap manager must be active at the trap transfer destination to ensure that standard SNMP Service traps can be received.

On the trap transfer source machine, restart SNMP Service by performing step 10.

As a result, the trap receipt application at the trap transfer destination receives the "ColdStart" standard SNMP Service trap.

For example, if the trap transfer destination is a Linux machine, the following message is added to syslog when snmptrapd receives the trap, and this indicates that the trap transfer destination can correctly receive such traps.

Aug 17 14:50:03 shaka snmptrapd[2600]: 2005-08-17 14:50:03 pq-server.fujitsu.com [192.168.0.162] (via 192.168.0.162) TRAP, SNMP v1, community public SNMPv2-SMI::enterprises.211.1.31.1.2.100.3 Cold Start Trap (0) Uptime: 0:00:00.00

4.5.3 Setting the destinations of trap and e-mail sending via the MMB

Note:

- Perform the tasks for this setting only if the setting is required.
- If partitions are managed by operation management software, this setting is required.

Destinations for trap and e-mail sending via the MMB are the addresses set with the MMB Web UI.

See Section 5.1.2, "System SNMP setting." for the MMB trap destination. See Section 2.2.3.5, "SMTP settings." for the e-mail destination.

4.5.4 Windows firewall setting

To run your system with the Windows firewall enabled, specify [Exceptions] for the following ports to guarantee that data can be sent to and received from the MMB through the following ports:

- TCP port used by PSA: 24450 port
- UDP port used for SNMP: 161 port

1 Click [Control Panel] → [Windows Firewall].
The [Windows Firewall] window opens.

2 Click the [Exceptions] tab, and click the [Add Port] button.
The [Add Port] dialog box opens.

3 Enter the port number used by PSA, and click the [OK] button.

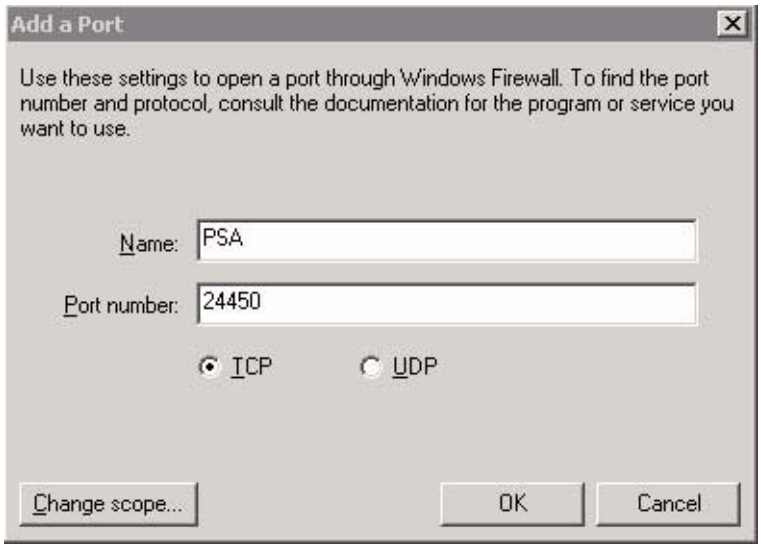


Figure 4.24 [Add a Port] dialog box

4 Click the [Add Port] button in the [Windows Firewall] window again.
The [Add Port] dialog box opens.

5 Enter the port number used by SNMP, and click the [OK] button.

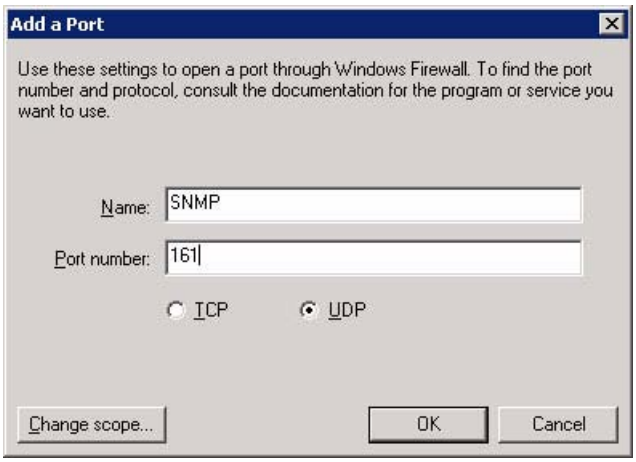


Figure 4.25 [Add a Port] dialog box

6 In the [Windows Firewall] window, click the [OK] button, and this ends the setting procedure.

4.5.5 Setting Watchdog monitoring after a STOP error (a fatal system error) occurs

If a STOP error (a fatal system error) occurs in the system, the results are as follows:

- "Panic" is displayed for "System Progress" of the relevant partition in [Partition]-[Power Control] of the MMB Web-UI.
- A memory dump is collected in the system.

In such cases, to prevent the system from freezing or otherwise becoming non-responsive, monitoring using the Watchdog timer can be set.

When the specified time has elapsed, the MMB executes a Hard Reset, and the OS is rebooted.

Setting procedure

1 Open the following file:
[PSA installation folder] \etc\opt\FJSVpsa\usr\pnwatchdog.conf
(Example: C:\Program Files\fujitsu\FJSVpsa\etc\opt\FJSVpsa\usr\pnwatchdog.conf)

2 Specify a key value as shown below. The default is 0.
Section: [WATCHDOG]
Key: [TIMER]
Set value (unit: seconds) 0 (Watchdog timer not used)
1 to 6000 (Watchdog timer monitoring time)
Remarks: For the set value, measure the time required for memory dump in the applicable partition and determine the appropriate value. If the required time exceeds 6000 seconds (one hour and 40 minutes), specify 0 (Watchdog timer not used).
If the set value is shorter than the time required for memory dump processing, the Watchdog timer expires, resulting in execution of a Hard Reset, with the result that the memory dump cannot be collected correctly.

4.5.6 PSA update installation

This section describes the PSA update installation procedure.

Remarks: For the procedure for obtaining fix programs, ask your Fujitsu certified engineer or the support center.

Note: If the PEXU has been mounted, use PSA-1.10 or later.

(1) Minor update installation

1 Save the fix program (fjpsaxxxx.exe) to the desired folder.

2 Start the fix program. The following installation preparation window opens.

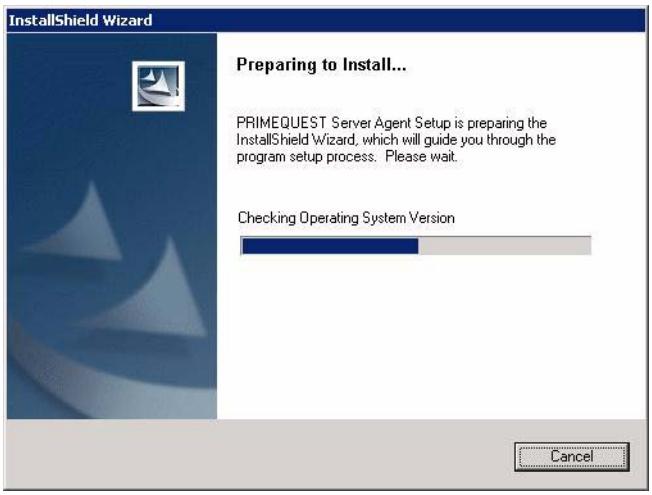


Figure 4.26 Installation preparation window

3 When the following window is displayed to indicate that the system is ready for installation, click the [Next] button to perform installation. Program updating is started.

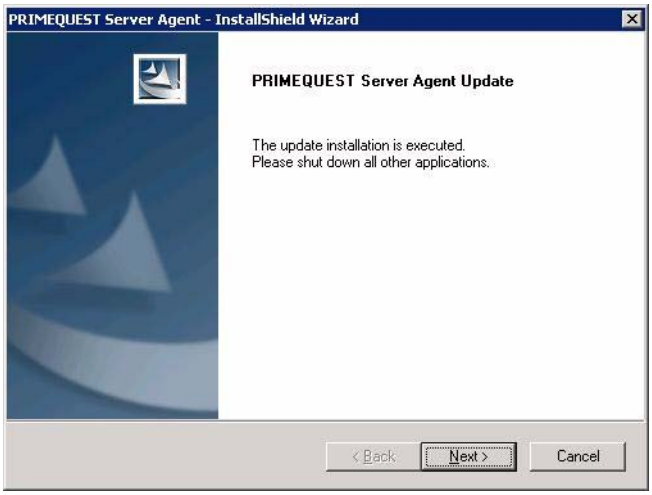


Figure 4.27 Update installation window

4 Click the [Finish] button to finish processing.

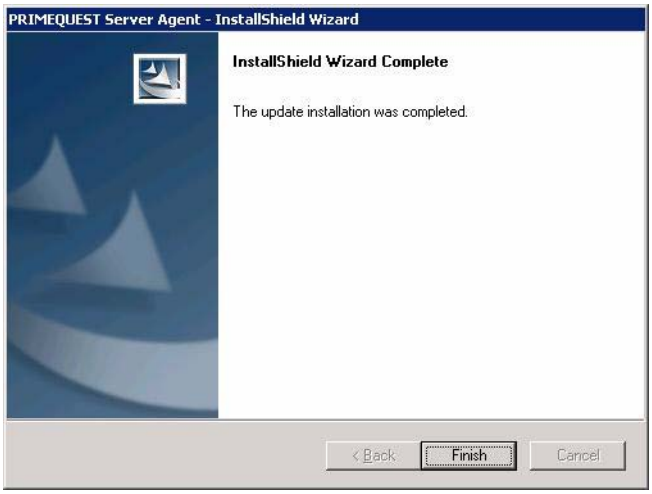


Figure 4.28 Update completion window

5 If a restart is necessary, a dialog box is displayed that prompts the user to specify whether to restart the computer. When this dialog box is displayed, confirm that a restart at this time would cause no problem, select the restart option, and click the [Finish] button.

(2) Major update installation

1 Save the fix program (fjpsaxxxx.exe) to the desired folder.

2 Start the fix program. The following installation preparation window opens.

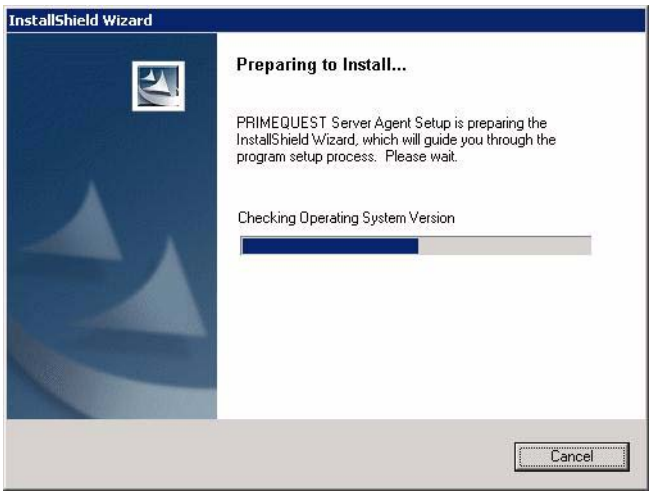


Figure 4.29 Installation preparation window

3 When a confirmation message is displayed, click the [OK] button. Uninstallation is started.

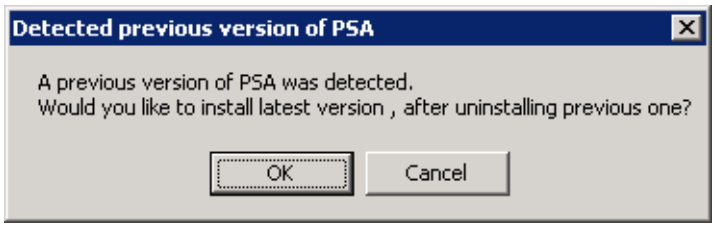


Figure 4.30 [Detected previous version of PSA] window

4 When uninstallation is completed, installation of the new version is started.

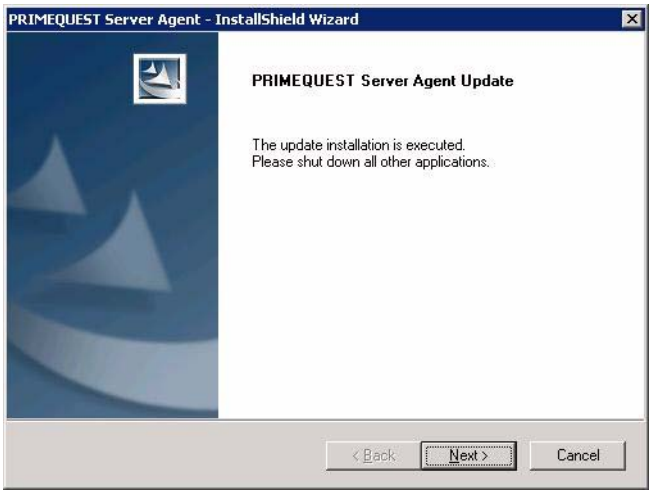


Figure 4.31 Update installation window

5 Specify the installation destination, and click the [Next] button.
By default, the new version is installed in Program Files\Fujitsu. To change the installation destination, click the [View] button, and specify a destination.

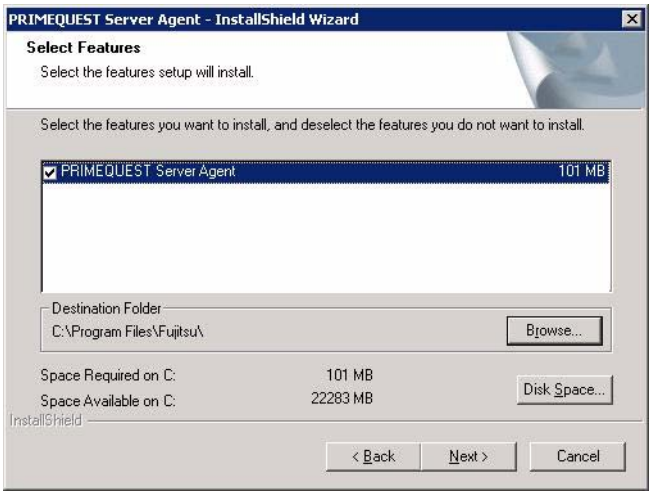


Figure 4.32 [Select Features] window

6 When installation is completed, the completion window shown below is displayed. Click the [Finish] button.

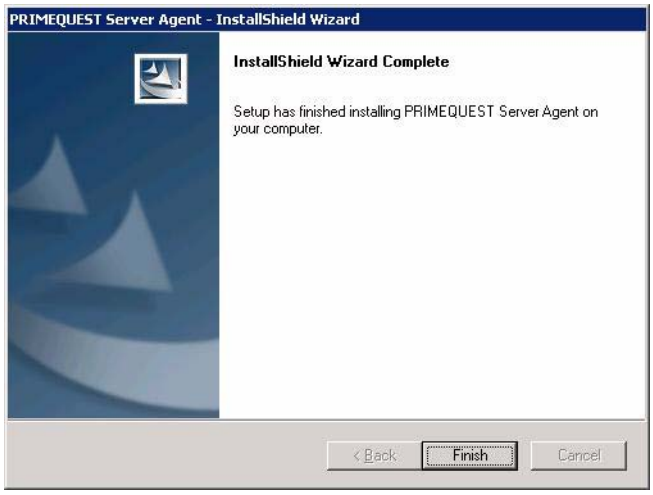


Figure 4.33 Installation completion window

7 If a restart is necessary, a dialog box is displayed that prompts the user to specify whether to restart the computer. When this dialog box is displayed, confirm that a restart at this time would cause no problem, select the restart option, and click the [Finish] button.

4.5.7 PSA uninstallation

This section describes the procedure for uninstalling PSA.

1 Click [Control Panel] → [Add/Remove Programs].
2 Select [PRIMEQUEST Server Agent] from [Currently Installed Programs], and click [Change/Delete].
3 A deletion confirmation message appears. Click [OK] to start uninstallation.

Figure 4.34 Confirmation message window

4 When uninstallation is completed, a maintenance completion window is displayed. Click [Finish].

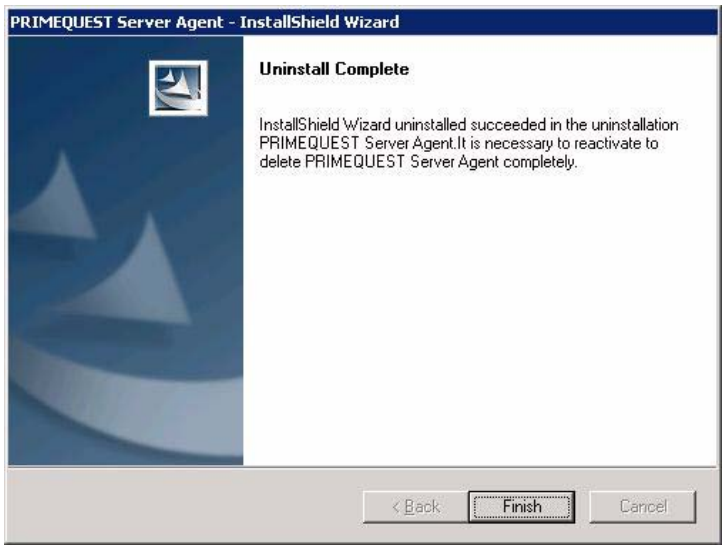


Figure 4.35 Maintenance completion window

5 If a restart is necessary, a dialog box is displayed that prompts the user to specify whether to restart the computer. When this dialog box is displayed, confirm that a restart at this time would cause no problem, select the restart option, and click the [Finish] button.

4.6 PSA Installation (Windows Server 2003) (PRIMEQUEST 520A/520/420)

This section describes procedure for installing PSA.

Required tasks:

- Checking the management LAN settings (→ 4.6.1)

Optional tasks:

- Setting the destination of trap sending from the partition (→ 4.6.2)
- Setting the destinations of trap and e-mail sending via the MMB (→ 4.6.3)
- Windows firewall setting (→ 4.6.4)
- Setting Watchdog monitoring after a STOP error (a fatal system error) occurs (→ 4.6.5)

Remarks:

- Use the PRIMEQUEST Software Installer or SystemcastWizard Lite to install PSA. If you want to manually install the PSA, see Chapter 4, "Manual PSA Installation" in the *PRIMEQUEST 500A/500/400 Series Reference Manual: Tools/Operation Information* (C122-E074EN).
  For details on installation using the PRIMEQUEST Software Installer, see Section 3.3.6.1, "Installation using the PRIMEQUEST Software Installer."
  For details on installation using SystemcastWizard Lite, see the *PRIMEQUEST SystemcastWizard Lite User's Guide* (C122-E010EN).
- When PSA is installed, the following setup tasks are automatically performed for PSA operation:

  1 Service setting
  - PRIMEQUEST Server Agent
  - PRIMEQUEST PEM Command Service
  - PRIMEQUEST PSA Environment Control Service

  2 Environment variable setting
  - PATH variable
    Value for use by PSA is added to the existing PATH variable.
  - FJSVpsa_INSTALLPATH variable
    This is a new variable added.

  3 Port setting
  The parameter is set to ensure that PSA uses the TCP:24450 port.

4 SNMP security setting

Make SNMP Service security settings because PSA must receive SNMP packets from the MMB.

The subsequent operations varies as follows depending on the parameter selected on the [Security tab] in the [Properties] dialog box of [SNMP Service] during PSA installation:

- If [Accept SNMP packets from any host] was selected:
  The SNMP security settings need not be made.
- If [Accept SNMP packets from these hosts] was selected:
  Make sure SNMP security settings unless the IP address of the MMB and localhost parameter are not specified.

Note: To change the SNMP Service security setting from [Accept SNMP packets from any host] to [Accept SNMP packets from these hosts] after PSA installation, or to change the IP address of the MMB, execute the SNMP security setting command (setsnmpsec). For details on this command, see the *PRIMEQUEST 580A/540A/520A/500/400 Series Reference Manual: Basic Operation/GUI/Commands* (C122-E003EN).

5 Window Management Instrumentation (WMI) setting

PSA collects information on PCI cards and SCSI devices by using WMI, which is installed as standard with Windows.

If the amount of memory and the number of internal handles that WMI uses to collect this information are insufficient because there are many LUNs, such as in RAIDs, change settings to the following values:

- Maximum amount of memory used: 536,870,912 bytes
- Maximum number of internal handles: 65,536

6 Task scheduler settings

To monitor for errors involving the power supply of the expansion file unit and FANs, make the following task scheduler settings:

Task name: File Unit Status Check

Activation interval: 5 minutes

The configuration information is collected when the PSA is started. Error monitoring is then performed based on the collected information until the next time the PSA is started. If an expansion file unit is not connected, configuration information is collected according to the schedule, but the process is completed immediately without error monitoring performed. Therefore, no additional workload is imposed on the system.

Notes:

- In the first attempt to open the PSA window from the Web-UI after the system restart following PSA installation, the error message "E_33077 PSA is Not Active. (01:0000)" may be displayed. This may occur because PSA requires a certain amount of time to acquire sensor information for the system. Wait a few minutes, then try to open the window again.
- After changing the IP address of an MMB or management LAN, be sure to restart PSA. Otherwise, a PSA screen display error occurs in the Web-UI and detectable errors in PSA cannot be reported.
- For PSA setup in Windows, the following points must be noted:
  - Do not enable Visual Notification in the Dr. Watson options. Otherwise, if a PSA error occurs and a message box opens, PSA cannot be restarted until the message box is closed.
  - Do In the properties for the system log of the event viewer of the application log, do not change the operation that is performed when the maximum log size is reached to "Do not overwrite events (clear log manually). Otherwise, any error that occurs when the maximum log size is reached is not output to the log.
  - Do not stop the Windows service, print spooler service.
    The operating system information collection function uses the Windows Management Instrumentation (WMI) to collect the configuration information. However, when the print spooler service is stopped, an error is reported to WMI and configuration information is not collected correctly.
  - If the following registry is set to under 20000 (this means 20 seconds), Windows OS may become hung-up at OS Shutdown. Therefore, be sure to set more than 20000 (this means 20 seconds). (Default value: 20000)
    HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\WaitToKillServiceTimeout
    (This registry determines how long the system waits after OS shutdown before stopping services.)
  - The following message may be displayed when PSA starts up, but this dose not cause any problems.
    "PM child process abnormal end [6:750] (tagt) 1:0x00000000"
    FJSVpsa Event ID 62

4.6.1 Checking the management LAN settings

This section describes how to check the management LAN settings.
For communication of PSA with the MMB via the management LAN, the NIC connected to the management LAN must be active.

Note: If you perform batch installation using the batch installer included in the High-Reliability Tools, configure the management LAN after the batch installation is completed.

(1) Verifying the NIC for the management LAN

In Device Manager, display the properties of the network adapters (Intel PRO/100 VE Network Connection) assigned to the management LAN, and check the settings in [Location] on the [General] tab.

Connect the network adapter for the management LAN to MMB as follows:

- MMB: PCI Bus 1, Device 8, Function 0

(2) Setting the network adapter for the management LAN

Note:

- The Spanning Tree Protocol (STP) function of the switch connected to the user port (management LAN) of the MMB must be disabled.
- To make settings through a connection to a remote desktop, a console session connection must be established. Establish this type of connection according to the following procedure:

  1 Select [Start], and click [Run]. The [Run] dialog box opens.
  2 Enter "mstsc /v:<servername/ip address> /console" in the [Open] input box, and click the [OK] button.
  For the connection to the server, specify an actual server name and IP address in <servername/ip address>. (A virtual IP address in the cluster cannot be specified.)
  * For details on the options for mstsc, you can enter "mstsc /?".

1 Click [Control Panel] and [Network Connections].
A list of networks is displayed.
2 Select the network whose device name is the specified Team name and select [Properties] from the right-click menu.
3 Select [Internet Protocol (TCP/IP)], click the [Properties] button, and specify the IP address, subnet mask, default gateway, and other parameters in the [Internet Protocol (TCP/IP) Properties] dialog box.

4.6.2 Setting the destination of trap sending from the partition

Note:

- SNMP v.3 is not supported in Windows.
- Perform the tasks for this setting only if the setting is required.
- The setting is required for linkage with operation management software.

1 Click [Control Panel] → [Administrative Tools].
2 Click [Computer Management].
3 In the left tree, click [Services and Applications] → [Services].
4 In the right pane, click [SNMP Service].
The [SNMP Service] dialog box appears.
5 Click the [Trap] tab.
6 Enter the desired community name in the [Community Name] field, and click [Add to List].
7 Click [Add] in the [Trap Send Destination] area.
8 Enter the host name or IP address of the server that will receive traps (for notification), and click [Add].
9 Click [OK].
10 Click the [Action] menu → [Restart] to restart the SNMP service.

Verifying the trap transfer destination setting

To verify the trap transfer destination setting, use the standard SNMP Service trap that is normally used during the SNMP Service restart in step 10. Check the reception of this trap to verify the transfer destination setting.

Remarks: A trap receipt application or trap manager must be active at the trap transfer destination to ensure that standard SNMP Service traps can be received.

On the trap transfer source machine, restart SNMP Service by performing step 10.

As a result, the trap receipt application at the trap transfer destination receives the "ColdStart" standard SNMP Service trap.

For example, if the trap transfer destination is a Linux machine, the following message is added to syslog when snmptrapd receives the trap, and this indicates that the trap transfer destination can correctly receive such traps.

Aug 17 14:50:03 shaka snmptrapd[2600]: 2005-08-17 14:50:03 pq-server.fujitsu.com [192.168.0.162] (via 192.168.0.162) TRAP, SNMP v1, community public SNMPv2-SMI::enterprises.211.1.31.1.2.100.3 Cold Start Trap (0) Uptime: 0:00:00.00

4.6.3 Setting the destinations of trap and e-mail sending via the MMB

Note:

- Perform the tasks for this setting only if the setting is required.
- The setting is required for linkage with operation management software.

Destinations for trap and e-mail sending via the MMB are the addresses set with the MMB Web UI.

See Section 5.1.2, "System SNMP setting." for the MMB trap destination. See Section 2.2.3.5, "SMTP settings." for the e-mail destination.

4.6.4 Windows firewall setting

To run your system with the Windows firewall enabled, specify [Exceptions] for the following ports to guarantee that data can be sent to and received from the MMB through the following ports:

- TCP port used by PSA: 24450 port
- TCP port used for SNMP: 161 port

1 Click [Control Panel] → [Windows Firewall].
The [Windows Firewall] window opens.

2 Click the [Exceptions] tab, and click the [Add Port] button.
The [Add Port] dialog box opens.

3 Enter the port number used by PSA, and click the [OK] button.

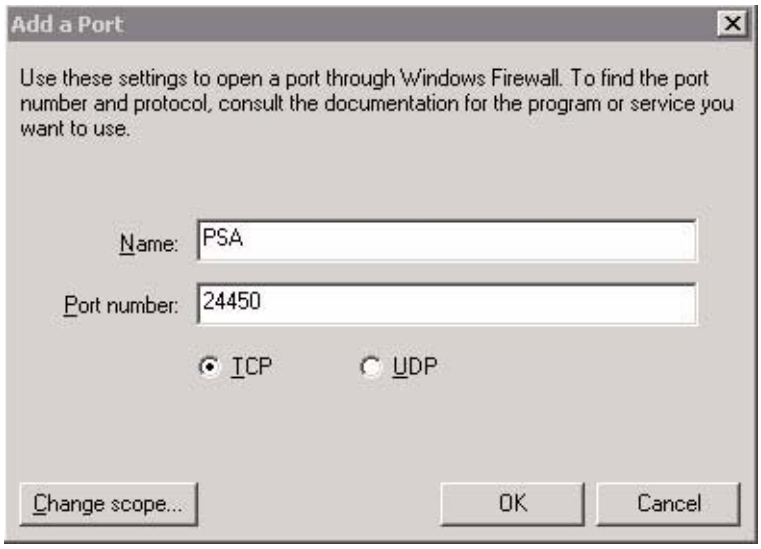


Figure 4.36 [Add a Port] dialog box

4 Click the [Add Port] button in the [Windows Firewall] window again.
The [Add Port] dialog box opens.

5 Enter the port number used by SNMP, and click the [OK] button.

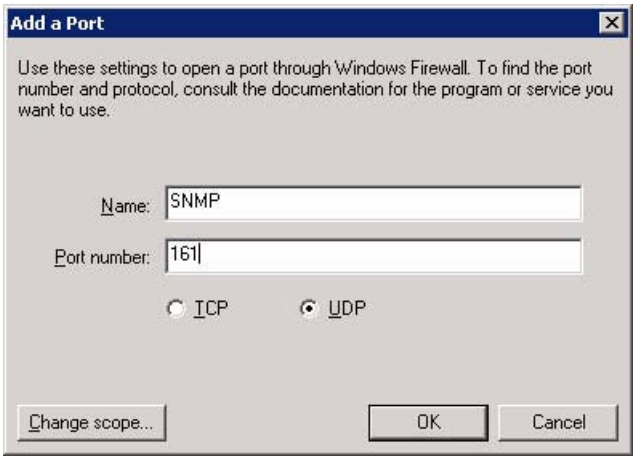


Figure 4.37 [Add a Port] dialog box

6 In the [Windows Firewall] window, click the [OK] button, and this ends the setting procedure.

4.6.5 Setting Watchdog monitoring after a STOP error (a fatal system error) occurs

If a STOP error (a fatal system error) occurs in the system, the results are as follows:

PRIMEQUEST 520A/520/420

- "Panic" is displayed for "System Progress" of the relevant partition in [Partition]-[Power Control] of the MMB Web-UI.
- A memory dump is collected in the system.

In such cases, to prevent the system from freezing or otherwise becoming non-responsive, monitoring using the Watchdog timer can be set.

When the specified time has elapsed, the MMB executes a Hard Reset, and the OS is rebooted.

Setting procedure

1 Open the following file:
[PSA installation folder] \etc\opt\FJSVpsa\usr\pnwatchdog.conf
(Example: C:\Program Files\fujitsu\FJSVpsa\etc\opt\FJSVpsa\usr\pnwatchdog.conf)

2 Specify a key value as shown below. The default is 0.
Section: [WATCHDOG]
Key: [TIMER]
Set value (unit: seconds) 0 (Watchdog timer not used)
1 to 6000 (Watchdog timer monitoring time)
Remarks: For the set value, measure the time required for memory dump in the environment to be applied and determine the appropriate value. If the required time exceeds 6000 seconds (one hour and 40 minutes), specify 0 (Watchdog timer not used).
If the set value is shorter than the time required for memory dump processing, the Watchdog timer expires, resulting in execution of a Hard Reset, with the result that the memory dump cannot be collected correctly.

4.6.6 PSA update installation

This section describes the PSA update installation procedure.

Remarks: For the procedure for obtaining fix programs, ask your Fujitsu certified engineer or the support center.

Note: If the PEXU has been mounted, use PSA-1.10 or later.

(1) Minor update installation

1 Save the fix program (fjpsaxxxx.exe) to the desired folder.

2 Start the fix program. The following installation preparation window opens.

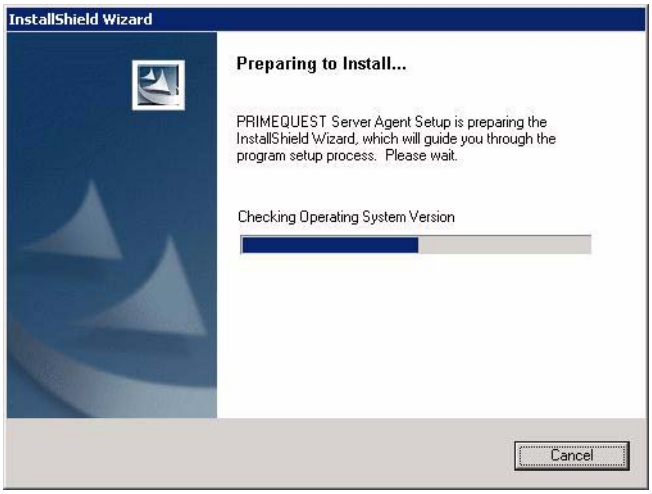


Figure 4.38 Installation preparation window

3 When the following window is displayed to indicate that the system is ready for installation, click the [Next] button to perform installation. Program updating is started.

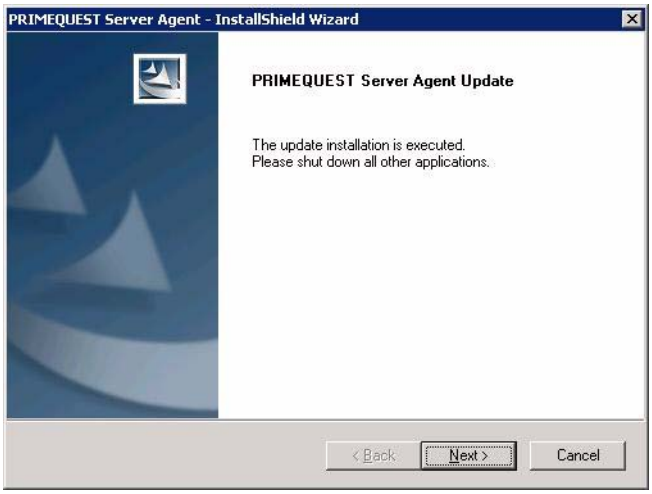


Figure 4.39 Update installation window

4 Click the [Finish] button to finish processing.

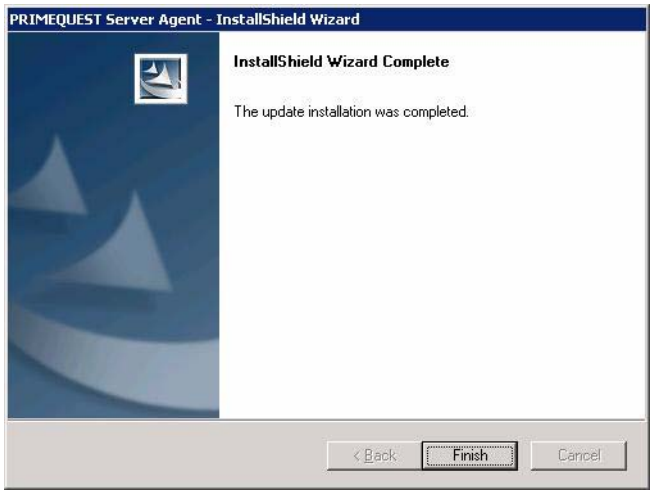


Figure 4.40 Update completion window

5 If a restart is necessary, a dialog box is displayed that prompts the user to specify whether to restart the computer. When this dialog box is displayed, confirm that a restart at this time would cause no problem, select the restart option, and click the [Finish] button.

(2) Major update installation

1 Save the fix program (fjpsaxxxx.exe) to the desired folder.

2 Start the fix program. The following installation preparation window opens.

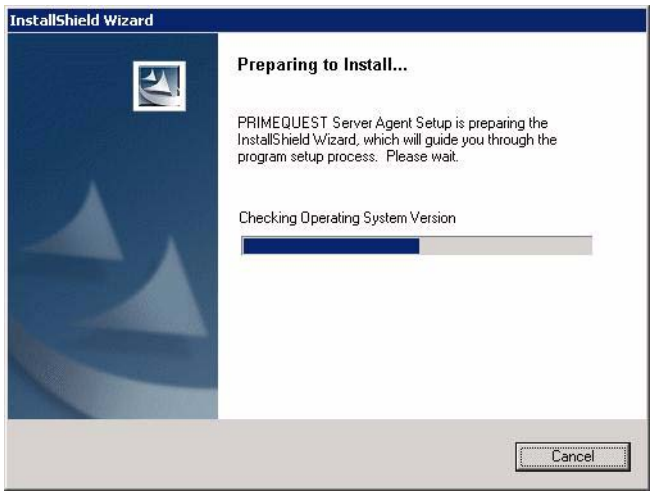


Figure 4.41 Installation preparation window

3 When a confirmation message is displayed, click the [OK] button. Uninstallation is started.

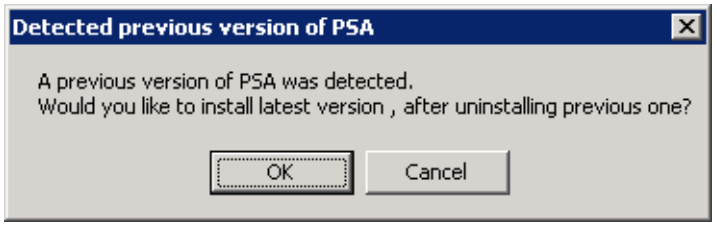


Figure 4.42 [Detected previous version of PSA] window

4 When uninstallation is completed, installation of the new version is started.

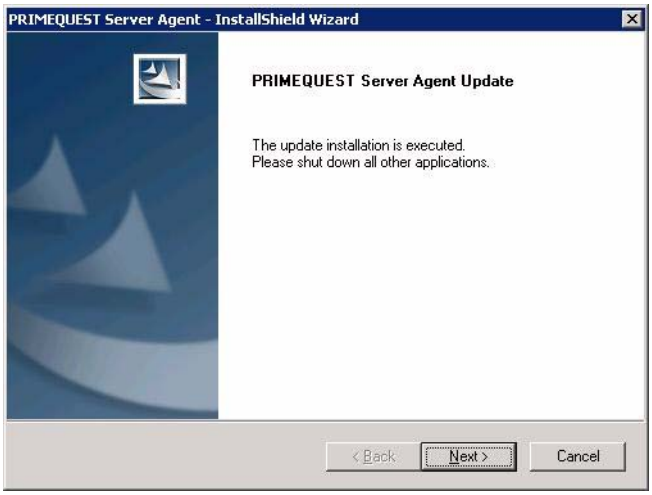


Figure 4.43 Update installation window

5 Specify the installation destination, and click the [Next] button.
By default, the new version is installed in Program Files\Fujitsu. To change the installation destination, click the [View] button, and specify a destination.

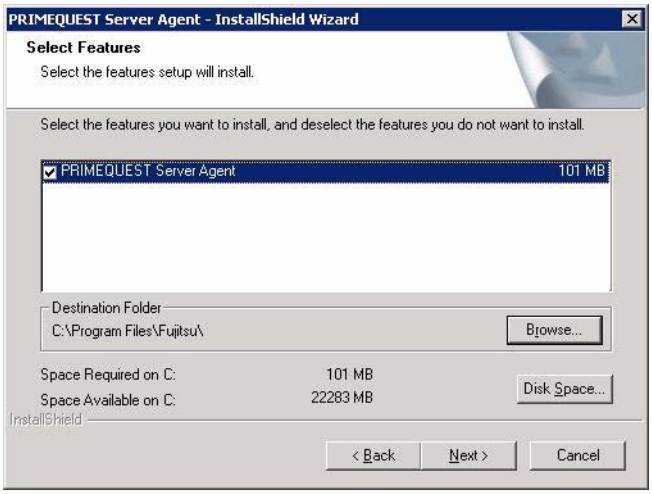


Figure 4.44 [Select Features] window

6 When installation is completed, the completion window shown below is displayed. Click the [Finish] button.

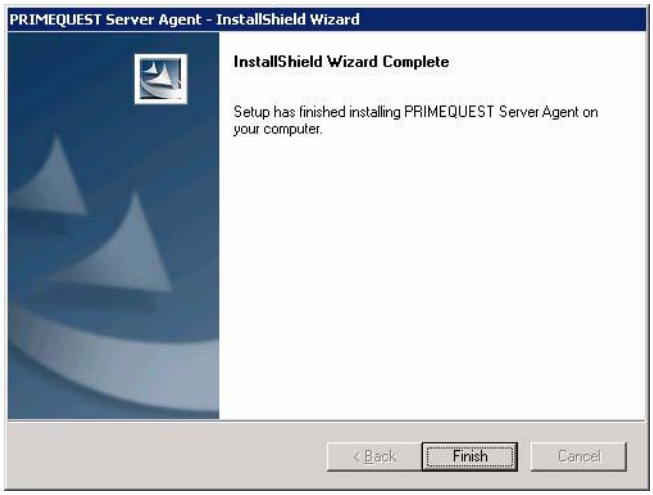


Figure 4.45 Installation completion window

7 If a restart is necessary, a dialog box is displayed that prompts the user to specify whether to restart the computer. When this dialog box is displayed, confirm that a restart at this time would cause no problem, select the restart option, and click the [Finish] button.

4.6.7 PSA uninstallation

This section describes the procedure for uninstalling PSA.

1 Click [Control Panel] → [Add/Remove Programs].
2 Select [PRIMEQUEST Server Agent] from [Currently Installed Programs], and click [Change/Delete].
3 A deletion confirmation message appears. Click [OK] to start uninstallation.

Figure 4.46 Confirmation message window

4 When uninstallation is completed, a maintenance completion window is displayed. Click [Finish].

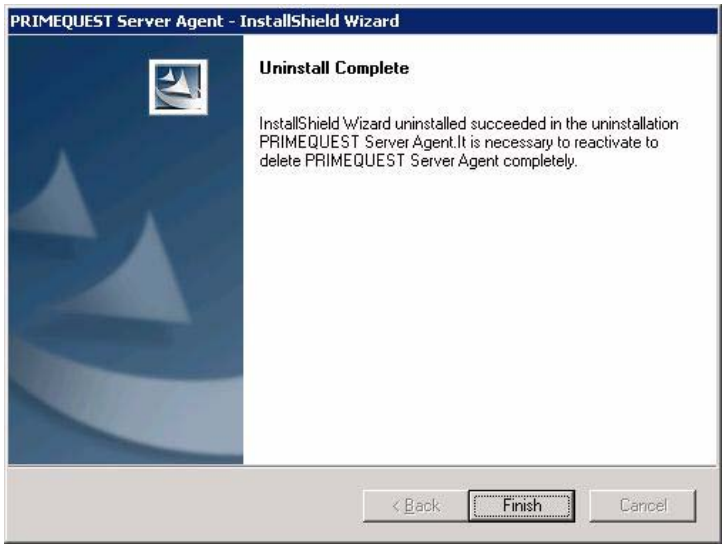


Figure 4.47 Maintenance completion window

5 If a restart is necessary, a dialog box is displayed that prompts the user to specify whether to restart the computer. When this dialog box is displayed, confirm that a restart at this time would cause no problem, select the restart option, and click the [Finish] button.

4.7 PSA Settings

For details on PSA settings on a system with Windows Server 2008 installed, see the *PRIMEQUEST Windows Server 2008 User's Guide* (C122-E087EN).

4.8 PSA Monitoring Setup

PSA is a system management application program that runs on an OS of the PRIMEQUEST machine to monitor for failures in the hardware and maintain the configuration. This section describes items you need to set up in the PSA window during installation.

- Setting S.M.A.R.T. (→ 4.8.1)
- Setting Watchdog (→ 4.8.2)

For saving the settings that have been made, see Section 4.13.1, "Saving PSA setup information."

4.8.1 Setting S.M.A.R.T.

Setting Targets of S.M.A.R.T.

The Self-Monitoring, Analysis and Reporting Technology (S.M.A.R.T.) function for predictive monitoring can be set for hard disks. This section explains how to enable or disable S.M.A.R.T. for predictive detection of hard disks that support S.M.A.R.T.
S.M.A.R.T. applies to the entire group of hard disks.
S.M.A.R.T. monitors the following disks:

- Built-in disks (excluding those which do not support S.M.A.R.T.)
- External disks (excluding RAID units and those which do not support S.M.A.R.T.)

Remarks:Only a user with setting authority can set or change the monitoring method.
A user without setting authority can only reference it.

Information to be monitored and processing to be performed

- Information to be monitored

  S.M.A.R.T. performs predictive monitoring for the information types below and reports when the threshold defined for each of them in S.M.A.R.T. is exceeded. The threshold for each item depends on the type of disk of each vendor.

  - Temperature
  - Read error rate
  - Write error rate
  - Seek error rate
  - Spin-up time
  - Number of remaining alternate sectors

  After monitoring is set, the system periodically (at about six-hour intervals) polls S.M.A.R.T. on each disk to check for predictive detection.

- Processing performed at detection of a predictive sign of error
  - Blinks the Fault LED on the relevant disk by repeating a cycle of "four quick blinks + pause"
  - Outputs information posted from S.M.A.R.T. to SYSLOG and reports it (REMCS/e-mail)

Procedure

1 Click [Partition] → [Partition#x] → [PSA] → [Setup] → [S.M.A.R.T.].
The [S.M.A.R.T.] window is displayed.

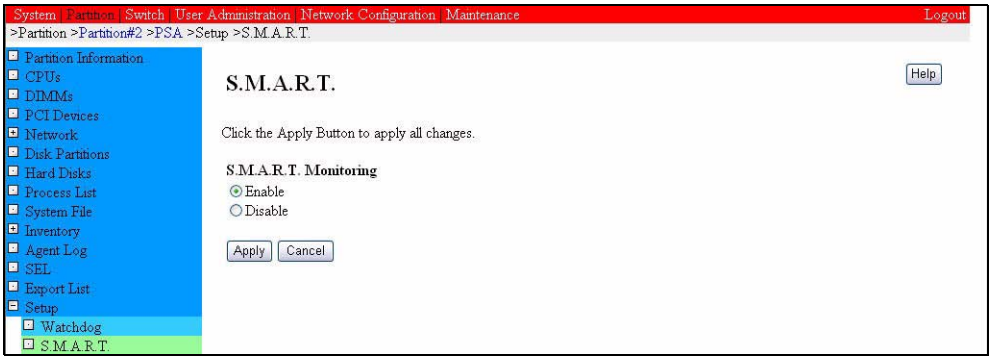


Figure 4.48 [S.M.A.R.T.] window

2 Select [Enable] or [Disable] and click the [Apply] button.

Item	Description
S.M.A.R.T. Monitoring	• [Enable]: Enables S.M.A.R.T. monitoring. • [Disable]: Disables S.M.A.R.T. monitoring. Default: [Enable]

4.8.2 Setting Watchdog

Information to be monitored

Watchdog monitoring includes two modes: Software Watchdog and Boot Watchdog. These two watchdog modes are explained below. To enable Watchdog monitoring, specify timeout data and action (action can be set only for Software Watchdog).

- Software Watchdog
  Software Watchdog causes the MMB firmware to periodically monitor the condition and takes the specified action if a Watchdog timer restart instruction is not given from PSA to MMB within the specified period.
- Boot Watchdog
  Boot Watchdog takes the specified action if OS boot fails to complete its processing within the specified period. Boot Watchdog options other than the time-out value can be set in the MMB ASR window. In the MMB ASR window, Boot Watchdog can be disabled in case of emergency.

Before making the Watchdog setting

Before setting the TimeOut value for Boot Watchdog, measure the standard value for a TimeOut value according to the procedure below.

For the actual setting value, use a value that is twice as large as the measured value to secure a sufficient margin of safety.

Remarks: This operation can be performed only by a user with sufficient privileges for this setting.

Note: When the dump environment is set for Linux, also set the dump information storing time which is required for storing dump information after making the dump environment setting.

1 Click [Partition] → [Power Control].
The [Power Control] window appears.

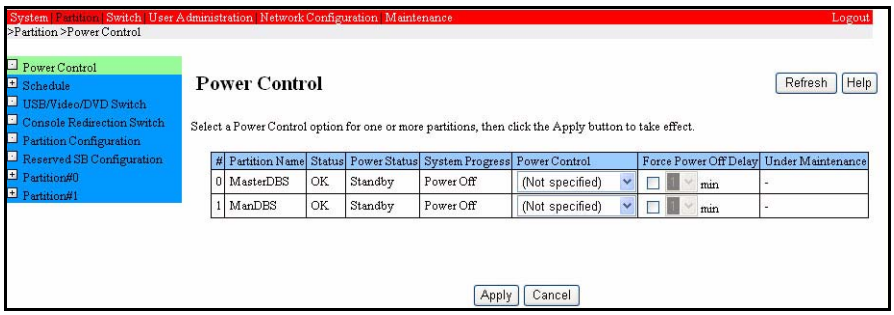


Figure 4.49 [Power Control] window

[For Linux]

2 Confirm that the [System Progress] field of the partition for which time is to be measured displays [OS Running].
Select [INIT] from the pull-down list in the [Power Control] window, and click the [Apply] button.

3 After dump information is saved, measure the time period from the start of rebooting the partition until the [System Progress] field displays [OS Running].

[For Windows]

2 Confirm that the [System Progress] field of the partition for which time is to be measured displays [Power Off].
Select [Power ON] from the pull-down list in the [Power Control] window.

3 Measure the time period from the clicking of the [Apply] button until the [System Progress] field displays [OS Running].

CAUTION

Malfunction

When performing the following operations, set Boot Watchdog [Disable]:

- CD-ROM boot
- Startup in single user mode
- Backup and restore using SystemcastWizard
  If the operation above is performed with Boot Watchdog set [Enable], operating system restart is repeated for the specified number of times, after which a specified action (Stop rebooting and Power Off, Stop rebooting, or Diagnostic Interrupt assert) is performed. The retry count for restarting the operating system and the action to be performed are determined according to the settings of the [ASR (Automatic Server Restart) Control] window of the MMB.
  At this time, by clicking the [Apply] button after checking the [Cancel Boot Watchdog] check box in the [ASR (Automatic Server Restart) Control] window of the MMB, Boot Watchdog can forcibly be set to [Disable].
  For details of the [ASR (Automatic Server Restart) Control] window of the MMB, see Section 5.3.11.3, "ASR (Automatic Server Restart) Control] window," in PART III "MMB" of the *PRIMEQUEST 580A/540A/520A/500/400 Series Reference Manual: Basic Operation/GUI/Commands* (C122-E003EN).
- If 0 is specified for the value of Number-of-Restart-Tries in the [ASR (Automatic Server Restart) Control] window of the MMB, the specified action is not executed even after a lapse of the time at which a timeout should occur. Do not specify 0 for the value when you enable watchdog monitoring.
  For details of the [ASR (Automatic Server Restart) Control] window of the MMB, see Section 5.3.11.3, "[ASR (Automatic Server Restart) Control] window in PART III "MMB" of the *PRIMEQUEST 580A/540A/520A/500/400 Series Reference Manual: Basic Operation/GUI/Commands* (C122-E003EN).

Procedure

1 Click [Partition] → [Partition#x] → [PSA] → [Setup] → [Watchdog].
The [Watchdog] window is displayed.

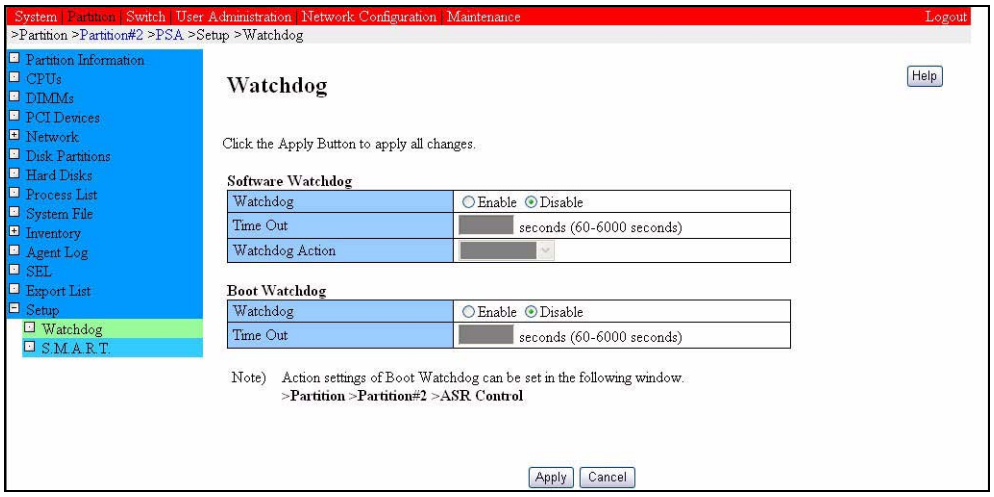


Figure 4.50 [Watchdog] window

2 Enter necessary data and click the [Apply] button.

Table 4.5 Displayed and setting items in the [Watchdog] window

Item	Description	
Software Watchdog	Watchdog	Specify whether to enable Software Watchdog monitoring. [Disable]: Do not monitor. [Enable]: Monitor. Default: [Disable]
	TimeOut	Specify the time-out value in seconds when Software Watchdog monitoring is enabled. Specification range: 60 - 6000 seconds (This option can be specified only when [Watchdog] is [Enable].) Default: 3600
	Watchdog Action	Select the action to be taken if recovery fails after time-out occurs. Select one from the drop-down list. • [No Action]: Do nothing. Do SEL output, however. • [Reset]: Reset the partition. • [Power Off]: Forcibly turn off the partition without executing the normal end processing for the OS (shutdown). • [Power Cycle]: Forcibly turn off the partition and then turn it on again. • [INIT]: Cause an INIT interrupt to the partition. (This option can be specified only when [Watchdog] is [Enable].) Default: [No Action]

Item	Description	
Boot Watchdog	Watchdog	Specify whether to enable Boot Watchdog monitoring. [Disable]: Do not monitor. [Enable]: Monitor. Note: When performing the following operations, set Boot Watchdog to [Disable]: •CD-ROM boot •Startup in single user mode •Backup and restore using SystemcastWizard Default: [Disable]
	TimeOut	Specify the time-out value in seconds when Software Watchdog monitoring is enabled. Specification range: 60 - 6000 seconds Note: Determine the value based on the duration from when the partition power is turned on and [System Progress] in the [Power Control] window of the MMB changes to [Boot] to when it changes to [OS Running]. To prevent incorrect detection, Fujitsu recommends setting a sufficiently large value, larger than double the above duration. Also, take into account the time required for storing dump information when an OS panic occurs. This option can be specified only when [Watchdog] is [Enable]. The default is 0. Note that timeout data cannot be specified with the default.

4.9 Dump Environment Setup (Linux: Red Hat)

When the dump function is used under Linux (Red Hat) control, disk space must be allocated in advance. For information on how to allocate the area, see the *PRIMEQUEST 580A/540A/580/540/480/440 System Design Guide* (C122-B001EN) or *PRIMEQUEST 520A/520/420 System Design Guide* (C122-B009EN).

When Linux (Red Hat) is used with PRIMEQUEST, the dump function that can be used depends on the Linux OS version. The following briefly explains the dump environment for each Linux OS version.

RHEL-AS4 (IPF)

When RHEL-AS4 (IPF) is used with PRIMEQUEST, the dump function (diskdump) provided by the Linux distribution and the dump function (sadump) dedicated to PRIMEQUEST can be used.

Figure 4.51 shows an overview of the dump environment.

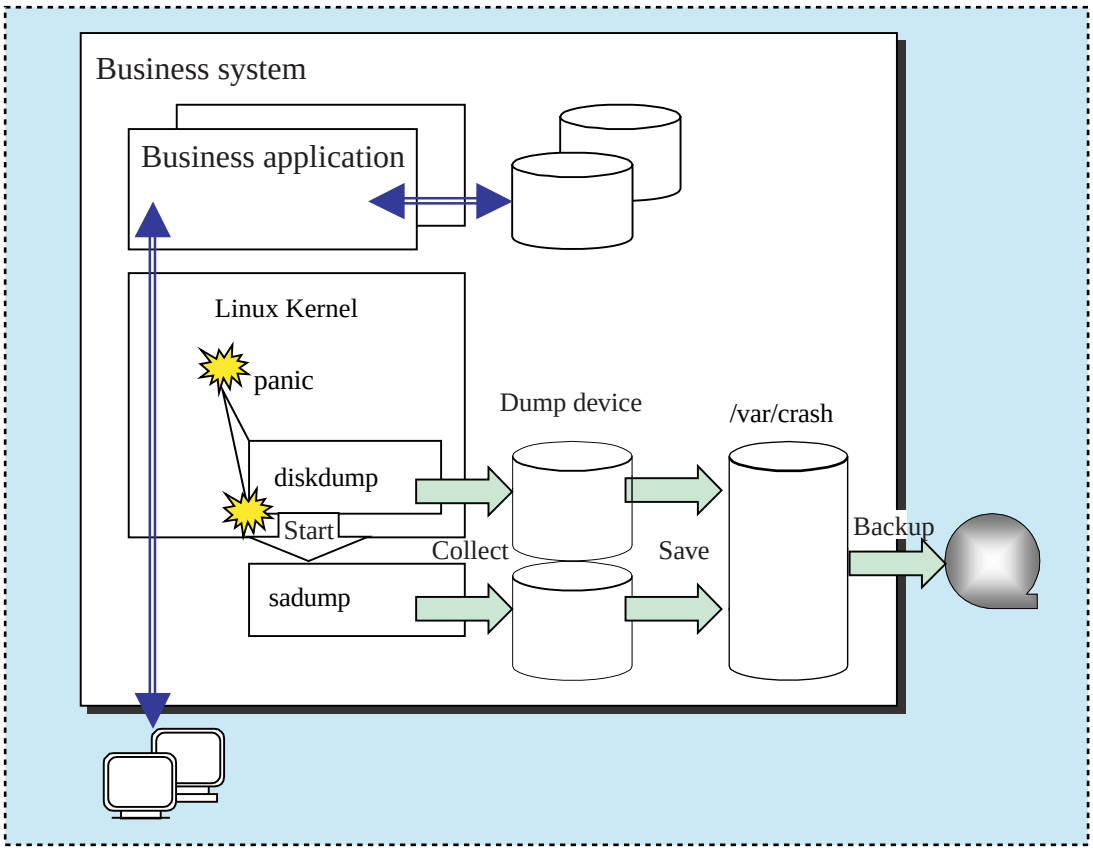


Figure 4.51 RHEL-AS4 (IPF) dump environment

RHEL5 (IPF)

When RHEL5 (IPF) is used with PRIMEQUEST, the dump function (kdump) provided by the Linux distribution and the dump function (sadump) dedicated to PRIMEQUEST can be used.

Figure 4.52 shows an overview of the dump environment.

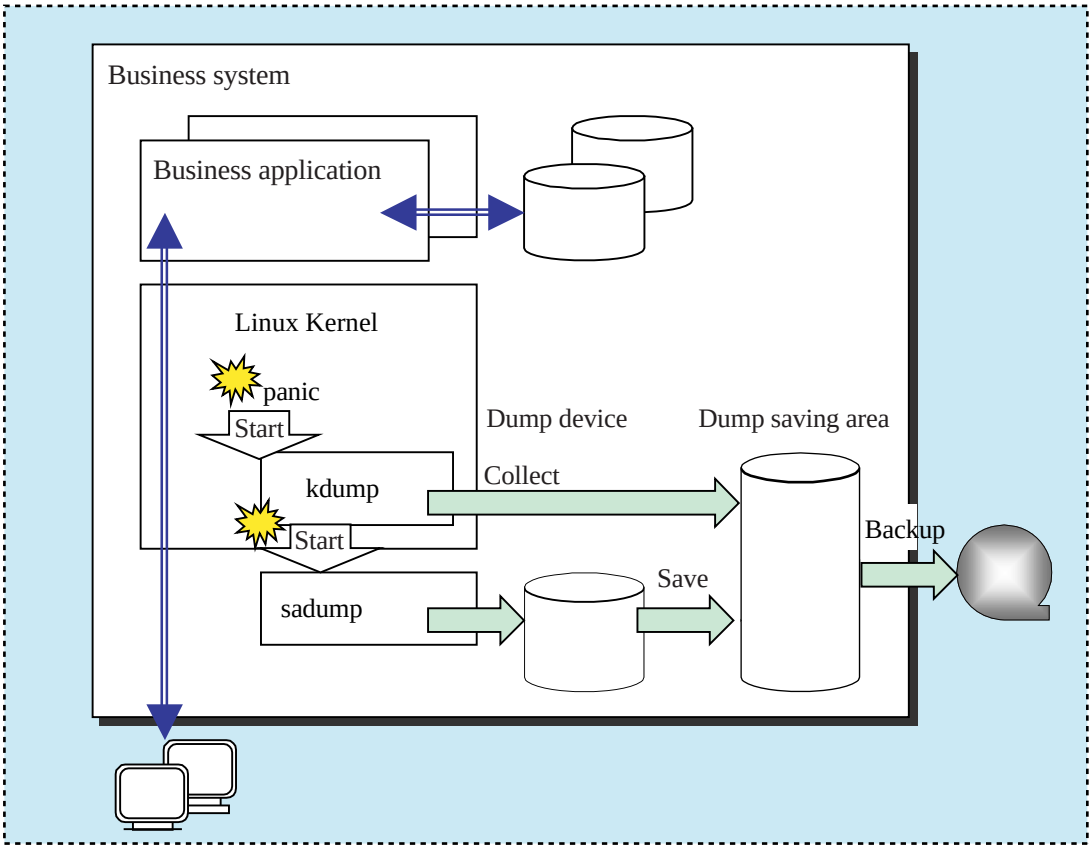


Figure 4.52 RHEL5 (IPF) dump environment

This section describes how to set up a dump environment. For dump-related operations, see the *PRIMEQUEST 500A/500/400 Series Reference Manual: Message/Logs* (C122-E004EN).

If a system failure occurs in the PRIMEQUEST, the user should notify the certified service engineer of the failure as an incident. The certified service engineer, in turn, will perform investigation based on the collected dump data. Before the dump data required for this investigation can be collected, the initialization tasks listed below must be executed.

The dump collection work differs for each type of Linux OS.

RHEL-AS4 (IPF)

Configure the dump environment according to the following procedure:

- Allocating a dump area
- Initial setting for diskdump

RHEL5 (IPF)

- Allocating a dump area
- Initial setting for kdump

This section describes the dump-related tasks in order they are executed.

- Allocating a dump area (→ 4.9.1)
- diskdump initial setting (→ 4.9.2)
- kdump initial setting (→ 4.9.3)

Do these operations with the root privilege.

Note: Regarding the environment setting from X Window System or networks such as telnet
Set up the dump environment at run level 3 wherever possible, without using X Window System. If X Window System is used to set up the dump environment, some console messages such as those related to a dump device space shortage are not displayed on X Window System. Also when telnet or ssh is used, some console messages may not be output. If circumstances force you to use X Window System or telnet, use the dmesg command or /var/log/messages to check the console messages.

4.9.1 Allocating a dump area

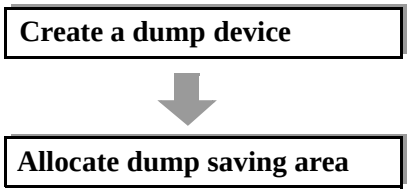
The operations required for using the various dump functions are described in the sections listed below. Perform the required operations with root authority.

- diskdump function of RHEL-AS4 (IPF):
  - 4.9.1.1, Creating a dump device.
  - 4.9.1.2, Allocating a dump saving area.
- kdump function of RHEL-AS4 (IPF):
  - 4.9.1.2, Allocating a dump saving area.

For details on estimating the disk space, see the *PRIMEQUEST 580A/540A/580/540/480/440 System Design Guide* (C122-B001EN) or the *PRIMEQUEST 520A/520/420 System Design Guide* (C122-B009EN).

Remarks: By using the installer on a PRIMEQUEST accessory CD-ROM, the dump can automatically be created.

The operation flow is shown below. The operations require the root privilege.



The following explains the procedure.

4.9.1.1 Creating a dump device

Use the parted command to allocate a dump device area.

The example in this section creates the dump device /dev/sdb1.

```
# parted /dev/sdb
 (parted) mkpart primary 0 1000
 (parted) q
```

To allocate a disk partition for a dump device when installing the Linux OS, create the disk partition with a file system specified. After the system starts, unmount the created partition and delete information about the created partition from /etc/fstab.

When re-creating a dump device with regard to a dump device extension or disk failure, re-initialize the dump device. For details on how to initialize dump devices, see Section 4.9.2, "diskdump initial setting."

Dump device size

Use fdisk or parted to allocate a dump device area (area type: Linux(83)).

The size of one dump device area is as follows.

```
Dump device size = installed memory size* + 512 MB
```

* When Extended Mirror Mode is used, the usable memory size is half the size of memory actually installed. Therefore, when Extended Mirror Mode is used, the installed memory size shown above is half the size of memory actually installed.

No dump device can be shared with a file system or swap partition.

To determine the exact size of a dump device so as to reduce disk usage when using diskdump, perform the following operation.

```
# cat /proc/diskdump
# sample_rate: 8
# block_order: 2
# fallback_on_err: 1
# allow_risky_dumps: 1
# total_blocks: 262042

# getconf PAGESIZE
16384
```

The total block size is displayed in memory pages. In this example, an area of "262,042 x 16,384" bytes is required for the dump device.

Redundant dump device

To guarantee that a dump can be collected on an alternate dump device in the event of an abnormality in the normally used dump device, add at least one dump device. Each additional dump device should be physically different from the existing device.

Usable devices

Usable devices are as follows. Create them on a non-duplicated disk not managed on PRIMECLUSTER GDS.

Table 4.6 Devices usable as dump devices

Type	Driver	Remarks
Internal disk	LSI Logic Fusion MPT driver (SCSI)	Supports the built-in SAS disk for the PRIMEQUEST 520A/520/420
External disk	Emulex FC driver	
	LSI Logic Fusion MPT driver (SCSI)	For connecting the SCSI disk using the SCSI card in the PRIMEQUEST 520A/520/420

A dump device must be prepared for each partition of PRIMEQUEST and cannot be shared by multiple partitions. It cannot be shared by more than one partition.

4.9.1.2 Allocating a dump saving area

Allocate an area to be used to save the dump. This area is called a dump saving area. Prepare this area for each partition. Note that this area cannot be shared by more than one partition. The area to be allocated as a dump saving area differs for each type of Linux OS.

Confirm the dump saving area.

- RHEL-AS4 (IPF)
  The dump saving area is /var/crash.
  Perform the following operation to confirm that this directory exists.

```
# ls –l /var/crash
```

- RHEL5 (IPF)
  Reserve a dedicated partition (example: /dev/sdb2) for the dump saving area and format it as a file system (example: ext3). Perform the following operation to confirm that this directory has been created correctly.

```
# mount /dev/sdb2 /var/crash
# ls -l /var/crash
```

  To ensure that destruction does not occur during operation, be sure not to mount the dump saving area.

For Linux (Red Hat), prepare the following empty area as the dump saving area.

```
Size of dump saving area
= (size of installed memory* + 1 GB) x number of dump files temporarily saved
```

* When Extended Mirror Mode is used, the usable memory size is half the size of memory actually installed. Therefore, when Extended Mirror Mode is used, the installed memory size shown above is half the size of memory actually installed.

To estimate the size of each dump saving area, consider the maximum number of dumps that are temporarily held on the system. If a dump file can be saved to media such as magnetic tape media immediately after the system is rebooted after an error occurs, assume that two temporarily saved dumps (diskdump/kdump and sadump may be corrected simultaneously) are sufficient. If the dump saving area runs short of free space, dumps cannot be saved correctly. Manage the free disk space carefully to ensure that a saved dump is quickly saved to external media and not left on the disk.

Note: When the parted command is used to check the size of the dump saving area under control of RHEL5, enter "unit MiB" to change the display unit. The parted command displays the size of the entire disk partition including the management area used by the ext3 file system. Therefore, to check the size of the necessary dump saving area, divide the displayed size value by 1.1 to determine the size of the area in which an ext3 file can be created.

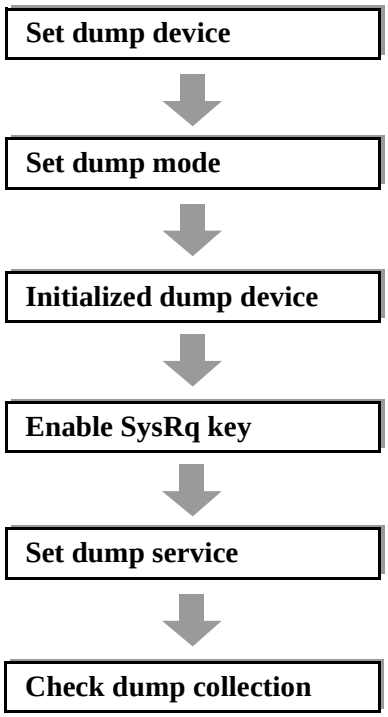
If a dump is saved normally, a file called vmcore is created. If the saving area runs short of free space, an incomplete dump is saved with the file name vmcore-incomplete. If the dump saving area does not have an area that is large enough to save a complete dump while RHEL-AS4 (IPF) is used, a script called diskdump-nospace, which can be edited by the user, is executed before failure occurs. Edit the script to allocate an enough area. Create this script under the /var/crash/scripts directory. If the dump saving area does not exist, create the relevant directory. If the directory needs to be re-created for expansion of the dump saving area or because of damage to the dump saving area, do this by following the ordinary method of creating directories.

When diskdump is used, the dump saving area is fixed to /var/crash. However, the dump saving areas for kdump and sadump are not fixed. For the setting methods, see Section 4.9.3.3, "Setting up the dump environment."

4.9.2 diskdump initial setting

This section explains the initial settings required for use of the dump function provided by the distribution.

Because diskdump is included in RHEL-AS4 (IPF), a special installation operation is not required. Make the following settings after installing RHEL-AS4 (IPF). This operation requires the root privilege.



The following explains the procedure.

(1) Setting a dump device

Use a text editor such as vi to add the following definition to the diskdump definition (/etc/sysconfig/diskdump).

```
DEVICE=device-name (example:  DEVICE=/dev/sde1)
```

Note: Specify the name of a compatible device as the device name.

Remarks: When specifying a dump device list including at least one redundant device, use a colon (:) to delimit adjacent device names in the list.

(2) Setting a dump mode

To use the partial dump function to reduce the dump area used, use a text editor such as vi to add the following line to the diskdump module parameter (/etc/modporbe.conf):

```
options diskdump dump_level=n
```

where n indicates one of the following dump modes:

0: Dumps all memory.

19: Use the partial dump function.

Specify when using the partial dump function to reduce dump loads when the amount of memory installed is large. If this is not specified, the system dumps the entire memory.

To use the compression function to reduce the dump area used, use a text editor such as vi to add the following line to the diskdump module parameter (/etc/modprobe.conf):

```
options diskdump compress=1
```

Use the file command in the manner shown below to confirm the compression of the dump area.

- If the dump area is not compressed
  As shown in the example below, a file is displayed in ELF format.

```
# file vmcore
vmcore: ELF 64-bit LSB core file IA-64, version 1 (SYSV), SVR4-
style, from 'vmlinux'
```

- If the dump area is compressed

```
# file vmcore
vmcore: data
```

If the dump file type has been reset while the diskdump service is active, the system needs to be reactivated.

(3) Initializing the dump device

Perform the following operation to initialize the dump device. Check the initialization result with the command return value. If the return value is 0, the initialization is normally completed.

```
# service diskdump initialformat
```

Note: The dump device area cannot be shared with a file system or other such unit. Take care with regard to the information contained in the dump device area because files in this area are damaged by initialformat, which formats dump information.

(4) Enabling the SysRq key

To enable the [SysRq] key, do as follows:

- When the system parameter check tool is installed

Enter the following command:

```
# /usr/sbin/fjprmset -f -S -a kernel.sysrq=1
```

Enter the following command. If 1 is displayed, it indicates that the setting has been validated.

```
# cat /proc/sys/kernel/sysrq
```

For the system parameter check tool, see Appendix A.5, "System Parameter Check Tool."

- When the system parameter check tool is not installed

Correct the kernel/sysrq value in the /etc/sysctl.conf file to validate the setting.

```
# vi /etc/sysctl.conf
```

Line changed and added:

```
kernel.sysrq = 1
```

```
# sysctl –p
```

Enter the following command. If "1" is displayed, assumed that the setting is reflected.

```
# cat /proc/sys/kernel/sysrq
```

(5) Setting a dump service

Perform the following operation to set a dump service so that it starts with a boot.

```
# chkconfig diskdump on
```

The following operation allows the user to check whether the setting can be correctly made.

```
# chkconfig –list diskdump
```

The displayed setting is as follows:

```
diskdump  0:ff  1:off  2:on  3:on  4:on  5:on  6:off
```

(6) Checking dump collection

1 Starting the dump service

Perform the following operation to start the dump service.

```
# service diskdump start
```

Remarks: The message shown below is output if the size of the dump device is smaller than the size of installed memory. Review the setting of the dump device area.

```
disk_dump: xx: is too small to save whole system memory
(xx: device name)
```

The following messages are output when the service is started. Ignore these messages.

```
PRESERVEDUMP not enabled
SKIPSAVECORE not enabled
SALVAGEMESSAGE enabled
```

2 Checking dump collection

If the system actually crashes, the dump may not be collected because of an area shortage. To prevent that, check whether the crash dump is actually collected.

Note: If the crash dump is forcibly collected, the system is forced to crash. Before checking the dump collection, stop any important applications.
Unnecessary file systems should also be demounted.

1 Manually collect a dump.
Select [Partition] from the [Power Control] menu of the MMB WEB UI, set [INIT] control, and then click [Apply].

2 Confirm that dump processing is completed.
Confirm that the following message is displayed on the console.

```
Rebooting in nn seconds.
```
(nn indicates the time in seconds that elapses before a restart.)

or

```
halt
```

3 Reboot the system.
If it has been specified that the system automatically reboot, wait until the system automatically reboots. If it has been specified that the system halt, reset and reboot the system. To reset the system, click [Partition] → [Power Control] on the MMB Web-UI, specify [Reset] as the status, and click the [Apply] button.

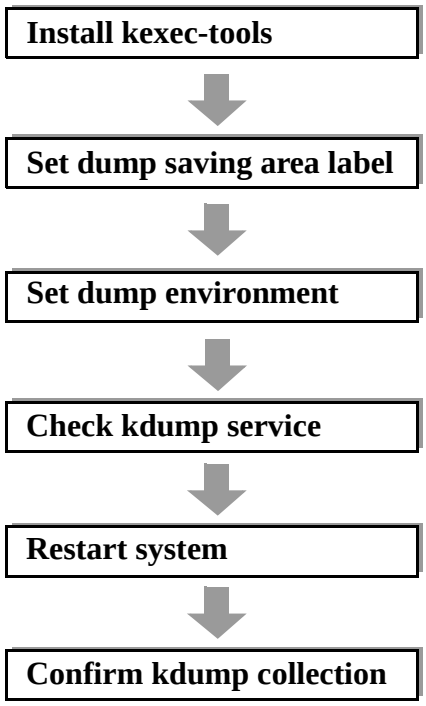
4 Confirm that a dump has been collected.
Perform the following two procedures:

- Confirm that a directory of /var/crash/127.0.0.1-[date and time] has been created.
- To check whether a dump has been collected, check whether a vmcore file has been created under the above directory.

5 Use the rm command to delete the collected test dump in the above directory.

4.9.3 kdump initial setting

This section explains the initial settings for use of the dump function provided by the distribution. Although kdump is included in RHEL5 (IPF), the required packages may not be applied depending on the setting for applying RHEL5 (IPF). This section explains how to make the initial setting for kdump, including the application of these packages. The operation flow of the initial setting for kdump is as follows:



4.9.3.1 Installing kexec-tools

The package kexec-tools, which is required for kdump, may not automatically be installed depending on how RHEL5 (IPF) is installed. When necessary, therefore, install it manually as follows:

```
# rpm -q kexec-tools
# rpm -ivh kexec-tools-<version/level to be installed>.el5.ia64.rpm
```

kernel-debuginfo and kernel-debuginfo-common may also need to be installed. When necessary, install them as follows:

```
# rpm -q kernel-debuginfo-common
# rpm -q kernel-debuginfo
# rpm -ivh kernel-debuginfo-common-<version/level to be installed>
.el5.ia64.rpm
# rpm -ivh kernel-debuginfo-<version/level to be installed>.el5.ia64.rpm
```

4.9.3.2 Setting a label for the dump saving area

Use the e2label command to set a label for the area to which a dump is to be saved.

```
# e2label /dev/sdb2 /dump                    Set
# e2label /dev/sdb2                          Verify
/dump
```

4.9.3.3 Setting up the dump environment

Edit /etc/kdump.conf to specify the area to which a dump is to be saved. Also, make settings for the dump function and others. The setting procedure is explained using a definition example below. Code the parts, which are not explained, as indicated in the definition example.

```
ext3 LABEL=/dump
           ~~~~~(1)
path /
core_collector makedumpfile
default reboot
~~~~~~~~~~~~~~(2)
```

1 Set /dump and the label for the area to which the dump is to be collected, and define the label as the dump saving area.

2 Specify reboot for the operation to be performed after dump collection. If sadump has been applied, the sadump definition is followed after kdump collection, and therefore the values set here are ignored.

```
core_collector makedumpfile -c -d 3
                            ~(3)~~~~(4)
```

3 Specify this to use the compressed dump function. Omit it if the function is not used. The compressed dump function can reduce the dump collection area but may take more time for dump collection. Perform performance verification sufficiently before enabling the compressed dump function.

4 Specify this to use the partial dump function. Omit it if the function is not used. Also, add the following definition to KDUMP_COMMANDLINE_APPEND of /etc/sysconfig/kdump.

```
swiotlb=128
```

If /etc/kdump.conf is set again, the sadump service or system needs to be restarted.

4.9.3.4 Setting the kdump service

Enter the following so that the kdump service automatically starts when the system boots.

```
# chkconfig kdump on
```

Enter the following to check whether the dump service has been set correctly.

```
# chkconfig -- list kdump
```

The settings are displayed as shown below:

```
kdump  0:off 1:off 2:on 3:on 4:on 5:on 6:off
```

4.9.3.5 Setting the kernel parameter

Specify the following with the kernel parameter append in /boot/efi/efi/redhat/elilo.conf.

```
append=" ··· crashkernel=512M@256M"
```

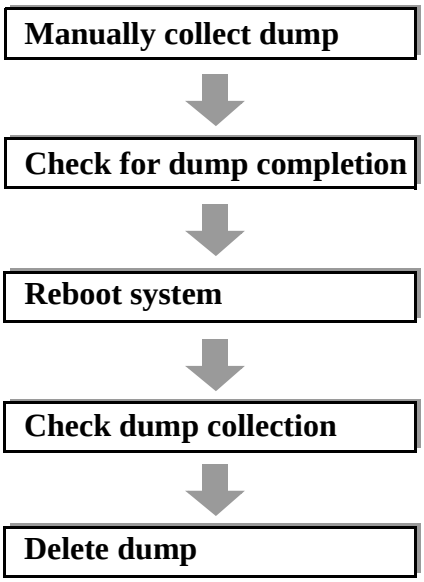
4.9.3.6 Rebooting the system

Enter the following to reboot the system.

```
# reboot
```

4.9.3.7 Checking kdump collection

If the system actually crashes, the dump may not be collected because of an area shortage. To prevent this problem, check in advance whether the crash dump is actually collected by using the following procedure:



Note: If the crash dump is forcibly collected, the system is forced to crash. Before verifying the dump collection, stop any important applications. Unnecessary file systems should also be demounted.

(1) Manually collecting a dump

Select [Partition] → [Power Control] from the MMB Web-UI to set the [INIT] control, and then click the [Apply] button to start dump collection.

(2) Confirming that dump collection is complete

Confirm that dump collection has been completed with the following message displayed on the console:

```
makedumpfile Completed.
```

Note: When the dump has been collected successfully, the message shown in the example that follows may be output. (Note that the actual dump file name is not vmcore-incomplete but is vmcore.)

```
The dumpfile is saved to /mnt/127.0.0.1-2007-02-14-15:20:37/vmcore-
incomplete.
```

(3) Rebooting the system

The system is automatically rebooted. Wait until the system reboot is complete.

(4) Confirming that the dump has been collected

Perform the following to confirm that the dump has been collected:

- Confirm that a directory with the name "127.0.0.1-[date-and-time]" has been created in the dump saving area.

  Note: If "UTC = false" is set in /etc/sysconfig/clock, the displayed date/time is 9 hours added to the date/time of dump collection. Be careful not to mistake it for the date/time of dump collection.

- Confirm that the dump is collected or the size of vmcore under the above directory is more or less the same as the estimated size of the dump file.

Because the dump saving area is not mounted with the operating kernel, confirm the dump collection as stated above after mounting the dump saving area.

(5) Deleting the dump

Use the rm command to delete the collected test dump. Finally, unmount the dump saving area.

4.10 Setting Up the Dump Environment (Windows Server 2003)

Windows Server 2003 allows you to use standard OS functions to collect dumps. Before you can collect dumps, you must allocate a system area. For details on allocating an area for such use, see the *PRIMEQUEST 580A/540A/580/540/480/440 System Design Guide* (C122-B001EN) or the *PRIMEQUEST 520A/520/420 System Design Guide* (C122-B009EN).

This section describes how to set up an environment for Windows Server 2003 to execute dump. For dump-related operations, see Chapter 1, "System Maintenance" in the *PRIMEQUEST 500A/500/400 Series Reference Manual: Tools/Operation Information* (C122-E074EN).

To enable system recovery in case of system failure, make the necessary settings by referring to the following sections before starting operation.

- Setting a memory dump file and paging file (→ 4.10.1)
- Early troubleshooting [DSNAP] (→ 4.10.2)

4.10.1 Setting a memory dump file and paging file

This section explains how to set a memory dump file and paging file.

The memory dump file is used to save debug information when a STOP error (fatal system error) occurs in the system. After the operating system and applications used for operation are installed, make the settings required for a memory dump.

4.10.1.1 Different types of information that can be obtained by a memory dump

The following three types of memory dumps can be configured on the PRIMEQUEST system, and they differ in the scope of information recorded:

Before starting a memory dump, make sure that the hard disk has enough free space.

- Complete memory dump
  Records all the contents of the physical memory when the system has stopped. The boot volume must have free space equivalent to approximately the physical memory size plus 1 megabyte. It can save only one dump. If the specified save location already has a dump file, the dump file is overwritten.

- Kernel memory dump (recommended)
  Only the kernel memory space contents are recorded. The boot volume must have 50 megabytes to several hundred megabytes (up to the physical memory size plus 128 megabytes) of free space. The size depends on the operating status. The boot volume can store only one dump. If the specified save location already has a dump file, the dump file is overwritten.
- Small memory dump
  Minimal information that is helpful for identifying a problem is recorded. This memory dump requires 64 or 128 kilobytes of free space. If this option is specified, a file is created each time the system is unexpectedly stopped.

Table 4.7 Modes and sizes of memory dump

Memory dump mode	Memory dump file	
Complete memory dump	Physical memory size + 1 MB	Overwrite (*2)
Kernel memory dump	Depends on the size of memory space used during operation of the operating system (normally, 50 megabytes to several hundred megabytes) Maximum: Mounted physical memory + 128 megabytes (*1)	Overwrite (*2)
Small memory dump	64 KB or 128 KB	Creation of a new file

*1 The maximum size is shown here, but the value depends on the memory space size.

*2 By default, an existing file is overwritten. The default setting can be changed so that an existing file is not overwritten. However, note that no new file would be created, unlike in a "minimum memory dump."

Notes: Select the setting mode appropriate for system operation by considering the following:

- If the PRIMEQUEST Software Installer is executed, the mode is automatically set to kernel memory dump. Because a kernel memory dump does not include user mode information, the cause of the problem may not always be determined.
- Depending on the size of mounted memory, a complete memory dump takes longer to create a dump and keeps business stopped longer accordingly. In addition, more space is required for saving a dump file on the hard disk.

4.10.1.2 Setting a memory dump

Setting a complete memory dump

Complete memory dump cannot be set from the system dump setting window. It can be set by changing the following registry value:

HKEY_LOCAL_MACHINE\System\CurrentControlSet\Control\CrashControl
"CrashDumpEnabled" (type: REG_DWORD, data: 0x1)

After changing the setting, restart the system. For details on the dump file save path and overwrite settings, see "Setting a kernel memory dump/minimum memory dump."

Setting a kernel memory dump/minimum memory dump

Set the memory dump file as follows:

1. Log on to the server with the administrator privilege.
2. Check the amount of free space on the drive on which the memory dump file is to be stored.
   For details, see Section 4.10.1.4, "Setting the paging file."
3. Click [Start] → [Control Panel] → [System].
   The [System Property] dialog box appears.
4. Click the [Detail Setting] tab, and click [Set] at [Startup and Recovery].
   The [Startup and Recovery] dialog box appears.

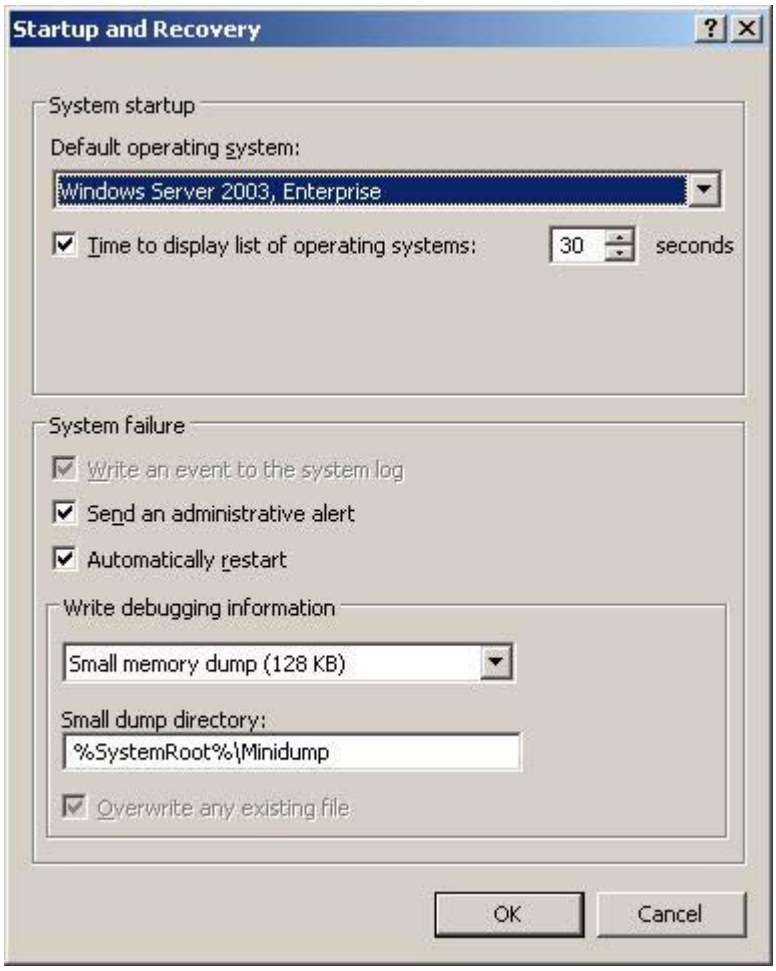


Figure 4.53 [Startup and Recovery] dialog box

5 Do the following settings:
Select the type of memory dump file from [Write debugging information].

- Kernel memory dump (recommended)
  Only kernel memory is logged to the memory dump file.
  In [Dump file], specify the full path of the directory to which a memory dump file is saved. If the [Overwrite any existing file] check box is selected for kernel memory dump, debug information is always written to the specified file.
- Small memory dump (64 KB or 128 KB)
  Minimum information is logged in the memory dump file. In the [Small Dump Directory] field, specify the full path of the directory used to store small dumps. Every time an unrecoverable error occurs, a new file is created in the directory specified in [Small dump directory].

6 Click [OK] to close the [Startup and Recovery] dialog box.

7 Click [OK] to exit from the [System Property] dialog box.

8 Reboot the system.
The settings are validated after the system reboot.

4.10.1.3 Verifying the memory dump settings

Perform a memory dump in advance to make sure that memory information is dumped normally. In addition, measure the time taken until dump is output actually and the time taken for a system restart in order to estimate the time required till business can be restarted. Based on that result, reconsider the dump mode as needed.

To implement a dump, specify INIT for the target partition by selecting [Partition] - [Power Control] from the MMB Web-UI. For details, see Chapter 5, "MMB Web-UI," in the *PRIMEQUEST 580A/540A/520A/500/400 Series Reference Manual: Basic Operation/GUI/Commands* (C122-E003EN).

4.10.1.4 Setting the paging file

Set the paging file by following the procedure below. Unless otherwise instructed, use the values that are automatically assigned during Windows installation for the paging file.

1 Log on to the server with the administrator privilege.
2 Click [Start] → [Control Panel] → [System].
The [System Property] dialog box appears.
3 Click the [Detail Setting] tab, and click [Set] at [Performance Options].
The [Performance Options] dialog box appears.

4 Click the [Advanced] tab.

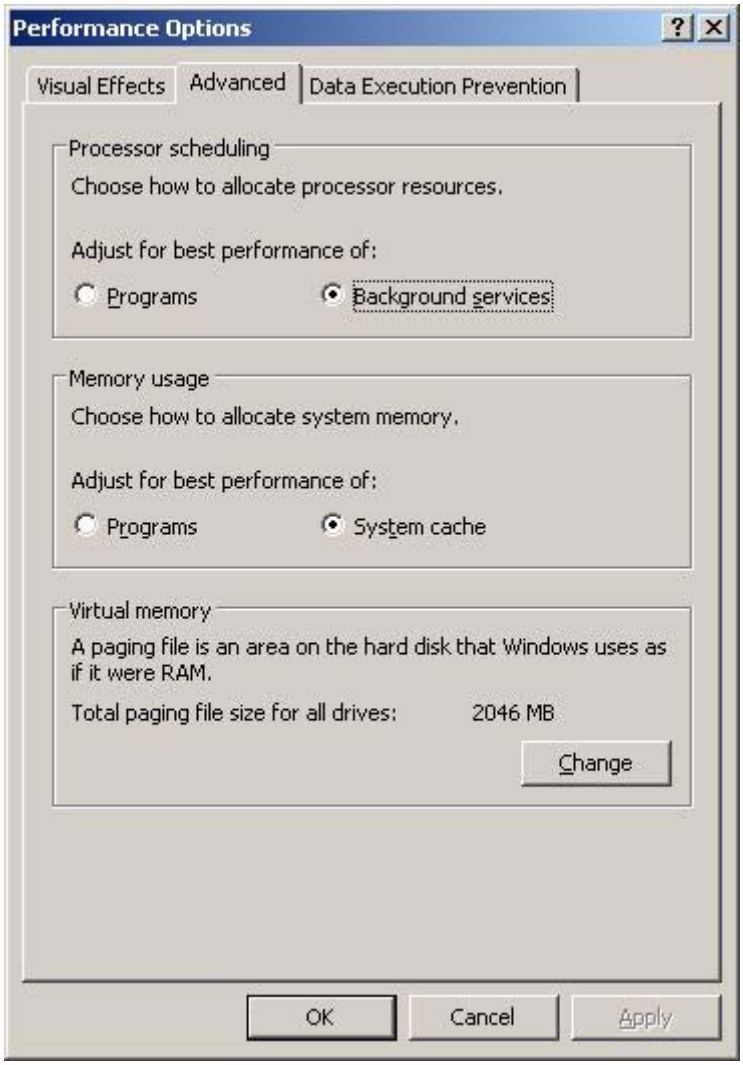


Figure 4.54 [Performance Options] dialog box

5 Click [Change] of [Virtual Memory].
The Virtual Memory dialog box appears.

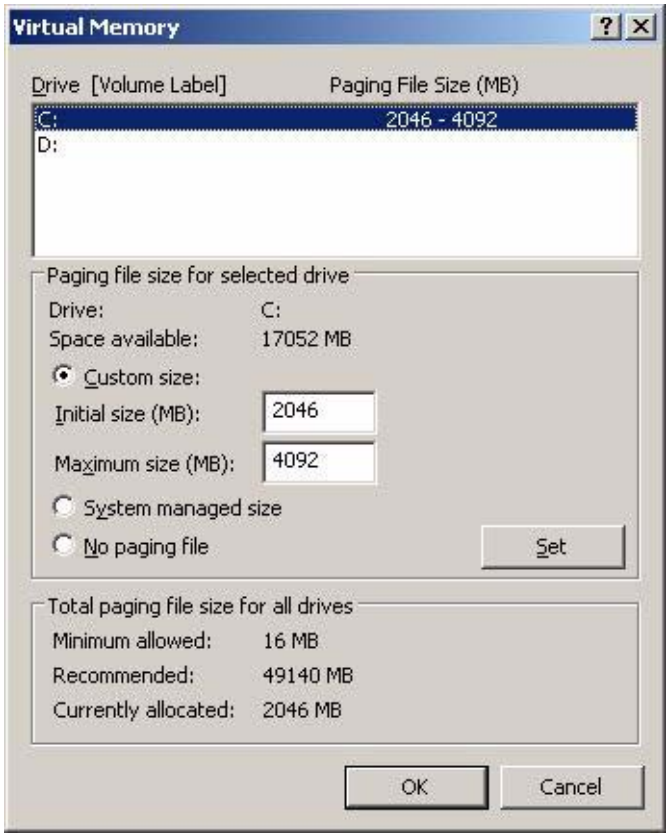


Figure 4.55 [Virtual Memory] dialog box

6 Specify the drive on which a paging file is created.
From the [Drive] field, select the drive on which the system is installed. The selected drive is displayed at [Drive] under [Paging file size for selected drive].

7 Select the [Custom size] option button and enter a value in [Initial size].
To find out the minimum value, follow the procedure below:

1 Enter the minimum value in the [Initial size (MB)] field in the [Custom size:] section (if the [Virtual Memory] dialog box shown in Figure 4.55 is displayed, this value is 16 MB, which is the value of [Minimum allowed:] in the [Total paging file size for all drives] section). Enter the minimum value + 2 MB in the [Maximum size (MB)] field (if the [Virtual Memory] dialog box shown in Figure 4.55 is displayed, this value is 18 MB). Click the [Set] button.

2 Keep the values set if the message shown below does not appear.
If the message shown below appears, set the displayed value as the minimum value (200 MB in this example).
Generally, it is recommended to use the value that is automatically assigned by the operating system.

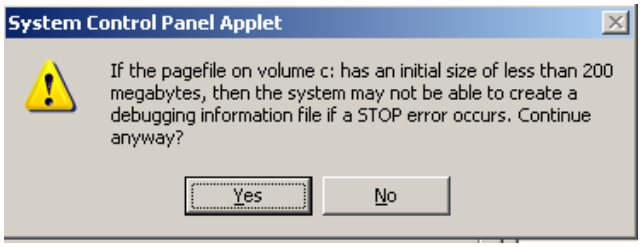


Figure 4.56 Confirmation message window

8 Enter a value in [Maximum size].
Specify a value greater than [Initial size].
9 Save the settings.
Click [Set] in [Paging file size for selected drive]. The settings are saved and displayed under [Paging File Size] of [Drive].
10 Click [OK] to close the [Virtual Memory] dialog box.
11 Click [OK] to close the [Performance Options] dialog box.
12 Click [OK] to close the [System Property] dialog box.
13 Reboot the system.
The settings are validated after the system reboot.

4.10.1.5 Note

Note that if the paging file is allocated to a partition other than the system partition (usually drive C), no dump file is generated when a stop error occurs. Unless otherwise instructed, do not move the paging file.

4.10.2 Early troubleshooting [DSNAP]

DSNAP is a software program that quickly and securely collects investigative data, when a problem occurs in Windows OS. If a problem occurs in your system, your Fujitsu certified engineer uses this software to correctly find out your system software configuration and setting states and conduct smooth examinations of processes.

- Installation method

See Section 3.3.6, "High-Reliability Tools."

- Usage

Refer to [OS Installation Drive]: \DSNAP README_EN.TXT file.

4.11 NTP Client Setup

This section describes how to use NTP (Network Time Protocol) based time correction on the PRIMEQUEST.

NTP is a protocol that defines the method of exchanging time information between computers. NTP synchronizes the system clock with an accurate reference clock at system startup, and it then maintains the clock within a certain range of accuracy.

4.11.1 NTP operation on PRIMEQUEST

This section describes how to correct time for each partition using NTP on the PRIMEQUEST.

The PRIMEQUEST provides NTP client and server functions on the MMB. The MMB NTP client function allows you to specify up to three individual NTP servers. Each partition uses the NTP server function on the MMB to adjust the time on the partition.

However, the MMB need not be specified for the NTP servers in any of the partitions. For stable NTP operation, specify multiple NTP servers from the NTP client (Fujitsu recommends at least three).

The figure below outlines the configuration assumed when the other NTP servers are used.

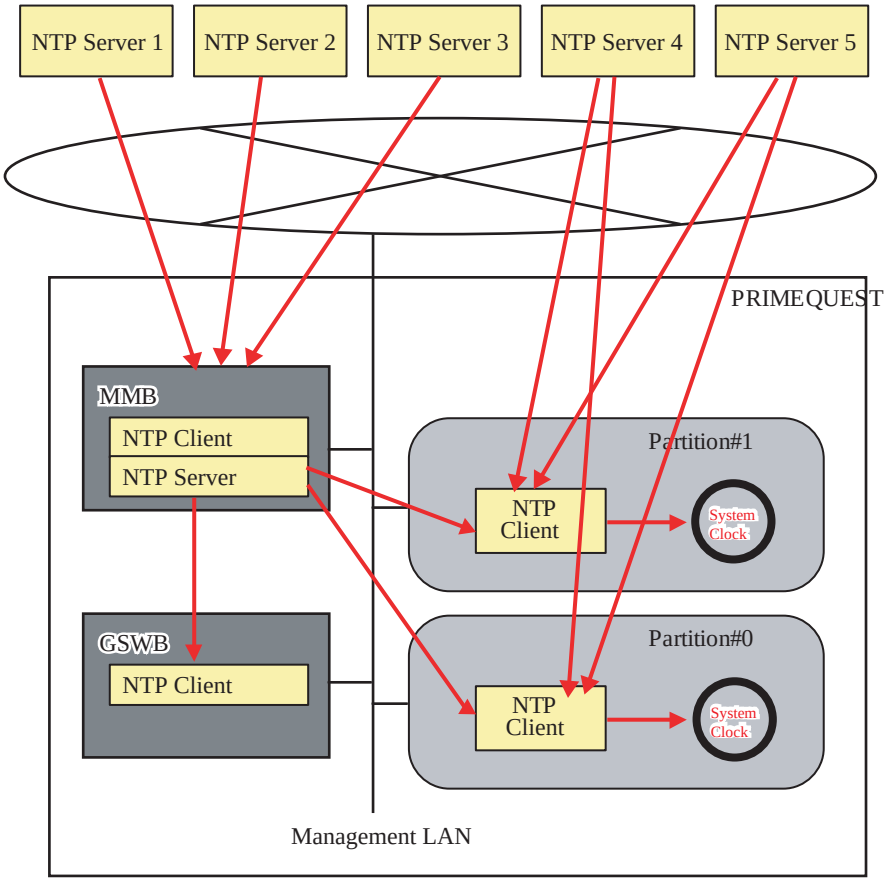


Figure 4.57 Configuration for using external NTP servers

Remarks:

- NTP server 1 to NTP server 5 are NTP servers using very high-precision clocks for connections to the Internet or intranets.
- GSWB is mounted only in PRIMEQUEST 580A/540A/540/540/480/440.

4.11.2 NTP server setup

Set the NTP servers if they have not been set during MMB initialization.

Use the MMB NTP client function to set the other NTP servers with which time synchronization is established. Also, enable other clients to use the MMB as an NTP server.

Remarks: If the MMB is set as an NTP server and each partition is set as an NTP client within one cabinet, use the following setting, but it is not a typical configuration.

- NTP: Enable
- NTP Server 1 to NTP Server 3: 0.0.0.0

1 Click [Network Configuration] → [Date/Time].
The [Date/Time] window appears.

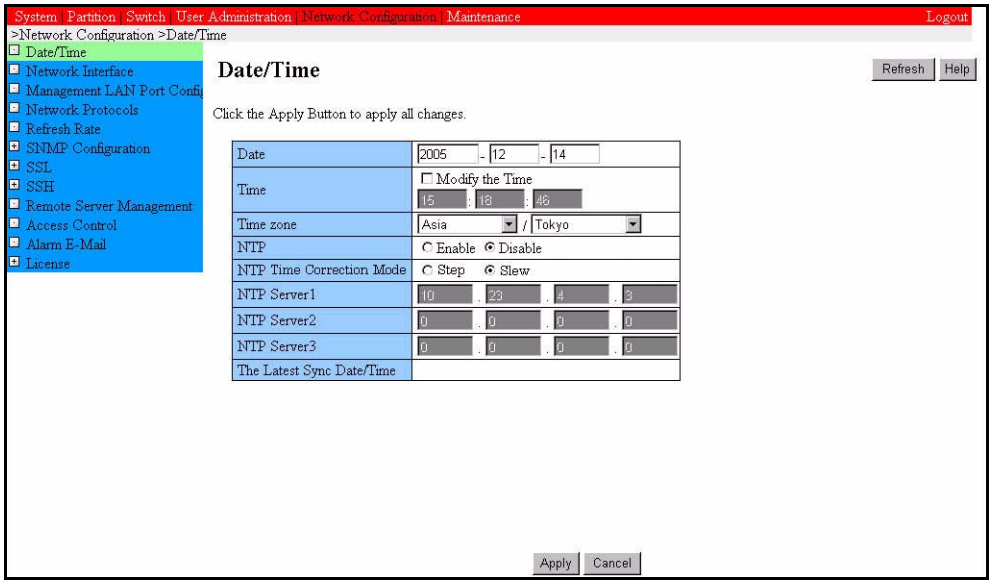


Figure 4.58 [Date/Time] window (example)

2 Specify [NTP] as Enable.

3 Specify the IP addresses of the other NTP servers.
NTP Server1: Specify the primary NTP server.
NTP Server2: Specify the secondary NTP server.
NTP Server3: Specify the other (thirdary) NTP server.

4 Click the [Apply] button.
The MMB establishes time synchronization with the NTP servers set in [NTP Server1] to [NTP Server3]. This also enables other clients to use the MMB as an NTP server.

5 After several minutes have passed, click the [Refresh] button, and confirm that the correct time is displayed.

4.11.3 Setting each partition as an NTP client

Each partition functions as an NTP client when the NTP server is set.

4.11.3.1 NTP client operation in a partition running Linux

In each partition, the NTP client is used as follows:

1. Start the Linux OS.
2. Adjust the time (step-wise adjustment is used only when the NTP client is used for the first time) (ntpdate -b).
3. Start the ntp daemon to maintain the accuracy of the clock.

Remarks: In general, steps 2 and 3 are performed during IPL as specified in the startup script.

NTP setup on a partition

To set up NTP on a partition running Linux, perform the following steps:

1. Set an NTP server in the ntp configuration file (/etc/ntp.conf) as follows:

/etc/ntp.conf file

```
server MMB-IP-address
```

Figure 4.59 NTP server IP address setting example

Because no special options are required for communication between the MMB and a partition, the above setting is all that you need to use ntpd. When the MMB is used as an NTP server, specify a virtual IP address for the MMB IP address.
For stable NTP operation, define at least three high-reliability NTP servers, including the MMB, in the ntp configuration file.
Notes:

- The above description assumes that ntpd was already installed during system installation.
- The MMB in the PRIMEQUEST 520A/520/420 has no virtual IP address.

2 Restart the service.
[Red Hat Enterprise Linux]

```
# service ntpd restart
```

[SUSE Linux Enterprise Server]

```
# /etc/init.d/xntpd restart
```

3 Modify the service configuration.
[Red Hat Enterprise Linux]

```
# chkconfig ntpd on
```

[SUSE Linux Enterprise Server]

```
# chkconfig xntpd on
```

4.11.3.2 Setting NTP in a Windows partition

This section explains how to set a Windows controlled NTP in a partition.

1 Log on to the system with the Administrator account.
2 Click [Control Panel] → [Date and Time].
The [Date and Time Property] dialog box appears.
3 Click the [Internet Time] tab.
4 Specify the MMB virtual IP address in the [Server:] box, and then click [OK] to close the box.
5 Click the [Internet Time] tab again from the [Date and Time Property] dialog box, and then click [Update Now]. During normal communication with the NTP server, the message shown in Figure 4.60 is displayed to report that synchronization has been established.

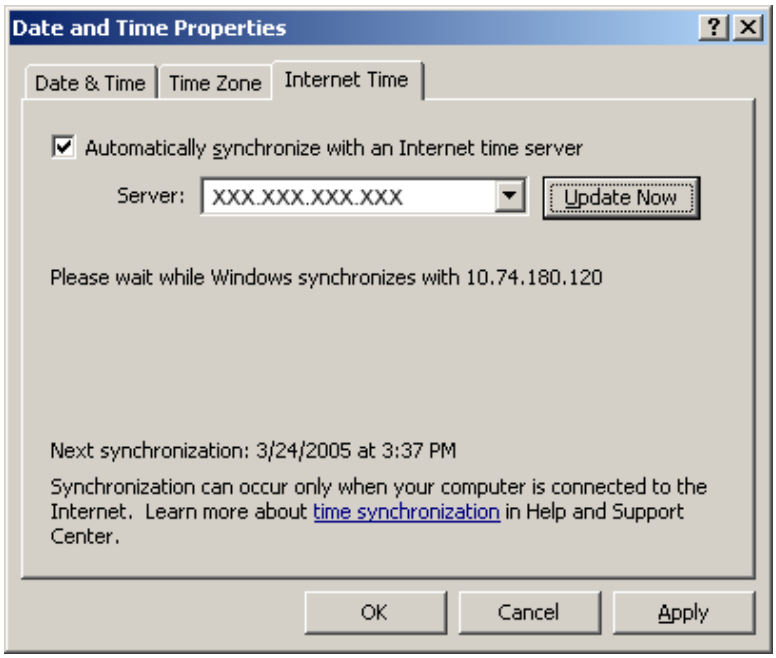


Figure 4.60 MMB virtual IP address setting example

Notes:

1. If the [Synchronize with the Internet time server automatically] check box is selected, the MMB automatically synchronizes with the specified NTP server.
2. By default "time.windows.com" is specified in the [Server:] box.
3. If synchronization cannot be established with the NTP server, a Win32Time error is indicated in the event log.
4. An MMB physical IP address is used in communication for time synchronization with an external NTP server. In case a setting such as a firewall security setting needs to be changed to enable communication, note that communication needs to be enabled not only with the MMB virtual IP address (Virtual IP address), but also with the corresponding physical IP addresses (MMB#0 IP address and MMB#1 IP address).
5. If [Update Now] is clicked within three minutes after the procedure described in Section 4.11.2, "NTP server setup," synchronization may fail. In this event, wait at least three minutes, and then click [Update Now] again.

6 Click [OK] button to save the settings.

4.11.3.3 NTP setting for a domain belonging to a partition

If a partition in which Windows is installed belongs to a domain (it is a member of the domain), the time of the partition is automatically synchronized with the NTP server of the domain controller. In such cases, the [Internet Time] tab is not displayed as shown in the figure below.

Every partition in an MSCS cluster environment must always belong to a domain, and the time of the partition also is automatically synchronized with the NTP server of the domain controller.

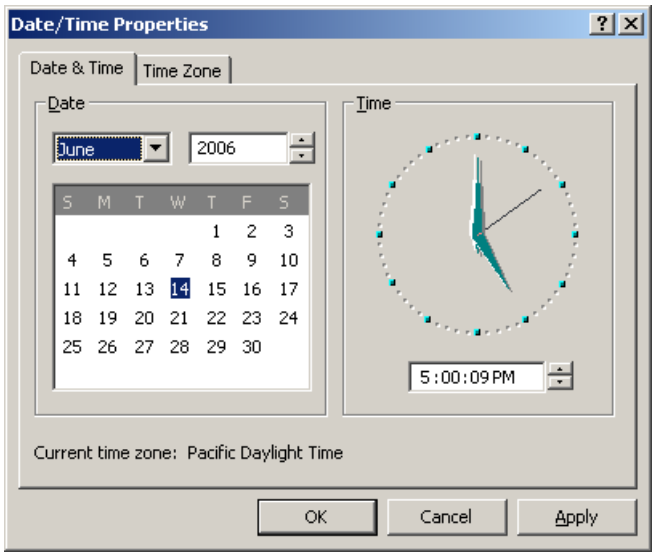


Figure 4.61 [Date and Time Properties] dialog box (in time synchronization with an NTP server)

4.12 OS Backup Settings

This section describes how to back up Linux (Red Hat) or Windows. For information on restoration, see Chapter 1, "System Maintenance" in the *PRIMEQUEST 500A/500/400 Series Reference Manual: Tools/Operation Information* (C122-E074EN).

- Linux (Red Hat) backup (→ 4.12.1)
- Windows backup (→ 4.12.2)

4.12.1 Linux (Red Hat) backup

This section describes how to back up system volumes contained in a partition in which the Linux OS is installed. Two Linux backup methods are available:

- Using the standard OS utilities
- Using SystemcastWizard Lite

The Linux OS system volume backup procedure as described below uses the standard OS utilities in each of the following two cases:

- When PRIMECLUSTER GDS is not used
- When PRIMECLUSTER GDS is used

Note: Prepare a single unit such as a tape unit as a backup device.

Remarks: Perform the backup/restoration operation from the OS console. A KVM console or serial console can be used.

For details on use of SystemcastWizard Lite for Linux backup, see the *PRIMEQUEST SystemcastWizard Lite User's Guide* (C122-E010EN).

4.12.1.1 Backup when PRIMECLUSTER GDS is not used

This section explains the applicable backup procedure when PRIMECLUSTER GDS is not used.

The example of operation shown below assumes the following disk configuration:

```
/dev/sda1 : /boot/efi
/dev/sda2 : /
/dev/sda3 : swap
/dev/sda4 : /work
```

Preparation

First, check the operation environment (system and disk configurations) of the objective system.

Note: The information displayed at this time would be required for recovery if the disk were to fail. Record the command output to ensure that it can be read at the time of recovery.

(1) Check the system configuration.

1 Check IDE and SCSI card types and IRQ and I/O port operating status.

```
# dmesg
```

or

```
# more /var/log/messages
```

2 Check driver file names.

```
# lsmod
```

3 Check device names, device types, and major and minor numbers.

```
# ls -al /dev/sda*
```

(2) Check the disk configuration.

1 Check the mount status.

```
# cat /etc/fstab
```

2 Record the partition configuration information.
In cases such as a disk failure, restoration on a new disk may be necessary. Accordingly, the parted command must be used to record the current partition configuration and prepare for restoration.

See below for an example of recorded information.
Example:

```
# parted
(parted) unit s
(parted) print

Disk /dev/sdb: 71390319s
Sector size (logical/physical): 512B/512B
Partition table: gpt

 No.   Start        End          Size        File system   Name     Flag
  1    34s          204833s      204800s     fat16         Primary  msftres
  2    204834s      42147873s    41943040s   ext2          Primary
  3    42147874s    46228383s    4080510s    linux-swap    Primary
  4    46228384s    67199903s    20971520s   ext2          Primary
(parted) quit
```

Remarks: In RHEL5 (IPF), the print subcommand of the parted command displays simplified values with units such as "MB" added to the values. Therefore, the values may differ greatly from the actual sizes.
To minimize differences from the size displayed at the backup time, change the display unit to a smaller measurement unit before executing the print subcommand, and record it for partition reconfiguration.
In the above example, "unit s" is used for the display unit (s) for sectors.

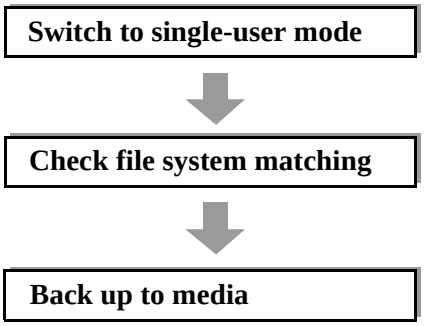
3 Check file system label names.

```
# e2label /dev/sda2
```

* If a device mounted in /boot/efi is specified, an error occurs. This error occurs because the file system is different. That does not cause a problem because "boot/efi" is not defined as a label name, checking it is not required.

Backup

Perform the backup in the following procedure.



The following explains each step.

(1) Switch to single-user mode

To perform the backup, the user must deactivate all processes except those required to perform it. This is to secure file matching.
To enter this state, switch to single-user mode.

- When the system is already active
  1. Log in with the root directory.
  2. Stop running applications.
  3. Enter single-user mode (run level 1).

```
# init 1
```

- When the system is in a stopped state
  1. Start the system.
     When the EFI boot manager menu appears, select the name of the system to be started (such as Red Hat Enterprise Linux).
     Note: Advance settings are required to start the EFI boot manager menu. For the setting procedure, see Section 5.3.8.2, "[Boot Control] window" in the *PRIMEQUEST 580A/540A/520A/500/400 Series Reference Manual: Basic Operation/GUI/Commands* (C122-E003EN).
  2. Enter the command shown below following the "ELILO boot:" prompt.
     - When a KVM console is used

```
kernel-label-name 1
```

     - When a serial console is used

```
kernel-label-name 1 console=ttyS0,19200n8r
```

     After completing the transition to the single user mode, a prompt appears in command line mode.
     Note: To check the current *kernel-label-name*, see the default entry in the following config file:
     /boot/efi/efi/redhat/elilo.conf

(2) Check file system matching

To check whether the file system to be backed up is normal, check its match.

The file system that needs to be checked is ext3 (or ext2). "/boot/efi" and swap need not be checked.

- For location other than "/" (root), "/boot/efi," and swap

  1 Demount the file system to be backed up.

```
# cd /
# umount /work
```

  2 Check the matching of the demounted file system.

```
# e2fsck -pfv /dev/sda4
```

Note: Do not execute the e2fsck command if the umount command produces an error.
If the e2fsck command is executed with the file system mounted, the selected volume may be damaged.

- For "/" (root)

  1 Remount the "/" file system in Read-Only mode.

```
# mount -r -n -o remount /
```

  2 Check the matching of the file system.

```
# e2fsck -pfv /dev/sda2
```

  3 Remount the file in normal state.

```
# mount -w -n -o remount /
```

Note: Do not execute the e2fsck command if the mounting in Read-Only mode fails.
If the e2fsck command is executed with the file system mounted as write-enabled, the selected volume may be damaged.

(3) Back up to media

Back up to backup media for each partition of the disk.
The dump command is used for backup, but it supports the ext2 and ext3 file systems only. Use the tar command to back up /boot/efi of a different file system.

Note: Be careful when different tape units are used for backup and restoration because the default block sizes of the tape units may be different. Execute backup and restoration based on the same block size. Restoration fails if the block size used for restoration differs from that used for backup.

- Using a locally connected tape unit:

1 Prepare a tape unit.
See "mt" command manuals for details.

- Display status information on the tape unit.

```
# mt -f /dev/nst0 status
```

- Rewind tape.

```
# mt -f /dev/nst0 rewind
```

2 Back up.

- For location other than /boot/efi
Back up with the dump command.

```
# dump 0uf /dev/nst0 /dev/sda2
```

- For /boot/efi
Back up with the tar command.

```
# cd /boot/efi
# tar czvf /dev/nst0 .
```

- When a tape unit connected to the remote host is used

1 Start the network.

```
# /etc/rc.d/init.d/network start
```

2 Activate the network.

```
# ifconfig eth0 xxx.xxx.xxx.xxx netmask xxx.xxx.xxx.xxx
broadcast\
xxx.xxx.xxx.xxx
```

\: Indicates that no line feeds should be inserted.

Remarks: Set values such as the IP address according to your system.

3 Prepare a tape unit.

Use the mt command with the ssh command for operation with a remote tape unit.

For details, see the mt command manual.

- Rewind tape.

```
# ssh remote-host-name mt -f /dev/nst0 rewind
```

Enter the password in response to the password prompt.

4 Back up.

Use the ssh command for the backup operation.

- For a file system other than /boot/efi

Back up with the dump command.

```
# dump 0f - /dev/sda2 | ssh remote-host-name dd of=/dev/nst0
```

Enter the password in response to the password prompt.

- For /boot/efi

Back up with the tar command.

```
# cd /boot/efi
# tar czvf - . | ssh remote-host-name dd of=/dev/nst0
```

Enter the password in response to the password prompt.

4.12.1.2 Backup when PRIMECLUSTER GDS is used

When GDS is used, the backup procedure is as follows:

Stop all running applications.

↓

Switch to single-user mode.

↓

Investigate the device special name of the file system.

↓

Back up the file system data to media.

Remarks: See the *PRIMECLUSTER Global Disk Services Handbook* for details.

4.12.2 Windows backup

Use SystemcastWizard Lite to back up a Windows partition.

For details, see the *PRIMEQUEST SystemcastWizard Lite User's Guide* (C122-E010EN).

4.13 Saving Setup Information

This section explains how to save the information that has been set.

- Saving PSA setup information (→ 4.13.1)
- Saving EFI configuration information (→ 4.13.2)

Remarks:Once the system has been placed into operation, save PSA settings and EFI configuration information at a regular interval.

4.13.1 Saving PSA setup information

Use the export function to convert the snapshot information retained in PSA into CSV format and save it to the partition management area.

The export function can be performed in two modes: manual export and automatic export. A Manual export can be performed on the export screen.

The export function can save up to 100 data files. When 100 files are exceeded, the least recent file is deleted and a new file is saved.

Exported data remains saved unless the maximum number is exceeded or it is deleted intentionally.

4.13.1.1 Listing exported files

This section explains what can be done from a listing of files. The screen lists the files currently exported, in order with the most recent on top.

The following types of operation can be performed from the list display screen:

- Saving a snapshot in CSV format to a file
  A snapshot of information retained in PSA can be saved in CSV format to a file.
- Downloading an exported file to the terminal
  An exported file can be downloaded to the terminal.
- Deleting an exported file
  An exported file can be deleted from the partition management area.

Remarks: For file deletion, see the *PRIMEQUEST 580A/540A/520A/500/400 Series Reference Manual: Basic Operation/GUI/Commands* (C122-E003EN).

Procedure

1 Click [Partition] → [Partition#x] → [PSA] → [Export List].
The [Export List] window appears.

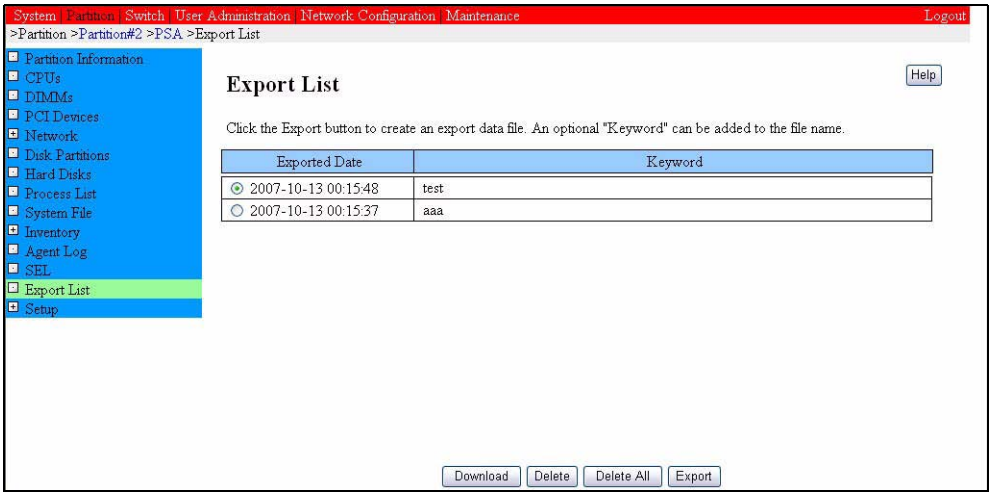


Figure 4.62 [Export List] window (example)

2 Click the appropriate control button according to the processing.
To save a snapshot in CSV format to a file, click the [Export] button.
To download an exported file to the terminal, select the radio button of the target file and click the [Download] button. Only one file can be selected at a time.
To delete all exported files, click the [Delete All] button. To delete a specific file, select the radio button of the target file and click the [Delete] button. Only one file can be selected at a time.
For the subsequent operation, see Section 4.13.1.2, "Saving to a CSV format file."

Table 4.8 Displayed and setting items in the [Export] window

Item	Description
Exported Date	Select the radio button of the file to be exported or deleted. Only one file can be selected at a time. The date/time the file is exported is displayed in yyyy-MM-dd HH:mm:ss format. The partition local time is assigned as the time.
Keyword	The keyword entered for export is displayed. No keyword can be entered in automatic export mode.

4.13.1.2 Saving to a CSV format file

This section explains how to save a snapshot of information retained in PSA to a CSV format file.

This operation can be performed by clicking the [Export] button in step 2 in Section 4.13.1.1, "Listing exported files."

Procedure

1 Enter the keyword and click the [Export] button.
When the export is successfully finished, the [Export List] window is restored.
Remarks: The keyword is a supplementary phrase assigned to exported data. Enter it in up to 50 characters. The keyword field can be left blank if you do not want to enter a keyword.

Characters usable for a keyword: alphanumeric characters, blank, and symbols (excluding < >%&”,\)

If the export fails, the [Export Failure Notice] dialog box appears.
Click the [Return] button. The [Export List] window is restored with the latest list displayed.

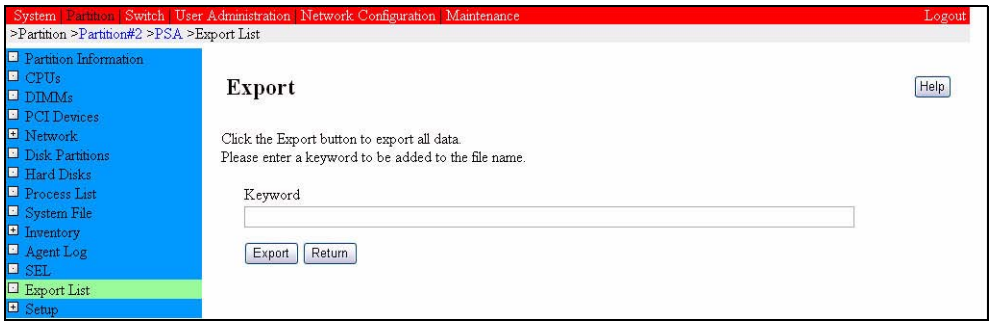


Figure 4.63 [Export] window (example)

2 If export failed, click the [OK] button in the [Export Failure Notice] dialog box.
The [Export List] window is restored and the list displays the latest status.

4.13.2 Saving EFI configuration information

Back up EFI configuration information to the remote PC.

Procedure

1 Click [Maintenance] → [Backup/Restore Configuration] → [Backup EFI Configuration].
The [Backup EFI Configuration] window appears.

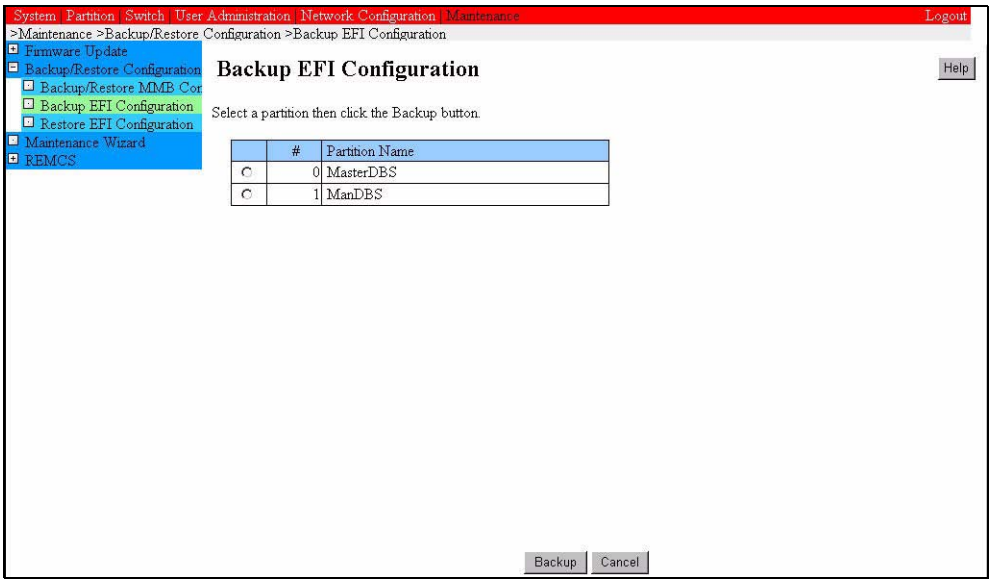


Figure 4.64 [Backup EFI Configuration] window (example)

2 Select the radio button of the partition for which configuration information is to be backed up, and click the [Backup] button.

3 The storage destination dialog box appears. Select the storage path and click the [OK] button.
The default name of the EFI configuration file to be backed up is as follows:

partition-number_backup-date_efi-version.dat

4 Click the [OK] button.
The downloading of the configuration file begins.

CHAPTER 5 Security Setup

5.1 Security Settings

This chapter describes the settings required for security and how to report errors that occur during operation.

Considering the operation conditions, specify the required security settings.

It is recommended to back up the setup information after completing the following setup tasks. For backing up the settings made here, see Section 2.6, "Saving Configuration Information."

- Access control setting (→ 5.1.1)
- System SNMP setting (→ 5.1.2)
- Specifying SSH parameters (→ 5.1.3)
- Specifying HTTPS parameters (→ 5.1.4)

5.1.1 Access control setting

To ensure MMB security, access control for a network protocol is set.

Fujitsu recommends setting access control during installation to ensure security. However, access control can be set later.

Selecting a filter to be edited

- Procedure

1 Click [Network Configuration] → [Access Control].
The [Access Control] window is displayed.

Figure 5.1 [Access Control] window (example)

2 Use a radio button to select a filter to be edited.

Table 5.1 Displayed and setting items in the [Access Control] window

Item	Description
Protocol	Displays protocols subject to IP filtering. HTTP, HTTPS, Telnet, SSH, SNMP
Access Control	Displays setting for enabling/disabling access.
IP Address	Connection-enabled IP address
Subnet Mask	Subnet mask of connection-enabled IP address

Filter addition and editing

- Procedure

1 To add a filter, click the [Add Filter] button in the [Access Control] window. To edit the filter, click the [Edit Filter] button.
For addition, the [Add Filter] window is displayed. For editing, the [Edit Filter] window is displayed.
The following shows a display example of the [Edit Filter] window.

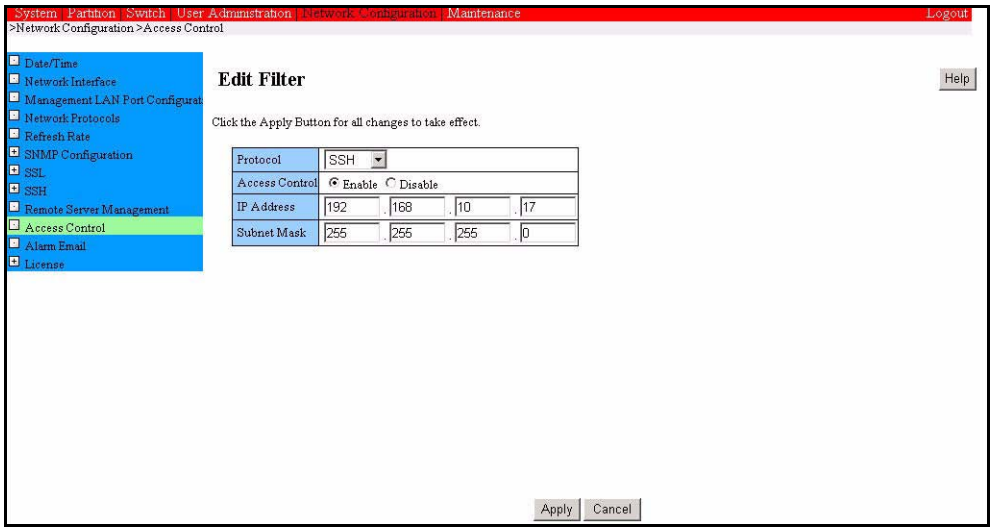


Figure 5.2 [Edit Filter] window (example)

2 Enter the required items.
Up to 64 filters can be set.

Note: When seting a proxy with the Web browser from your computer or workstation, set the IP address taking into consideration the proxy setting.

Table 5.2 Displayed and setting items in the [Edit Filter] window

Item	Description
Protocol	Sets a protocol subject to IP filtering. Select one of the following from the pull-down menu. HTTP, HTTPS, Telnet, SSH, SNMP
Access Control	Use the [Enable] and [Disable] radio buttons to specify whether to implement access control. • If [Disable] is selected, access to the protocol selected above is enabled for all IP addresses. In this case, entry in the entry fields of the following [IP Address] and [Subnet Mask] is disabled. • If [Enable] is selected, entry in the entry fields of the following [IP Address] and [Subnet Mask] is enabled to set an IP address that enables access to the protocol selected above.
IP Address	Connection-enabled IP address Setting example: 192.168.0.0
Subnet Mask	Subnet mask of connection-enabled IP address Setting example: 255.255.255.0

3 Click the [Apply] button.

Filter removal

1 Select a filter and click the [Remove Filter] button. A removal confirmation window is displayed.

2 To remove the filter, click the [OK] button.
The [Access Control] window is then restored, and the user can confirm that the filter has been removed from the list.

To cancel the removal, click the [Cancel] button.

5.1.2 System SNMP setting

Set Simple Network Management Protocol (SNMP). The SNMP can be set with the Administrator privilege. Specify whether to notify the linked management software if an error occurs during operation. To notify the linked management software, specify the report destination. Set the following four.

- Enabling SNMP
- Setting SNMP detail
- Setting an SNMP trap send destination
- SNMP v3 setting

Enabling SNMP

- Procedure

1 Click [Network Configuration] → [Network Protocols]
The [Network Protocols] window is displayed.

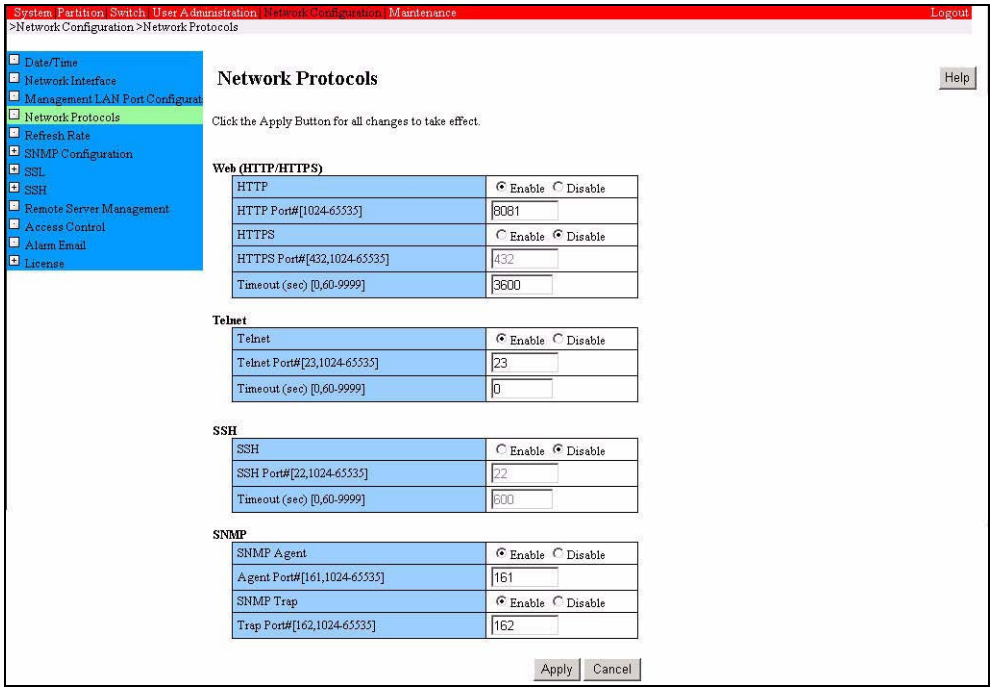


Figure 5.3 [Network Protocols] window (example)

2 Enter the [SNMP] items.

Table 5.3 Displayed and setting items in the [Network Protocols] window

Item	Description
<SNMP>	
SNMP Agent	Enables or disables SNMP Agent. Default: Disable
Agent Port	Sets a port to be used for SNMP Agent. Port numbers that can be set are 161 and 1,024 to 65,535. Default: 161
SNMP Trap	Enables or disable SNMP Trap. Default: Disable
Trap Port	Set a port to be used for SNMP Trap. Port numbers that can be set are 162 and 1,024 to 65,535. Default: 162

3 Click the [Apply] button.

Setting SNMP detail

- Procedure

1 Click [Network Configuration] → [SNMP Configuration] → [Community].
The [SNMP Community] window is displayed.

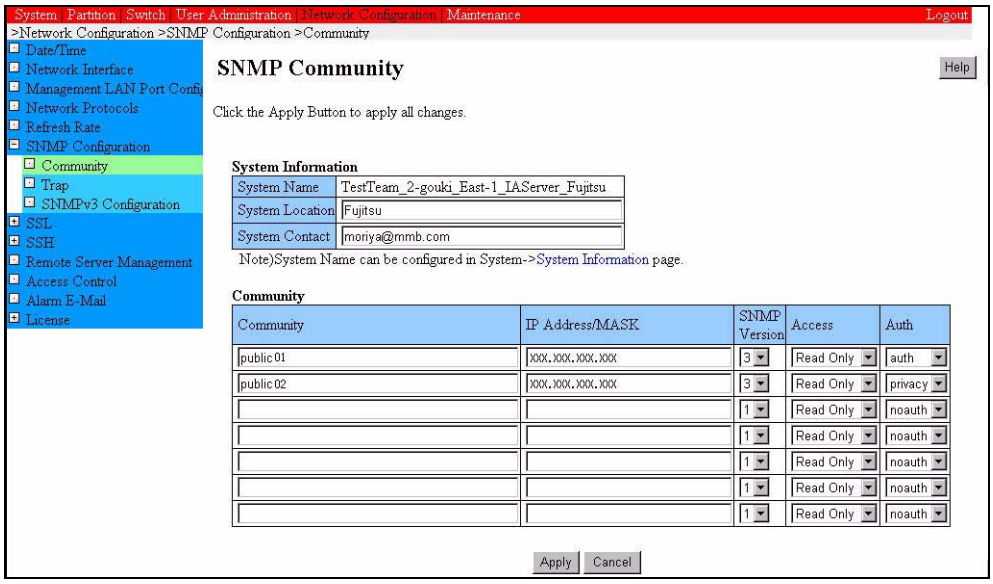


Figure 5.4 [SNMP Community] window (example)

2 Enter the required items.

- A maximum of 16 communities can be set. Enter a community to be set, access-enabled IP address, SNMP version, access authority, and certification information.
- To delete the items, clear the [Community] and [IP address] items.

Table 5.4 Displayed and setting items in the [SNMP Community] window

Item	Description
<System Information>	
System Name	Displays a system name of the PRIMEQUEST set in the [System Information] window. Set the name in the [System Information] window (Section 2.2.4.3, "Specifying the system name.")

Item	Description
System Location	Sets a system location. Remarks: Any of the following characters can be used: [0-9],[a-z],[A-Z], (en-size space) ! " # $ % & ' ( ) = - ^ ~ \ @ ` [ ] { } : * ; + ? < . > , / _ | However, the following restrictions apply: •The following characters cannot be used at the beginning of a string: # (en-size space) •The following character cannot be used at the end of the string: (en-size space)
System Contact	Sets a system contact. Remarks: Any of the following characters can be used: [0-9],[a-z],[A-Z], (en-size space) ! " # $ % & ' ( ) = - ^ ~ \ @ ` [ ] { } : * ; + ? < . > , / _ | However, the following restrictions apply: •The following characters cannot be used at the beginning of a string: # (en-size space) •The following character cannot be used at the end of the string: (en-size space)
<Community>	
Community	Sets an SNMP Community string. Remarks: Any of the following characters can be used: [0-9],[a-z],[A-Z], (en-size space) ! " # $ % & ' ( ) = - ^ ~ \ @ ` [ ] { } : * ; + ? < . > , / _ | However, the following character cannot be used at the beginning of the string: " ' ` #
IP Address/MASK	Set an access-enabled IP address or network address.
SNMP Version	Sets an SNMP version (1, 2, or 3).
Access	Specifies whether to enable reading or reading and writing. • [Read Only]: Enables reading only. • [Read Write]: Enables reading and writing.
Auth	Used to select a security level. This item can be selected only if 3 is selected for [SNMP Version]. If 1 or 2 is selected for [SNMP Version], [noauth] is automatically set for the item. • noauth: The authentication function is not used. • auth: The authentication function is used. • priv: The authentication function and privacy function (data encryption) are used.

3 Click the [Apply] button.

Setting an SNMP trap send destination

- Procedure

1 Click [Network Configuration] → [SNMP Configuration] → [Trap].
The [SNMP Trap] window is displayed.

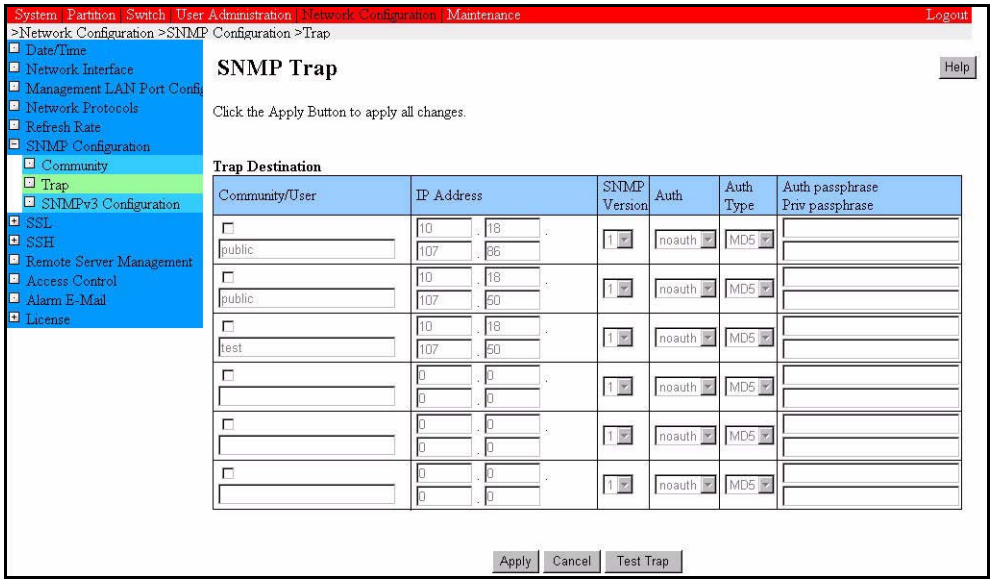


Figure 5.5 [SNMP Trap] window (example)

2 Enter a send destination.

- Up to 16 trap send destinations can be set.
- Set a community or user name and the IP address of the trap transfer destination, an SNMP version, and certification level.

Table 5.5 Displayed and setting items in the [SNMP Trap] window

Item	Description
Community/User	Specifies a community name or user name. Remarks: Any of the following characters can be used: [0-9],[a-z],[A-Z], (en-size space) ! " # $ % & ' ( ) = - ^ ~ \ @ ` [ ] { } : * ; + ? < . > , / _ | However, the following character cannot be used at the beginning of the string: " ' ` #
IP Address	Specifies the IP address of the trap transfer destination.
SNMP Version	Used to select an SNMP version. • 1: A version-1 SNMP trap is sent. • 2: A version-2 SNMP trap is sent. • 3: A version-3 SNMP trap is sent.
Auth	Used to select an authentication level. • noauth: Disables authentication and encryption based on a password (enables authentication based on a user name). • auth: Enables authentication based on a password but disables encryption based on a password. • priv: Enables authentication and encryption based on a password.
Auth Type	• md5: Selects MD5 as the hash function for password-based encryption. • sha: Selects SHA as the hash function for password-based encryption.
Auth passphrase	Displays the packet encryption keyword used at the time of password-based authentication (no password-based encryption).
Priv passphrase	Displays the packet encryption keyword used at the time of password-based authentication and encryption.

3 Click the [Apply] button.

Click the [Test Trap] button to send a test trap to the trap send destination that is currently set.

SNMP v3 setting

This function sets an SNMP v3 specific engine ID and user.

Notes: If the engine ID or IP address is changed, the user set for SNMP v3 access must be completely set again from the beginning. To validate the set user, temporarily stop the SNMP daemon and then restart it. Therefore, if the [Apply] button is clicked here, the SNMP service is temporarily stopped.

- Procedure

1 Click [Network Configuration] → [SNMP Configuration] → [SNMP v3 Configuration].
The [SNMP v3 Configuration] window is displayed.

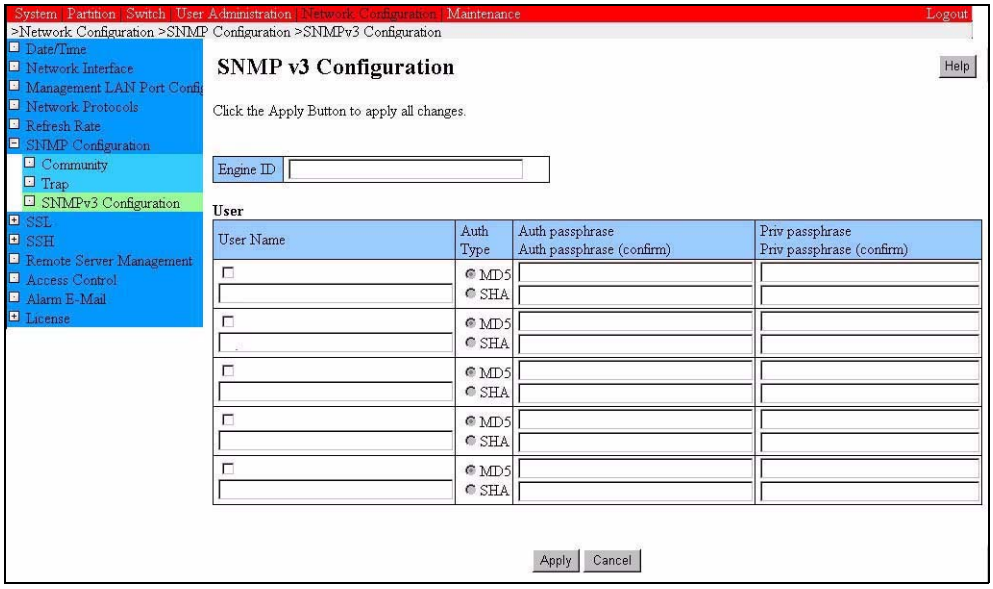


Figure 5.6 [SNMP v3 Configuration] window (example)

2 Enter an SNMP v3 user.
Up to 16 users can be registered.

Table 5.6 Displayed and setting items in the [SNMP v3 Configuration] window

Item	Description
Engine ID	Specify an engine ID. Remarks: Any of the following characters can be used: [0-9],[a-z],[A-Z], (en-size space) ! " # $ % & ' ( ) = - ^ ~ \ @ ` [ ] { } : * ; + ? < . > , / _ | However, the following restrictions apply: •The following characters cannot be used at the beginning of a string: # (en-size space) •The following character cannot be used at the end of the string: (en-size space)
User	
User Name	Specifies a user name. Selecting the check box of the target user enables input of a user name. Remarks: Any of the following characters can be used: [0-9],[a-z],[A-Z], (en-size space) ! " # $ % & ' ( ) = - ^ ~ \ @ ` [ ] { } : * ; + ? < . > , / _ | However, the following character cannot be used at the beginning of the string: " ' ` #
Auth Type	Select the authentication type. • MD5: Use MD5 as the hash function for password encryption. • SHA: Use SHA as the hash function for password encryption.
authpassphrase	Displays the packet encryption keyword used for password authentication (no encryption is performed).
privpassphrase	Displays the packet encryption keyword used for password authentication and encryption.

3 Click the [Apply] button.
To reflect the selected user, temporarily stop the SNMP daemon and then restart it.

5.1.3 Specifying SSH parameters

Specify SSH parameters for MMBs. This can be performed by users with administrator privilege.

Procedure

1 Click [Network Configuration] → [Network Protocols].
The [Network Protocols] window is displayed.

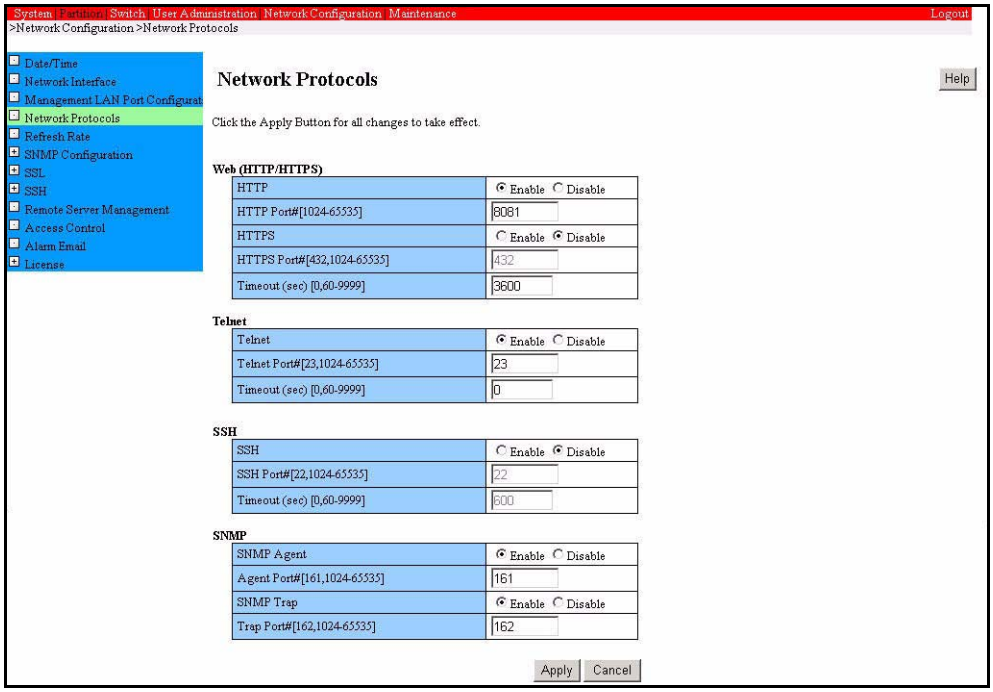


Figure 5.7 [Network Protocols] window (example)

2 Specify the items related to SSH.

Table 5.7 Setting items of SSH

Item	Description
<SSH>	
SSH	Sets [Enable]/[Disable] of SSH Default: [Disable]
SSH Port	Sets a port to be used for SSH. Default: 22
Timeout	Sets a time interval allotted for entering data with SSH connected before the connection is cut off. Default: 600 seconds

3 Click the [Apply] button.

5.1.4 Specifying HTTPS parameters

Specify HTTPS parameters for MMB. This can be performed by users with administrator privilege.

To enable HTTPS, a valid SSL certificate must have been registered. If the user attempts to enable HTTPS without the certificate being registered, an error is displayed.

You do not need to perform this step if it has already been performed by the certified service engineer for test program execution.

Procedure

1 Click [Network Configuration] → [Network Protocols].
The [Network Protocols] window is displayed.

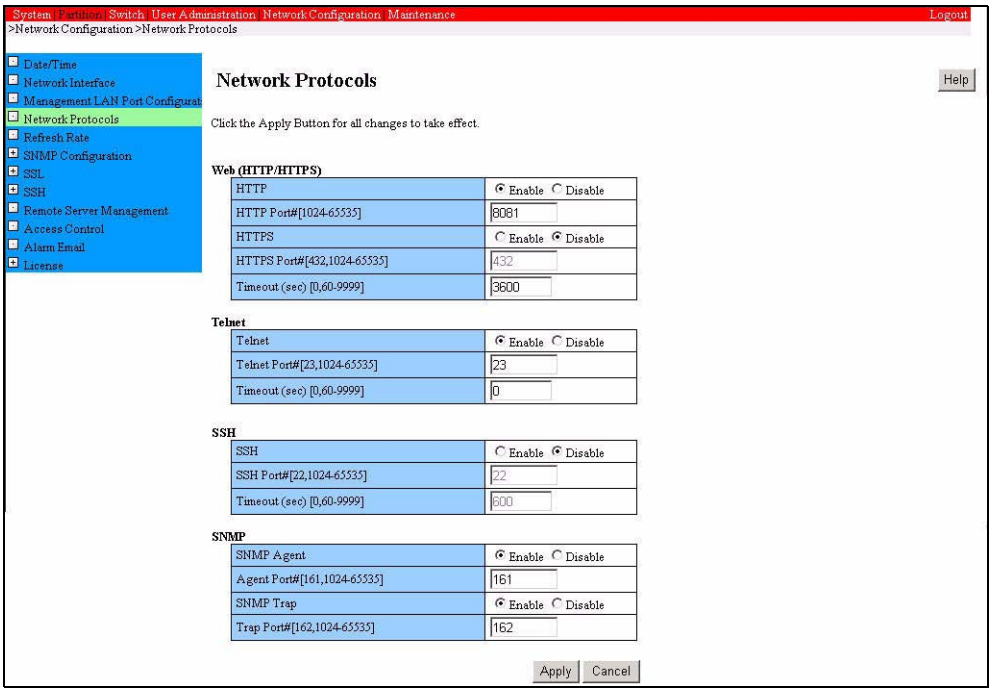


Figure 5.8 [Network Protocols] window (example)

2 Specify the HTTPS related settings to the [HTTP] items.

Table 5.8 Setting items of HTTPS

Item	Description
<Web (HTTP/HTTPS)>	
HTTPS	Sets [Enable]/[Disable] of HTTPS. Default: [Disable]
HTTPS Port#	Sets a port number to be used for HTTPS. Default: 432
HTTP/HTTPS Timeout	Sets a time interval allotted for entering data with HTTP/HTTPS connected before the connection is cut off. Default: 600 seconds

3 Click the [Apply] button.

CHAPTER 6 GSWB Initialization

If the optional product GSWB is implemented in PRIMEQUEST 580A/540A/580/540/480/440, you need to initialize the GSWB.

Perform initialization by following the instructions in the *PRIMEQUEST GSWB User's Manual* (C122-E028EN).

Appendix A Software Programs Supplied with the PRIMEQUEST Hardware

The table below indicates the software programs supplied with the PRIMEQUEST hardware.

Y: Supported

Table A.1 List of the software programs supplied with PRIMEQUEST hardware

No.	Name	Function	EFI	Supported OSs		
				Linux (RedHat)	Linux (SUSE)	Windows
1	EFI/BIOS	Firmware	Y	Y	Y	Y
2	PSA	Hardware system management	-	Y	Y	Y
3	SIRMS	Software configuration information collection	-	Y (*1)	-	Y (*1)
SCSI-related software programs						
4	Driver	Driver	Y	Y	Y	Y
5	Fusion MPT EFI appl.	F/W update tool	Y	-	-	-
6	Fusion MPT management tool	CIMS Browser	-	Y	Y	-
Broadcom-LAN-related software programs						
7	Driver	Driver	-	Y	-	Y
8	BCM EFI appl.		Y	-	-	-
9	BACS(Win)	VLAN, aggregation, etc.	-	-	-	Y
Intel-LAN-related software programs						
10	Driver	Driver	-	Y	Y	Y
11	Intel PROSet(Win)	VLAN, AFT/ALB, etc.	-	-	-	Y
Neterion-LAN related software programs						
12	Driver	Driver	-	Y	-	Y
13	Xframe Control Panel (Win)	VLAN, Team, etc.	-	-	-	Y
Emulex-FC-related software programs						
14	Driver	Driver	Y	Y	Y	Y
15	lputil		-	Y	Y	Y
16	HBAnyware		-	Y	Y	Y

No.	Name	Function	EFI	Supported OSs		
				Linux (RedHat)	Linux (SUSE)	Windows
Others						
17	HBA blocking driver for PCL		-	Y (*2)	-	-
18	Log trace capture	Log collection	-	Y (*1)	-	-
19	sadump (standalone)	Dump	-	Y (*3)	-	-
20	Installation Support Tool	Executed on an external PC (Windows) to create the config file.	-	Y	Y	-
21	Installation Support Tool for Windows	Tool for creating the installation floppy disk used for automatic Windows installation	-	-	-	Y
22	Bundled-Software Package Tool	Installation tool (bundled software)	-	Y	Y	-
23	DSNAP	Runs OS-level commands to collect basic information on Windows OS.	-	-	-	Y
24	PRIMEQUEST Software Installer	Tool for installing the accompanying software	-	-	-	Y
25	System Parameter Check Tool	Checks the environment variables (arguments required for OS operation) being set by the user.	-	Y	-	-
26	System data output tool (fjsnap)	Runs on an OS to collect the information required for support activities by executing commands.	-	Y	Y	-
27	SystemcastWizard Lite	Remote installation Disk backup/restore	-	Y	Y	Y
28	SNMP MIB	MIB	-	Y	Y	Y
29	Software Support Guide	Runs OS-level commands to collect information to support troubleshooting.	-	-	-	Y
30	HRM/server	Maintenance support tool	-	Y	-	Y

*1: This is supported only in Japan.

*2: This is supported only in Japan and the Asian region.

A.1 Types of Supplied Software Programs

The PRIMEQUEST uses bundled versions of various software programs. This chapter describes overview of these bundled versions and installation and operation of SystemcastWizard Lite.

- Installation Support Tool (→ A.2)
- Bundled-Software Package Installer (→ A.3)
- DSNAP (→ A.4)
- System Parameter Check Tool (→ A.5)
- System Data Output Tool (fjsnap) (→ A.6)
- SystemcastWizard Lite (→ A.7)
- Installation Support Tool for Windows (→ A.8)
- Software Support Guide (→ A.9)

A.2 Installation Support Tool

A configuration file contains the configuration parameters used to install the Linux OS. The installation support tool is used to create this configuration file. The installation support tool is compatible with the following Linux OS:

- Red Hat Enterprise Linux AS (v.4 for Itanium)
- Red Hat Enterprise Linux 5 (for Intel Itanium)
- SUSE Linux Enterprise Server 9 for Itanium Processor Family
- SUSE Linux Enterprise Server 10 for Itanium Processor Family

The OS is installed on the PRIMEQUEST-series machine according to the settings made in advance in the config file created by the installation support tool on a Windows PC to facilitate work for this OS installation.

The bundled-software package installer facilitates installation of supplied software.

For details, see the *PRIMEQUEST Installation Support Tool User's Guide (Red Hat)* (C122-E005EN) and the *PRIMEQUEST Installation Support Tool User's Guide (SUSE)* (C122-E047EN).

A.3 Bundled-Software Package Installer

Bundled-Software Package Installer is a tool used to collectively install utility programs for PRIMEQUEST.

Bundled-Software Package Installer supports the following Linux OS:

- Red Hat Enterprise Linux AS (v.4 for Itanium)
- Red Hat Enterprise Linux 5 (for Intel Itanium)
- SUSE Enterprise Linux Server 10 for Itanium Processor Family

For details, see the *PRIMEQUEST Bundled-Software Package Installer User's Guide* (C122-E006EN).

A.4 DSNAP

DSNAP is a software program that quickly and securely collects investigative data, when a problem occurs in Windows OS. If a problem occurs in your system, your Fujitsu certified engineer uses this software to correctly find out your system software configuration and setting states and conduct smooth examinations of processes.

- Installation method

See Section 3.3.6, "High-Reliability Tools."

- Usage

Refer to [OS Install Drive]: \DSNAP README_EN.TXT file.

A.5 System Parameter Check Tool

Some settings of the system parameters, which are very likely to be changed in the Linux kernel environment, may prevent normal operation of the Linux system. System Parameter Check Tool detects and reports these settings. System Parameter Check Tool supports the following Linux OS:

- Red Hat Enterprise Linux AS (v.4 for Itanium)
- Red Hat Enterprise Linux 5 (for Intel Itanium)

System Parameter Check Tool provides commands that check and set system parameters and the function that implements automatic checks at system boot and shutdown.

Using System Parameter Check Tool can prevent system boot failures, which might be caused by system parameter setting errors, and it can detect dump area setting errors.

For details, see the *PRIMEQUEST System Parameter Check Tool User's Guide* (C122-E009EN).

A.6 System Data Output Tool (fjsnap)

fjsnap is a tool that collectively collects system information required for troubleshooting.

fjsnap collects up to about 200 types, 1,000 files of hardware/software configuration information, environment setups, operation information, and the logs required for troubleshooting, and then compresses and outputs them into a file.

An outline of system information collection by fjsnap is shown below:

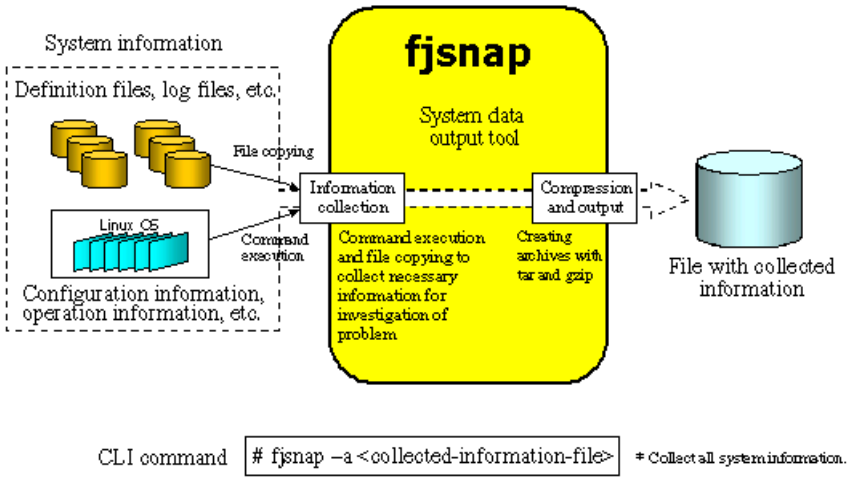


Figure A.1 Outline of system information collection by fjsnap

For further information on fjsnap, see the *PRIMEQUEST 500A/500/400 Series Reference Manual: Messages/Logs* (C122-E004EN).

A.7 SystemcastWizard Lite

A.7.1 Overview of SystemcastWizard Lite

SystemcastWizard Lite is a software program you can use to install an OS or back up or restore hard disk data via a network. It is useful, for example, when you construct a system involving multiple partitions. Using the PRIMEQUEST network activation function can facilitate processing since you follow instructions from the management console and need not insert activation CD disks or other such media into a PRIMEQUEST drive.

Remote OS setup

This function is used for a new installation of an OS through a network. All end-to-end installation processes are performed automatically based on the setup information that is specified in advance. The required installation time and workload can be reduced because a system with the same configuration can be constructed any number of times and an OS can be installed in multiple partitions at the same time.

Backup/restore

This function is used to back up and restore system volumes through a network. Since system volumes can be backed up and restored in units of disks, this function is useful for backing up a system while it is being constructed or checked and for system recovery in the event of a problem. A network activation function facilitates recovery of the entire system volume while the OS is inactive.

A.7.2 Configuration of SystemcastWizard Lite

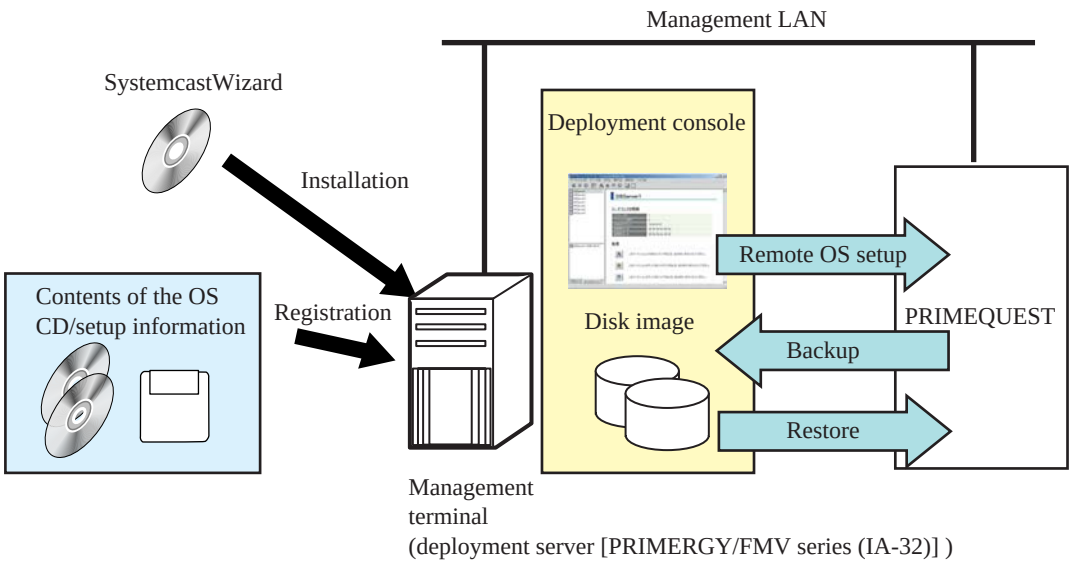


Figure A.2 Configuration of the bundled version of SystemcastWizard Lite

Install SystemcastWizard Lite on a computer connected to the management LAN to construct a management terminal (deployment server). From the management console (deployment console) on this management terminal, instructions can be issued to the PRIMEQUEST for remote OS setup and backup/restore.

Note that the DHCP function (*1) is started via the network. Note also that an FTP server is required to remotely set up a Linux OS.

*1 SystemcastWizard Lite contains a simple DHCP server.

A.7.3 Installation of SystemcastWizard Lite

To use SystemcastWizard Lite, you need to install it.

When you run setup.exe for SystemcastWizard Lite, which is contained in the "PRIMEQUEST SystemcastWizard Lite" CD-ROM supplied with the PRIMEQUEST, the installer starts. Follow the instructions displayed on the screen to install the software.

For further information, see the manual for *PRIMEQUEST SystemcastWizard Lite User's Guide* (C122-E010EN).

A.7.4 How to use the SystemcastWizard Lite

From the Start menu on the management terminal where you installed SystemcastWizard Lite, click [Programs] - [SystemcastWizard Lite] - [Deployment Console]. This starts the deployment console.

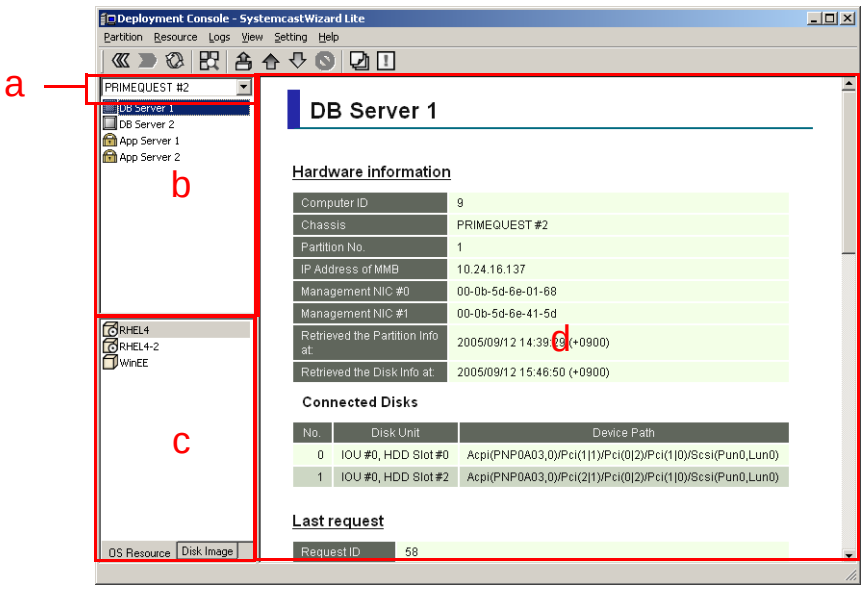


Figure A.3 Starting the deployment console

Window components

The deployment console window consists of the following components:

a Cabinet name (drop-down list)
If multiple cabinets are registered, you can use this list to select the cabinet to be processed.

b Partitions View
Displays a list of partitions in the selected cabinet.

c Resources View
Displays a list of remote OS setup resources and disk images.

d Details View
Displays detailed information about the selected partition, resource, log, or other such object.

Operation flow

The operation flow is described below.

1. Select the target partition from the Partitions View.
2. From the menu, select the task you want to perform (remote OS setup or backup/restore). A dialog box appears.
3. Follow the instructions displayed on the dialog box to set up and run the software. You can see the progress status and execution results on the deployment console because that information is displayed in the Details View.

For details, see the *PRIMEQUEST SystemcastWizard Lite User's Guide* (C122-E010EN).

A.7.5 Considerations

Only SystemcastWizard Lite, which is supplied with the main unit, can be used with the PRIMEQUEST machines.

A.8 Installation Support Tool for Windows

Installation Support Tool for Windows is a tool for automatic installation of Windows on the PRIMEQUEST-series machine.

For details, see the *PRIMEQUEST Installation Support Tool for Windows User's Guide* (C122-048EN).

The *PRIMEQUEST Installation Support Tool for Windows User's Guide* (C122-048EN) is included in the following path on the "PRIMEQUEST Drivers CD for Microsoft® Windows Server® 2003" (C122-E024):

E:\Tools\General\IST\manual (where the CD-ROM drive is Drive E)

A.9 Software Support Guide

Software Support Guide is a group of programs that can collectively gather information on software errors in Windows in a prompt and accurate manner.

Fujitsu certified engineers use Software Support Guide to learn how your system software was operating at the time an error occurred in your system and to quickly investigate the error.

The table below lists the Software Support Guide tools, which enable quicker troubleshooting.

Table A.2 Software Support Guide tools and information that can be collected

Tool name	Information collected
QSS (Quick Support System)	Registries, event logs, system file list, Watson log, minidumps, and MSCS cluster log
User mode Process Dumper	Application (snapshot) dumps
Desktop Heap Monitor	Information on the size of the desktop heap, which is a system resource
ETW (Event Trace for Windows)	OS standard trace function Process/thread, disk, network trace can be used (ETW must be started after installing the Software Support Guide.)

For details, verify by starting and referencing the Software Support Guide.

Appendix B Installation Procedure

This appendix describes the procedure for PRIMEQUEST installation. Such installation includes the following types of operations:

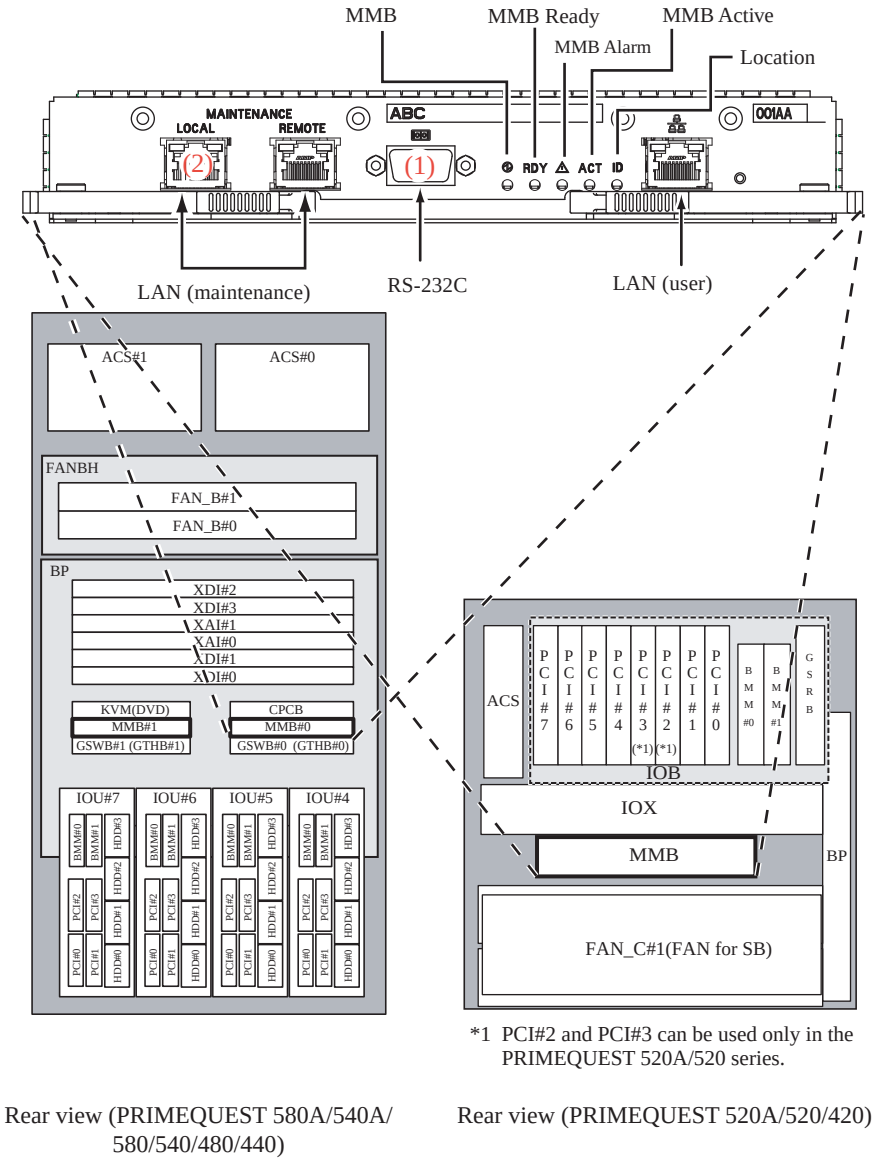
- Connecting a general-purpose PC
- Initializing the MMB
- Logging in to the Web-UI

B.1 Connecting a General-purpose PC

This section describes the procedure for connecting a general-purpose PC to the PRIMEQUEST main unit.

1. Connect the COM port on the general-purpose PC to the RS-232C external interface of the MMB, with an RS-232C cross cable ((1) in Figure B.1).
2. Connect the LAN port on the general-purpose PC to the LAN (maintenance) external interface of the MMB, with a LAN cable ((2) in Figure B.1).

Remarks: BMM#1 is supported only in the PRIMEQUEST 500A/500 series.



*1 PCI#2 and PCI#3 can be used only in the PRIMEQUEST 520A/520 series.

Rear view (PRIMEQUEST 580A/540A/580/540/480/440)

Rear view (PRIMEQUEST 520A/520/420)

Figure B.1 MMB location and external interfaces

Table B.1 MMB external interfaces

External interface		Quantity	Remarks
RS-232C		1	Used by a Fujitsu certified service engineer to set up the unit. It is not used in normal operation.
LAN	100Base-TX	3	• User: Used for a console connection • Maintenance: [LOCAL]: Dedicated for use by a Fujitsu certified service engineer [REMOTE]: REMCS port

3 Turn on the general-purpose PC to start terminal software.
Make the following terminal software settings.

Table B.2 Terminal software settings

Setting item	Value
Bits per second	19200
Data bits	8
Parity	None
Stop bit	1
Flow control	Not applicable
Emulation	VT100

B.2 Initializing the MMB

This section describes the procedure for initializing the MMB.

1 Switch the MAIN LINE SWITCH to ON.

2 The ALM LED on each unit goes on while the MMB Ready LED blinks (initialization is in progress). Then, confirm that the ALM LED on each unit is goes out and the MMB Ready LED stays on (end of initialization).

3 The login prompt appears. Enter "Administrator" to log in.

4 At the time of initial login, the system prompts you to change the Administrator password. Enter a new password.

Note: The password must be a string that consists of at least eight characters and cannot easily be guessed. If the entered password is inadequate, the system prompts you to enter another password.

5 Set up the MMB network.
Specify the IP address by using the following command:

```
Administrator> set ip <IP Address> <netmask>
Administrator> set gateway <defaut gateway IP Address>
```

Example: Setting 192.168.0.10 for the IP address, 255.255.255.0 for the netmask, and 192.168.0.1 for the gateway

```
Administrator> set ip 192.168.0.10 255.255.255.0
Administrator> set gateway 192.168.0.1
```

6 Enter the "set http enable" command to enable http.
This allows the user to access the MMB Web-UI via a LAN from a general-purpose PC.

```
Administrator> set http enable
```

7 Enter the "set telnet enable" command to enable telnet.

```
Administrator> set telnet enable
```

8 Set the date and time as necessary.

```
Administrator> set date MMDDhhmm[[CC]YY][,ss]
```

Example: Setting 13:10:00 and April 27, 2005

```
Administrator> set date 04271310[[20]05][,00]
```

B.3 Logging in to the Web-UI

This section describes the procedure for logging in to the MMB Web-UI. The MMB Web-UI supports the following browsers:

Internet Explorer: Version 5.5 (Service Pack2) or later
Netscape: Version 7.02 or later

Remarks:

- Because the MMB Web-UI uses JavaScript, JavaScript must be enabled in the browser settings on the general-purpose PC used.
- Because the MMB Web-UI downloads items, downloading must be enabled in the browser settings on the general-purpose PC used.

1 Start the browser, and enter the following URL:
http://<nodename>:<adminport>
nodename: IP address of the MMB
adminport: Port number assigned to the MMB management port (default: 8081)
Example: The IP address is 192.168.0.10.
http://192.168.0.10:8081

2 The Management Board Web UI window is displayed.

3 Log in using "Administrator".

The following window is displayed:

Username: Administrator

Password: Password that is set as described in Section B.2, "Initializing the MMB"

Remarks: Closing this Web-UI window

To close this Web-UI window, click [Logout] on the navigation bar indicated by e).

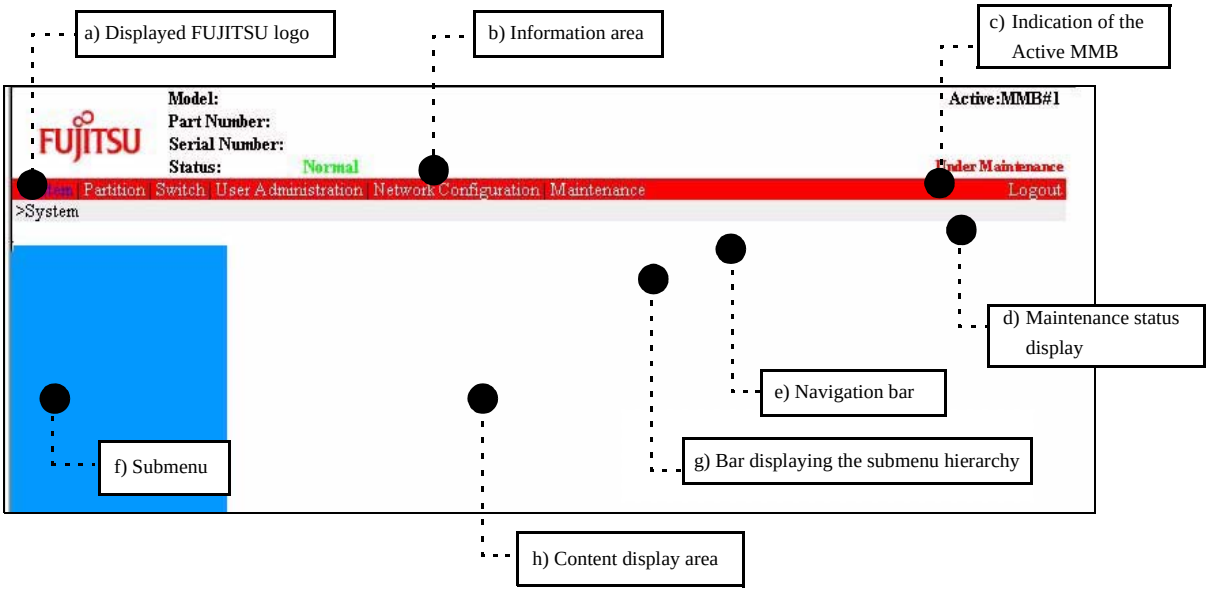


Figure B.2 [Web-UI Frame Information] window

Appendix C Power Control

This appendix describes the power-on/off procedures.

- Power-On/Off Procedures for the Main Unit (→ C.1)
- Power Control on Cabinets and Partitions (→ C.2)
- Powering On and Powering Off Partitions (→ C.3)

C.1 Power-On/Off Procedures for the Main Unit

This section describes the power-on/off procedures for the main unit, including the following:

- Powering on and off by controlling the main power (→ C.1.1)
- Power-on and power-off procedures for the entire system (→ C.1.2)

C.1.1 Powering on and off by controlling the main power

This section explains powering on and off through control of the main power.

The circuit breakers of the PRIMEQUEST 580A/540A/580/540/480/440 are the main power switches on the main unit. They also work as circuit protectors that protect the main unit by detecting overcurrents.

Note: FAN_E#0 and FAN_E#1 of the PRIMEQUEST 520A/520/420 series machine rotate not only when the system is operating, but also when it is on standby.

- Power-on procedure using circuit breakers (PRIMEQUEST 580A/540A/580/540/480/440) (→ C.1.1.1)
- Power-on procedure (PRIMEQUEST 520A/520/420) (→ C.1.1.2)
- Power-off procedure using circuit breakers (PRIMEQUEST 580A/540A/580/540/480/440) (→ C.1.1.3)
- Power-off procedure (PRIMEQUEST 520A/520/420) (→ C.1.1.4)

C.1.1.1 Power-on procedure using circuit breakers (PRIMEQUEST 580A/540A/580/540/480/440)

Note on power-on

Switch on the circuit breakers from the base cabinet.

Unless all circuit breakers are switched on, the system may not start normally because of insufficient PSU power supply. Switch on all circuit breakers in quick succession.

Remarks: When switching off and on a main line switch, wait at least 10 seconds after switching it off before switching it on again.

If the circuit breaker is switched off because an overcurrent was detected, a problem such as a short circuit occurred in the main unit. If the circuit breaker is switched on again under this condition, the circuit breaker on the distribution panel may be switched off and a burnout may occur in the main unit. To prevent this problem, do not switch on the circuit breaker again, and call a certified service engineer.

Power-on procedure

1 Switch on the circuit breakers on the main unit.
Open the rear door of the base cabinet, and set the all breaker switches near the top of the cabinet to the | side.

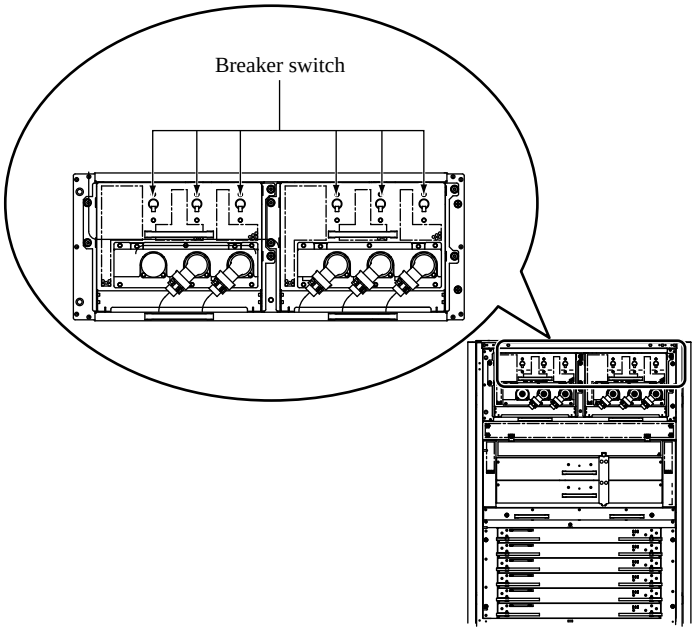


Figure C.1 Circuit breaker locations (base cabinet)

Notes: The number of switches depends on the mode of power supply to the main unit.
Figure C.1 shows an example of the PRIMEQUEST 580A/580/480 with a PSU expansion installed.

2 When an Extended Power Cabinet is connected to the PRIMEQUEST 580A/580/480, turn on the circuit breakers of the Extended Power Cabinet.
Open the rear doors of the Extended Power Cabinet and set all the switches to the | side.

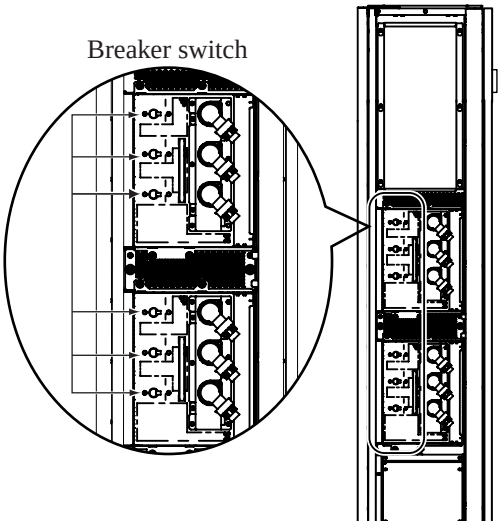


Figure C.2 Circuit breaker locations (Extended Power Cabinet)

Notes: The number of switches depends on the unit configuration.
Figure C.2 shows an example of the Extended Power Cabinet with a PSU expansion installed.

3 When an Extended I/O Cabinet is connected, turn on the circuit breakers of the Extended I/O Cabinet.
Open the front door of the Extended I/O Cabinet and set all the switches used in the power distribution box to the 1 side.
Remarks: The type of power distribution box and circuit breaker in the Extended I/O Cabinet depends on the region in which the cabinet is used.
Especially in Europe, the power distribution box in the Extended I/O Cabinet does not have circuit breakers. For this cabinet, therefore, turn on the circuit breakers on the power distribution board to which the input power supply of the Extended I/O Cabinet is connected.

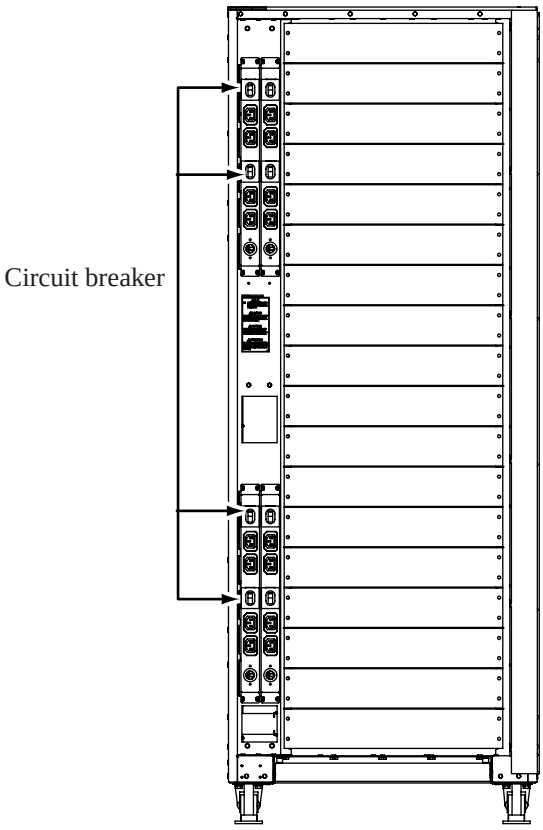


Figure C.3 Circuit breaker locations (Extended I/O Cabinet)

C.1.1.2 Power-on procedure (PRIMEQUEST 520A/520/420)

Remarks: Before turning on power again after disconnecting the power cable from the ACS, wait at least 10 seconds after power-off and then reconnect the power cable.

If the circuit breaker on the power distribution box is switched off because an overcurrent was detected, a problem such as a short circuit occurred in the main unit. If the circuit breaker is switched on again under this condition, the circuit breaker on the distribution panel may be switched off and a burnout may occur in the main unit. To prevent this problem, do not switch on the circuit breaker again, and call a certified service engineer.

Power-on procedure

1 Connect the power cable to the ACS of the main unit, and then connect the power cable to the power distribution box.

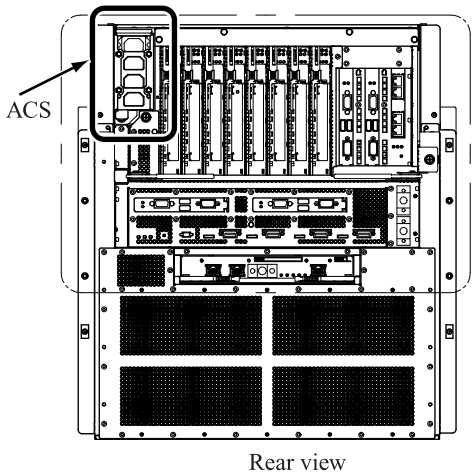


Figure C.4 ACS location

C.1.1.3 Power-off procedure using circuit breakers (PRIMEQUEST 580A/540A/580/540/480/440)

Power-off procedure

CAUTION

Data destruction

When power to the main processing unit is turned off in an operation from the MMB, only the following LEDs of the OPL and the MMB stay lit:

- MMB-Ready LED of the OPL
- Power LED of the MMB
- Ready LED of the MMB
- Active LED of the MMB

Before turning off the main power (UPS, power distribution box, circuit breaker switches, etc.), be sure to confirm that all LEDs other than the above are off. Otherwise, turning off the main power may cause damage to data.

1 Turn off the main unit.
Use the management board (MMB) for the power-off operation. For details, see Section C.1.2, "Power-on and power-off procedures for the entire system."

2 Confirm that only the following LEDs of the OPL and the MMB are lit:
- MMB-Ready LED of the OPL
- Power LED of the MMB
- Ready LED of the MMB
- Active LED of the MMB

3 If an Extended Power Cabinet is connected to the PRIMEQUEST 580A/580/480, turn off the circuit breakers of the Extended Power Cabinet.
Open the rear door of the Extended Power Cabinet, and set all the switches to the O side.
Note: The number of switches depends on the unit configuration. (See Figure C.2)
Figure C.2 shows an example of the PRIMEQUEST 580A/580/480 with a PSU expansion installed.

4 Turn off the circuit breakers of the main unit.
Open the rear door of the main unit and set all the circuit breakers on the upper part of the cabinet to the O side.
Note: The number of switches depends on the mode of power feed to the main unit. (See Figure C.2)
Figure C.2 shows an example of the PRIMEQUEST 580A/580/480 with a PSU expansion installed.

5 If an Extended I/O Cabinet is connected, turn off the circuit breakers of the cabinet.

Open the front door of the Extended I/O Cabinet, and set all the switches in the power distribution box to the 0 side.

Remarks: The type of power distribution box and circuit breaker in the Extended I/O Cabinet depends on the region in which the cabinet is used. (See Figure C.3.)

Especially in Europe, the power distribution box in the Extended I/O Cabinet does not have circuit breakers. For this cabinet, therefore, turn off the circuit breakers on the power distribution board to which the input power supply of the Extended I/O Cabinet is connected.

C.1.1.4 Power-off procedure (PRIMEQUEST 520A/520/420)

Power-off procedure

CAUTION

Data destruction

When power to the main processing unit is turned off in an operation from the MMB, only the following LEDs of the OPL and the MMB stay lit:

- MMB-Ready LED of the OPL
- Power LED of the MMB
- Ready LED of the MMB
- Active LED of the MMB

Before turning off the main power (UPS, power distribution box, circuit breaker switches, etc.), be sure to confirm that all LEDs other than the above are off. Otherwise, turning off the main power may cause damage to data.

1 Turn off the main unit.

Use the management board (MMB) for the power-off operation. For details, see Section C.1.2, "Power-on and power-off procedures for the entire system."

2 Confirm that only the following LEDs of the OPL and the MMB are lit:

- MMB-Ready LED of the OPL
- Power LED of the MMB
- Ready LED of the MMB
- Active LED of the MMB

3 Disconnect the power cable from the power distribution box.

C.1.2 Power-on and power-off procedures for the entire system

C.1.2.1 Power-on procedure for the entire system

Remarks: The procedures described below show sample screenshots of windows displayed for the PRIMEQUEST 580A/540A/580/540/480/440.

Procedure

1 Switch on the power switches on the MMB and peripherals.

2 Log in to MMB Web-UI.
The MMB Web-UI window is displayed.

3 Click [System] → [System Power Control] from the MMB menu.
The [System Power Control] window is displayed.

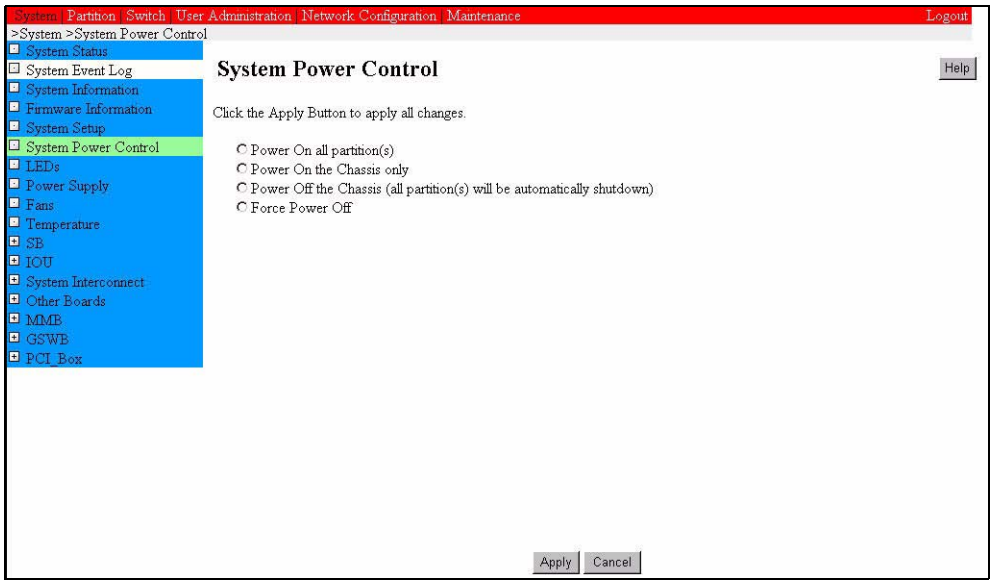


Figure C.5 [System Power Control] window

4 Click [Power On all partition(s)] or [Power On the Chassis only] (only for the PRIMEQUEST 580A/540A/580/540/480/440), and click the [Apply] button.
System power is turned on.
Remarks: If [Power On all partition(s)] is selected while only cabinet power is on, power to every partition is turned on.
If [Power On the Chassis only] is selected, power to components other than the system board (SB) and IO Unit is turned on (this includes power to the GSWB).

Explanation of the [System Power Control] window

Table C.1 Displayed and setting items in the [System Power Control] window

Item	Description
Power On all partition(s)	Power to every partition is turned on. If this item is selected while only cabinet power is on, power to every partition is turned on.
Power On the Chassis only (PRIMEQUEST 580A/540A/580/540/480/440 only)	Power to components other than the SB and IO Unit is turned on. This power-on operation includes the GSWB.
Power Off – the Chassis (all partition(s) will be automatically shutdown).	Power to all partitions and cabinets is turned off. If you select this option in the power-off state, nothing happens.
Force Power Off	Power is turned off without shutting down partitions.

C.1.2.2 Power-off procedure for the entire system

CAUTION

Data destruction

Before shutting down power, make sure the following events have occurred; otherwise, data may be destroyed:

- All applications have completed processing.
- No user is using a component.

Note: A partition in which Windows is installed may not be shut down when the shutdown function is executed from the MMB Web-UI. To turn off power to the partition, use the Windows shutdown function. For details on the Windows shutdown function, see the *PRIMEQUEST 580A/540A/520A/500/400 Series Reference Manual: Basic Operation/GUI/Commands* (C122-E003EN).

Remarks: The procedures described below show sample screenshots of windows displayed for the PRIMEQUEST 580A/540A/580/540/480/440.

Procedure

1 Log in to MMB Web-UI.
The MMB Web-UI window is displayed.

2 Click [System] → [System Power Control] from the MMB menu.
The [System Power Control] window is displayed.

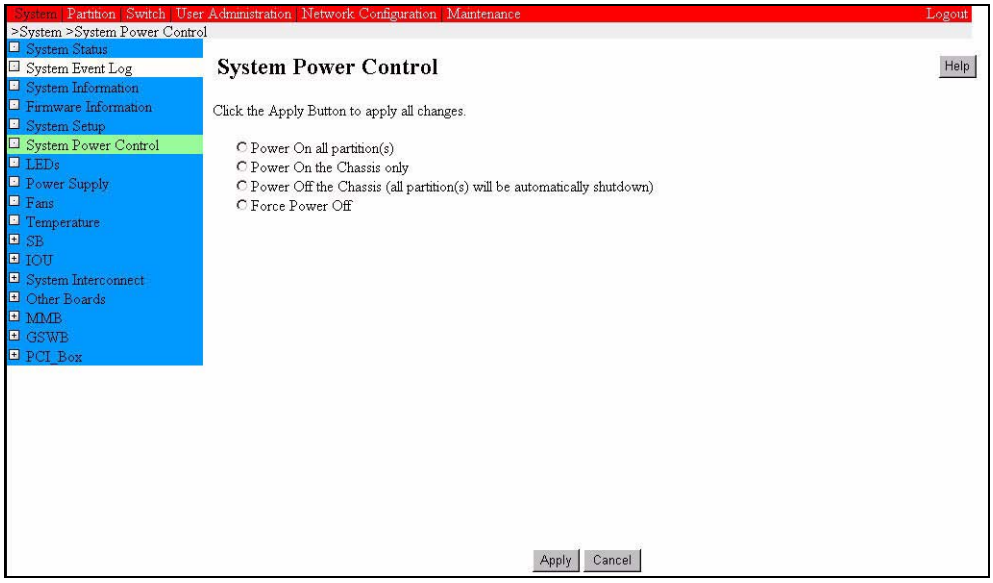


Figure C.6 [System Power Control] window

3 Click [Power Off the Chassis (all partition(s) will be automatically shutdown)] or [Force Power Off], and click the [Apply] button.

System power is turned off.

Remarks: If [Force Power Off] is selected, power is turned off without shutting down any OS running a partition.

C.2 Power Control on Cabinets and Partitions

This section describes power control procedures for the entire PRIMEQUEST system and for partitions.

Note: A partition in which Windows is installed may not be shut down when the shutdown function is executed from the MMB Web-UI. To turn off power to the partition, use the Windows shutdown function. For details on the Windows shutdown function, see the *PRIMEQUEST 580A/540A/520A/500/400 Series Reference Manual: Basic Operation/GUI/Commands* (C122-E003EN).

Remarks: The procedures described below show sample screenshots of windows displayed for the PRIMEQUEST 580A/540A/580/540/480/440.

Procedure

1 Click [System] → [System Power Control] from the MMB menu.
The [System Power Control] window is displayed.

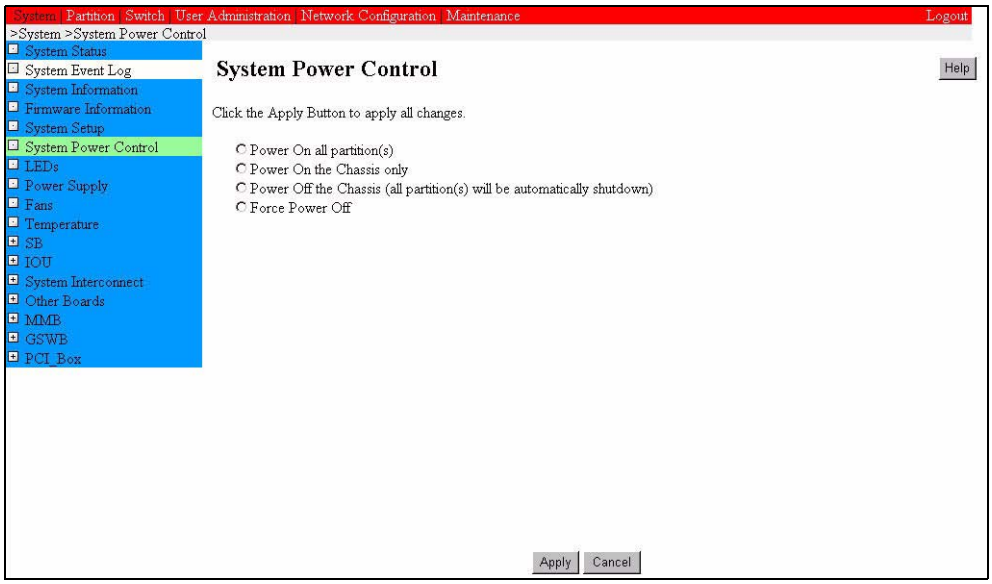


Figure C.7 [System Power Control] window

2 Select a power control mode and click the [Apply] button.

3 Click [Power Off the Chassis (all partition(s) will be automatically shutdown)] or [Force Power Off], a confirmation window appears. In the confirmation window, click the [OK] button to start processing or the [Cancel] button to return to the main window without performing processing.

Explanation of the [System Power Control] window

Table C.2 Displayed and setting items in the [System Power Control] window

Item	Description
Power On all partition(s)	Power to every partition is turned on. If this item is selected while only cabinet power is on, power to every partition is turned on.
Power On the Chassis only (only for the PRIMEQUEST 580A/540A/580/540/480/440)	Power to components other than the SB and IO Unit is turned on. This power-on operation includes the GSWB.
Power Off – the Chassis (all partition(s) will be automatically shut down.)	Every partition is shut down, and cabinet power is turned off.
Force Power Off	Power is turned off without shutting down partitions.

C.3 Powering On and Powering Off Partitions

This section explains how to power on and power off partitions as follows:

- Partition power-on procedures (→ C.3.1)
- Partition power-off procedures (→ C.3.2)

The power-on and power-off procedures for partitions require Admin authority.

C.3.1 Partition power-on procedures

This section explains the partition power-on procedures.

Procedure

1 Log in to MMB Web-UI.
The MMB Web-UI window is displayed.

2 Click [Partition] → [Power Control] from the MMB menu.
The [Power Control] window is displayed. This window displays only the partitions that are bootable with SBs and IO Units assigned.

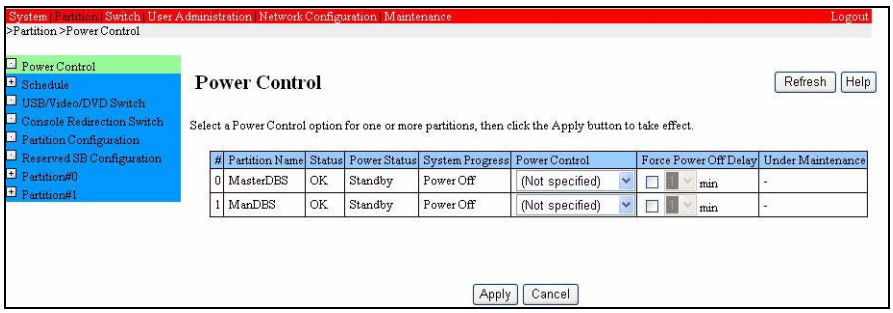


Figure C.8 [Power Control] window

The # column shows partitions numbers.
For details about the [Power Control] window, see Part III, "MMB," in the *PRIMEQUEST 580A/540A/520A/500/400 Series Reference Manual: Basic Operation/GUI/Commands* (C122-E003EN).

3 To turn on a partition, select [Power On] for it in the [Power Control] column, and click the [Apply] button.
A confirmation dialog box appears. Click the [OK] button to continue; otherwise, click the [Cancel] button.
Note: If the specified control fails because the partition is already powered on or is being powered off, a warning message appears.

Explanation of the window

Table C.3 Displayed and setting items in the [Power Control] window

Item	Description
#	An identification number for each partition is displayed. Note that this window does not display a partition to which no SB or IO Unit is assigned.
Partition Name	The name of each partition is displayed.
Status	The partition status is displayed as follows: • [OK]: The partition is operating normally. • [Degraded]: A component is faulty (the partition can operate by isolating the faulty component). • [Warning]: The partition is in the warning state (a failure will probably occur). • [Failed]: The partition failed.
Power Status	The partition power status is displayed as follows: • [On]: Power is on. • [Standby]: The partition is in the standby state.
System Progress	The progress of a partition is displayed. • [Power Off]: Partition power is off. • [Power On In Progress]: The partition is in power-on sequence. • [Reset]: The partition is reset. • [POST XXXXh]: Indicates that the partition has started POST Code=XXXXh processing. • [Boot]: The partition status is as follows: - Boot in progress - PSA not yet installed - Installation in progress - Backup or restoration by SystemcastWizard in progress • [OS Running]: The OS is active. • [OS Shutdown]: The OS is shut down. • [Panic]: The system is in panic state. • [Power Off In Progress]: The partition is in power-off sequence. • [Check Stop]: The partition is stopped. • [Initiate soft-shutdown]: Starts countdown to Force Power Off.

Item	Description
Power Control	The type of power control over a partition as described below can be selected by the user. For a partition that is on, [Power On] is not displayed. For a partition that is off, [Power Off], [Reset], [INIT], [Power Cycle], and [Force Power Off] are not displayed. • [Power On]: Turns on the partition. • [Power Off]: Turns off the partition. From the viewpoint of the OS, this operation is the same as when the unit power button is set to off. Therefore, if the OS supports the advanced configuration and power interface (ACPI), the OS can be shut down and power then turned off when [Power Off] is selected. For details, see the OS power specifications (ACPI). If the OS does not support ACPI, this operation simply turns off power without shutting down the OS. • [Power Cycle]: Forcibly turns off the partition and turns it on again. • [Reset]: Resets the partition. • [INIT]: Issues the INIT interrupt to the partition. • [Force Power Off]: Forcibly turns off the partition. • [Not specify]: Takes no action for the partition. Notes: • Executing INIT forcibly terminates applications running in the partition. Before executing INIT, stop important applications. Also, unmount unnecessary file systems.
Force Power Off Delay	When [Power Off] is selected, the power-off operation may fail because the shutdown instruction to the OS in the partition does not work normally. Here, the user can specify whether to forcibly turn off the partition in such a case. If the check box is selected for a forced power-off, the delay time can be set (1 to 9 minutes). The partition is forcibly turned off after this time has elapsed. Default: No forced power-off

Item	Description
Under Maintenance	This indicates whether a partition is under maintenance: [Maintenance]: The partition is under maintenance. [- (hyphen)]: The partition is not under maintenance. Partitions under maintenance are excluded from power control from this window. Remarks: With the PRIMEQUEST 500A/500 series, the "Under Maintenance" item may not be displayed in the [Power Control] window depending on the MMB firmware version. In this case, the number of the partition under maintenance is displayed under "Under Maintenance" in the information area.

Reference: If the OS supports the Advanced Configuration and Power Interface (ACPI), the power-off operation shuts down the OS and then turns off the power. However, if the OS does not support ACPI, the power-off operation turns off the power without shutting down the OS.
Even if the OS supports ACPI, the power-off operation may fail if an application running on the OS does not support it. This symptom depends on the specifications of the OS or the applications. For details, see the OS or application manuals.

Remarks: After the cabinet power is turned off, it cannot be turned on again for a certain period of time. During this period, [Power Control] is grayed out and cannot be selected.

C.3.2 Partition power-off procedures

This section explains the partition power-off procedures.

Notes:

- A partition in which Windows is installed may not be shut down when the shutdown function is executed from the MMB Web-UI. To turn off power to the partition, use the Windows shutdown function. For details on the Windows shutdown function, see the *PRIMEQUEST 580A/540A/520A/500/400 Series Reference Manual: Basic Operation/GUI/Commands* (C122-E003EN).
- If the following condition occurs, contact a Fujitsu certified service engineer: Also, do not execute [Reset] or [Force Power Off] for a partition until the problem is removed.
  [Power off], [Reset], or [Force Power Off] is executed for a partition or a shutdown is executed from the operating system, and, as a result, “Error” is displayed for [Status] in the MMB Web-UI window (information frame). Furthermore, an attempt to display the status of each component in the MMB Web-UI window causes “Read Error” to be displayed for [Part Number] or [Serial Number].

Procedure

1 Log in to MMB Web-UI.
The MMB Web-UI window is displayed.

2 Click [Partition] → [Power Control] from the MMB menu.
The [Power Control] window is displayed.

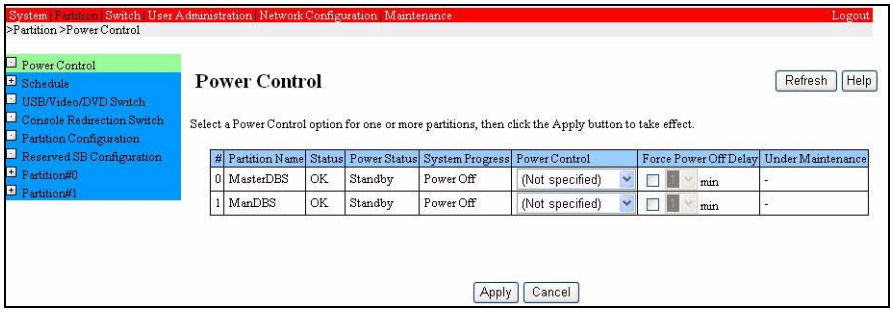


Figure C.9 [Power Control] window

The # column shows partitions numbers.

3 To turn off a partition, select [Power Off] for it in the [Power Control] column, and click the [Apply] button.
The partition is turned off.

Notes: For the reason described below, the operation for shutting down a partition must be performed from the OS.
When the [Power Off] operation is selected, and the OS supports ACPI, the OS can be shut down and the power to a partition can be turned off by the power-off operation described above. However, if the OS does not support ACPI, this operation turns the power off without shutting the OS down.
Even if the OS supports ACPI, power may not be turned off if an application running under the OS does not support it. This depends on the OS and application specifications. For details, see the OS and application manuals.

Appendix D Installation in the SAN Boot Environment

This appendix describes the SAN boot environment setup in Windows.

D.1 Confirmation of Necessary Items

Confirm the necessary items. The following items (hardware and software) are required for setting up the SAN boot environment.

This section uses Fujitsu's ETERNUS storage product as an example, but the basic unit settings are the same for other manufacturer's SAN storage units, if they are used.

- PRIMEQUEST
- Fibre Channel (FC) card
- SAN storage unit (ETERNUS)
- FC switch (as needed for configuration)
- PC used to configure the SAN storage unit (ETERNUS) and FC switch (The PC can also be used as the MMB console or other such console.)
- Windows Server 2003, Enterprise Edition for Itanium-based Systems or Windows Server 2003, Datacenter Edition for Itanium-based Systems
- USB floppy disk drive
  (when installing via KVM)

D.2 Procedure for Setting Up the SAN Boot Environment

Set up the SAN boot environment as follows:

- Design the SAN boot environment.
  Design the environment including the PRIMEQUEST machine and SAN storage allocation, connections, and IP addresses. The reliability that can be obtained depends greatly on the topologies of the PRIMEQUEST machine, SAN storage, and FC switches. Select the necessary items and forms of connections that satisfy requirements.
- Make SAN boot settings for the PRIMEQUEST machine.
  Set up the SAN storage units and PRIMEQUEST machine according to the configuration design. The Fibre Channel EFI driver must be configured.
- Set up SAN storage and FC switches.
  Mount, connect, configure, and tune the SAN storage units and FC switches according to the connection diagram prepared during environment design.

D.3 Design

An important part of designing the SAN boot environment is to design a topology (connection configuration) based on the business size.

This section describes two recommended SAN boot configurations in Windows systems: 2-path configuration and 4-path configuration.

Notes:

- Fujitsu recommends the 4-path configuration in consideration of boot reliability. Consider expanding or changing it depending on the business size.
- The configuration used in this section includes FC cards. The configuration may need to be changed depending on the cards that are added.

(1) Recommended 2-path configuration

Figure D.1 shows an example of SAN boot in the 2-path configuration.

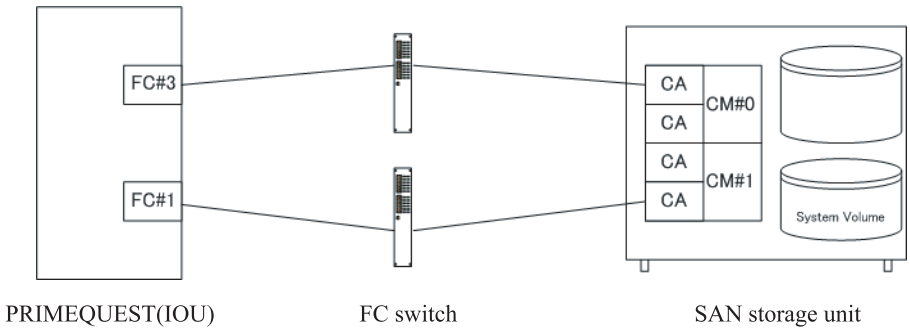


Figure D.1 SAN boot configuration example 1 (2-path configuration)

(2) Recommended 4-path configuration

Figure D.2 shows an example of SAN boot in the 4-path configuration.

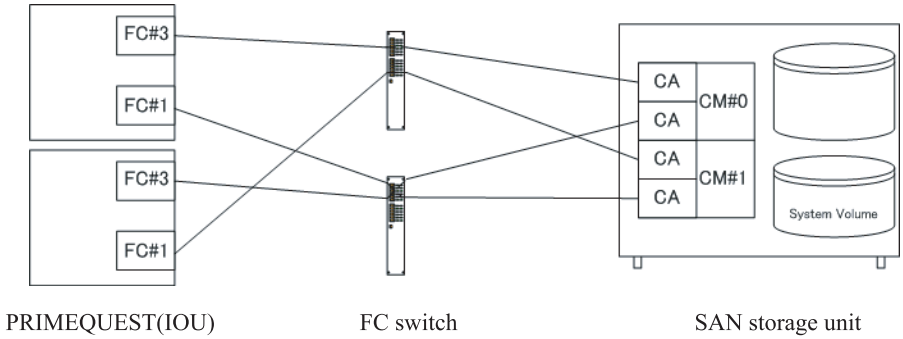


Figure D.2 SAN boot configuration example 2 (4-path configuration)

D.3.1 Notes on design

Note the following about designing the environment:

- Restrictions on slots for FC card connections

  For the PRIMEQUEST 580A/540A/580/540

  - In a SAN boot configuration, the OS can be installed via any slot in an IO Unit. After OS installation, making multipath settings that include the slot used for OS installation enables SAN boot from any slot of the IO Unit.
  - In a SAN boot configuration, OS installation via a PCI_Box and SAN boot cannot be performed.

  For the PRIMEQUEST 480/440

  - For PRIMEQUEST 480/440, connect the HBA card (FC card) used for SAN boot in the PRIMEQUEST 480/440 to PCI slot #1 or #3.
  - In a SAN boot configuration, OS installation via a PCI_Box and SAN boot cannot be performed.

  For the PRIMEQUEST 520A/520/420

  In a SAN boot configuration, OS installation and SAN boot is possible from all PCI slots in which an FC card has been mounted.

- Select 1-to-1 WWPN for zoning.

  When FC switches are used, zoning must be set up according to the system configuration. If zoning is specified manually, either a specified port or WWPN can be selected. However, for simplicity in the event of a failure, set 1-to-1 WWPN. If a specified port is used and a CA (host/FC switch port on an ETERNUS unit) fails, zoning must be set up again.

- Do not share the system disk.

  The system disk cannot be shared by multiple servers. Be sure to use the host affinity function for exclusive control of the system disk. Before using a non-Fujitsu SAN storage unit, confirm that an equivalent function is available.

- Restrictions on using the ETERNUS multipath driver

  1. When the ETERNUS multipath driver is used, the individual logical units (LUNs) in the ETERNUS unit must be equally assigned to all the HBAs contained in one server.
  2. If a zoning mode other than 1-to-1 WWPN is set, the possible configurations do not allow access to multiple CAs in the same cabinet through an FC switch from one HBA.
  3. The number of paths is limited.

     For Windows, the maximum number of paths that can be configured is 8.

For details, see the ETERNUS multipath driver manual.

D.4 Settings

This section outlines the ETERNUS main unit settings. For details, see the manuals supplied with the ETERNUS unit.

D.4.1 Reserving areas (RAID group, logical unit)

Reserve the areas required for setting up the SAN boot environment on the ETERNUS unit. No special restrictions and notes apply to such areas used as the system disk. For the procedure of reserving the necessary areas, see the ETERNUS manuals.

D.4.2 Making settings for logical units

Allocate the reserved logical unit area to a CA.

Use ETERNUS setup software to allocate it. For details, see the ETERNUS manuals.

Two setting patterns are available:

- If an environment in which HBA access is enabled is already set up (such as when the ETERNUS unit is connected directly to the HBA), the HBA WWPN required for this setting can be specified from the list displayed by ETERNUS setup software.

  Note: I/O processing across the ETERNUS unit must have been executed at least once from the HBA.

- In other cases, obtain information from the EFI console of the server containing the HBA. For the procedure, see "Configuring the EFI driver."

Note the following about making settings for logical units:

- Use the security function.
  Use the host affinity function to limit the servers that can access each disk. For example, if one ETERNUS unit is shared by two partitions, and if a system disk and shared disk are provided for each partition, the servers (HBAs) that can access each disk must be limited. This function must be used to prevent damage to the system disks.

D.4.3 Setting up the FC switch

The FC switches for the ETERNUS SN200 series are generally set up through a connection to the OS of the ETERNUS SN200 series machine from a telnet terminal (an ordinary PC can be used).

In the rest of this section, a switch means an FC switch.

1 Preparation for switch setup
Check the WWPNs of the ETERNUS unit and HBA.
Obtain the WWPN of the ETERNUS unit by using ETERNUSmgr and selecting the WWPN list function from the menu for displaying the unit status. The list function lists the WWPNs assigned to CAs. For details, see the ETERNUS manuals.
For details on how to obtain the WWPN of the HBA, see Section D.4.4, "Configuring the EFI driver."

2 Basic switch settings
The IP addresses in the LAN, subnet masks, and the gateway addresses of the switch and PC must be set. These switch settings can be made from the operation panel or through the serial port. For details, see the reference manuals for the ETERNUS SN200 series.
The setting that activates the switch SNMP function must also be made. If zoning is already set up for the switch, however, this is not required.

3 Zone creation, configuration creation, and configuration validation
Create and validate zones and the related configuration. For details on these operations, see the ETERNUS user's guide.

D.4.4 Configuring the EFI driver

To boot from a SAN storage unit, follow the procedure below for each HBA.

The EFI driver that is used varies depending on the mounted FC card. The displayed content is different for the different versions of the driver. This section describes a procedure appropriate to each version.

- Configuring the EFI driver (3.10a6 version) (→D.4.4.1)
- Configuring the EFI driver (3.11a4 version/3.11x1 version) (→D.4.4.2)

D.4.4.1 Configuring the EFI driver (3.10a6 version)

1 Turn on power to the partition.
The [EFI Boot Manager] window is displayed on the console.

```
EFI Boot Manager ver x.xx [x.xx]

Please select a boot option

    EFI Shell [Built-in]
    DVD/Acpi(PNP0A03, 0)/Pci(1D|1)/Usb(0, 0)/Usb(1, 0)
    Network/Acpi(PNP0A03,0)/Pci(1E|0)/Pci(8|0)/Mac(000B5D6F80A9)
    Boot Option Maintenance Menu
    Setup Menu
```

2 Start EFI Shell.
Select [EFI Shell (Built-in)], and press the [Enter] key.
EFI Shell starts.

3 List drivers.
After EFI Shell starts, enter the following, and press the [Enter] key:

```
Shell> drivers -b
```

A list of drivers is displayed as shown below.
Find the line with "Emulex SCSI Pass Thru Driver" displayed in the DRIVER NAME column, and record its value in the DRV column. In the following example, 22 is the driver identification number.

Check the VERSION information in this list

```
Shell> drivers -b
             T   D
D            Y C I
R            P F A
V   VERSION  E G G #D #C  DRIVER NAME                         IMAGE NAME
=== ======== = = = == === ============================ =================
00D 00000010 B - -  2  43 PCI Bus Driver                       PciBus

020 00000010 B - -  3   3 USB Bus Driver                       UsbBus
021 00000010 D - -  1   - Usb Keyboard Driver                 UsbKeyboard
022 00031114 B X X  2   7 Emulex SCSI Pass Thru Driver        Elxcli311a4
Press ENTER to continue, 'q' to exit: q

Shell>
```

Note: The information shown above, including identification numbers, varies depending on the environment.

4 List HBAs.

Enter "drvcfg -s X" (X is the driver identification number that was recorded in step 3), and press the [Enter] key. The mounted FC cards are listed. An example is shown below.

```
          Emulex FC EFI-Bios Utility, Ver: 3.10a6
-------------------------------------------------------------
      Emulex Adapters in this System: 001 thru 002

 001: LP10k     PCI-X  133MHz Bus#: 49 Dev#: 01 Func#: 00
 002: LP10k     PCI-X  100MHz Bus#: 4B Dev#: 02 Func#: 00
```

Note: The physical slot positions can be determined according to the bus numbers displayed in the window and the PRIMEQUEST physical position - bus number table. Make sure that they match.
For the PRIMEQUEST physical position - bus number table, see Chapter 4, "Physical Positions and Bus Numbers," in the *PRIMEQUEST 500A/500/400 Series Reference Manual: Tool/Operation Information* (C122-E074EN).

- PRIMEQUEST 580A/540A/580/540/480/440
  → "PRIMEQUEST 580A/540A/580/540/480/440 PCI Slot Physical Positions and Bus Numbers"
- PRIMEQUEST 520A/520/420
  → "PRIMEQUEST 520A/520/420 PCI Slot Physical Positions and Bus Numbers"

5 Select the HBA.

From the displayed HBA list, select the one to be used for SAN boot by moving the cursor to it, and press the [Enter] key. The HBA setup utility menu is displayed.

```
         Emulex FC EFI-Bios Utility, Ver: 3.10a6
-------------------------------------------------------------
 001: LP10k     PCI-X  133MHz Bus#: 49 Dev#: 01 Func#: 00
    HBA Status: Ready             Boot Bios : Disabled
    EFI  Boot : TE3.10A6          Firmware  : TS1.91A1
-------------------------------------------------------------
                     1. Setup Utility
                     2. Firmware Update
```

6 Display of setup menu for HBA setup utility

Select [1. Setup Utility], then press the [Enter] key. The following menu is displayed.

```
         Emulex FC EFI-Bios Setup Utility, Ver: 3.10a6
-----------------------------------------------------------------
   001: LP10k     PCI-X  133MHz Bus#: 49 Dev#: 01 Func#: 00
 Boot Bios : Disabled  Firmware  : TS1.91A1  I/O Base  : 8300
 Port Name : 10000000C942E2D6  Node Name : 20000000C942E2D6
 S_ID      : 000000    Link Speed: NA        Topology  : Invalid
-----------------------------------------------------------------
                 1. Enable or Disable BIOS
                 2. Configure HBA Parameters
                 3. Configure Boot Parameters
                 4. Reset to Default Values
```

7 Obtaining the HBA WWPN

Displaying the setup menu for HBA setup utility in step 6 above displays the HBA WWPN for "Port Name."

8 Initialize the HBA settings.

Select [4. Reset to Default Values] from the menu displayed in step 6.
Enter "y" in the displayed dialog box to initialize the HBA settings.

```
Do you want to Force defaults (y/n) :
```

Note: This operation is not required in the system state immediately following shipment from the factory.

9 Enable the BIOS Boot option.
Select [1. Enable or Disable BIOS] from the menu displayed in step 6.
The following menu is displayed:

```
 EFI-Bios Boot Option is Currently DISABLED.
             Disabled - default
             Enabled
```

Select [Enabled].

10 Press the [Esc] key once to return to the window displayed in step 6.

11 Specify the boot device.
Select [3. Configure Boot Parameters] from the menu displayed in step 6.
The following menu is displayed:

```
1. Device Path Selection
2. Maximum Luns/Target
3. Boot Target Scan
4. Configure Boot Devices
5. Delay Device Dicovery
```

12 Select [4. Configure Boot Devices]. A list of data is displayed as shown below.
Select an empty entry. All entries are empty in the initial state.

```
01: DID:000000 WWN:00000000 00000000
02: DID:000000 WWN:00000000 00000000
03: DID:000000 WWN:00000000 00000000
04: DID:000000 WWN:00000000 00000000
05: DID:000000 WWN:00000000 00000000
06: DID:000000 WWN:00000000 00000000
07: DID:000000 WWN:00000000 00000000
08: DID:000000 WWN:00000000 00000000
```

13 Select [01: DID:0000000 WWN: 00000000 00000000], and press the [Enter] key.
The following menu is displayed:

```
      Selected Boot Device in Flash:
01: DID:000000 WWN:00000000 00000000 LUN: 0000

           1. Scan Targets
           2. Clear Flash Boot Info
```

14 Scan Targets.
Select [1. Scan Targets], and press the [Enter] key.
A list of data is displayed as shown below:

```
Here are targets numbers 001 thru 001:

001: DID:0000EF WWN:202C00E0 00CB0815
```

15 Select the target from the displayed data by using the cursor key, and press the [Enter] key.
The LUN connected to the target is displayed as shown below:

```
Here are Luns numbers 0001 thru 0001:

0001: Mode: Peripheral dev LUN: 0000
```

16 Select the LUN to be used for boot by using the cursor key, and press the [Enter] key.

```
              Selected Boot Device:
001: DID:0000EF WWN:202C00E0 00CB0815 Mode: Per LUN: 0000

           1. Boot this device via WWN.
           2. Boot this device via DID.
```

17 Select [1. Boot this device via WWN], and press the [Enter] key.
The following list is displayed:

```
01: DID:000000 WWN:202C00E0 00CB0815 Mode: Per LUN: 0000
02: DID:000000 WWN:00000000 00000000
03: DID:000000 WWN:00000000 00000000
04: DID:000000 WWN:00000000 00000000
05: DID:000000 WWN:00000000 00000000
06: DID:000000 WWN:00000000 00000000
07: DID:000000 WWN:00000000 00000000
08: DID:000000 WWN:00000000 00000000
```

18 Press the [Esc] key five times. The system returns to the state at EFI shell startup.

```
 Drv[22]  Ctrl[ALL]  Lang[eng] - Options set.  Action Required is None
None

Shell>
```

19 Apply the settings.
Reset the partition. From the [Power Control] window, select the [Reset] from [Power Control] pull-down menu of the partition to be reset, and click the [Apply] button. Otherwise, enter the reset command.

```
 Shell> reset
```

Remarks: For details, see Emulex Corporation's EFIBoot Web site.
http://www.emulex.com/ts/index.jsp

D.4.4.2 Configuring the EFI driver (3.11a4 version/3.11x1 version)

1 Turn on power to the partition.
The [EFI Boot Manager] window is displayed on the console.

```
EFI Boot Manager ver x.xx [x.xx]
Please select a boot option

    EFI Shell [Built-in]
    DVD/Acpi(PNP0A03,0)/Pci(1D|1)/Usb(0, 0)/Usb(1, 0)
    Network/Acpi(PNP0A03,0)/Pci(1E|0)/Pci(8|0)/Mac(000B5D6F80A9)
    Boot Option Maintenance Menu
    Setup Menu
```

2 Start EFI Shell.
Select [EFI Shell (Built-in)], and press the [Enter] key.
EFI Shell starts.

3 List drivers.
After EFI Shell starts, enter the following, and press the [Enter] key:

```
Shell> drivers -b
```

A list of drivers is displayed as shown below.
Find the line with "Emulex SCSI Pass Thru Driver" displayed in the DRIVER NAME column, and record its value in the DRV column. In the following example, 22 is the driver identification number.

```
Shell> drivers -b
             T   D
D            Y C I
R            P F A
V   VERSION  E G G #D #C  DRIVER NAME                          IMAGE NAME
=== ======== = = = == === ============================ =================
00D 00000010 B - -  2  43 PCI Bus Driver                       PciBus

020 00000010 B - -  3   3 USB Bus Driver                       UsbBus
021 00000010 D - -  1   - Usb Keyboard Driver                 UsbKeyboard
022 00031114 B X X  2   7 Emulex SCSI Pass Thru Driver        Elxcli311a4
Press ENTER to continue, 'q' to exit: q

Shell>
```

Note: The information shown above, including identification numbers, varies depending on the environment.

4 List HBAs.

Enter "drvcfg -s X" (X is the driver identification number that was recorded in step 3), and press the [Enter] key. The mounted FC cards are listed. An example is shown below.

The EFI driver version is displayed as EFI-Bios Utility and EFI Boot versions.

```
                 Emulex FC EFI-Bios Utility, Ver: 3.11a4
-------------------------------------------------------------
              Emulex Adapters in this System: 001 thru 002

001: LP11002        PCI-X  133MHz      Seg#: 00 Bus#: 49 Dev#: 01 Func#:
01
002: LP11002        PCI-X  133MHz      Seg#: 00 Bus#: 49 Dev#: 01 Func#:
00
```

Note: The physical slot positions can be determined according to the bus numbers displayed in the window and the PRIMEQUEST physical position - bus number table. Make sure that they match.

For the PRIMEQUEST physical position - bus number table, see Chapter 4, "Physical Positions and Bus Numbers," in the *PRIMEQUEST 500A/500/400 Series Reference Manual: Tool/Operation Information* (C122-E074EN).

- PRIMEQUEST 580A/540A/580/540/480/440
  → "PRIMEQUEST 580A/540A/580/540/480/440 PCI Slot Physical Positions and Bus Numbers"
- PRIMEQUEST 520A/520/420
  → "PRIMEQUEST 520A/520/420 PCI Slot Physical Positions and Bus Numbers"

5 Select the HBA.

From the displayed HBA list, select the one to be used for SAN boot by moving the cursor to it, and press the [Enter] key. The HBA setup utility menu is displayed.

```
                  Emulex FC EFI-Bios Utility, Ver: 3.11a4
-----------------------------------------------------------------------
001: LP11002        PCI-X  133MHz      Seg#: 00 Bus#: 49 Dev#: 01 Func#: 01
             HBA Status: Ready            Boot Bios : Disabled
             EFI  Boot : BE3.11A4         Firmware  : BS2.10A7
-----------------------------------------------------------------------
                            1. Setup Utility
                            2. Firmware Update
```

6 Display of setup menu for HBA setup utility

Select [1. Setup Utility], then press the [Enter] key. The following menu is displayed.

```
               Emulex FC EFI-Bios Setup Utility, Ver: 3.11a4
-----------------------------------------------------------------------
001: LP11002        PCI-X  133MHz      Seg#: 00 Bus#: 49 Dev#: 01 Func#:
01
         Boot Bios : Disabled  Firmware  : BS2.10A7  I/O Base  : 8200
         Port Name : 10000000C9537FB3  Node Name : 20000000C9537FB3
         S_ID      : 000000    Link Speed: NA        Topology  : Invalid
-----------------------------------------------------------------------
                        1. Enable or Disable BIOS
                        2. Configure HBA Parameters
                        3. Configure Boot Parameters
                        4. Reset to Default Values
```

7 Obtaining the HBA WWPN

Displaying the setup menu for HBA setup utility in step 6 above displays the HBA WWPN for "Port Name."

8 Initialize the HBA settings.

Select [4. Reset to Default Values] from the menu displayed in step 6.
Enter "y" in the displayed dialog box to initialize the HBA settings.

```
Do you want to Force defaults (y/n) :
```

Note: This operation is not required in the system state immediately following shipment from the factory.

9 Enable the BIOS Boot option.
Select [1. Enable or Disable BIOS] from the menu displayed in step 6.
The following menu is displayed:

```
 EFI-Bios Boot Option is Currently DISABLED.
             Disabled - default
             Enabled
```

Select [Enabled].

10 Press the [Esc] key once to return to the window displayed in step 6.

11 Specify the boot device.
Select [3. Configure Boot Parameters] from the menu displayed in step 6.
The following menu is displayed:

```
1. Device Path Selection
2. Maximum Luns/Target
3. Boot Target Scan
4. Configure Boot Devices
5. Delay Device Dicovery
```

12 Select [4. Configure Boot Devices]. A list of data is displayed as shown below.
Select an empty entry. All entries are empty in the initial state.

```
01: DID:000000 WWN:00000000 00000000
02: DID:000000 WWN:00000000 00000000
03: DID:000000 WWN:00000000 00000000
04: DID:000000 WWN:00000000 00000000
05: DID:000000 WWN:00000000 00000000
06: DID:000000 WWN:00000000 00000000
07: DID:000000 WWN:00000000 00000000
08: DID:000000 WWN:00000000 00000000
```

13 Select [01: DID:0000000 WWN: 00000000 00000000], and press the [Enter] key.
The following menu is displayed:

```
      Selected Boot Device in Flash:
01: DID:000000 WWN:00000000 00000000 LUN: 0000

           1. Scan Targets
           2. Clear Flash Boot Info
```

14 Scan Targets.
Select [1. Scan Targets], and press the [Enter] key.
A list of data is displayed as shown below:

```
Here are targets numbers 001 thru 001:

001: DID:0000EF WWN:202C00E0 00CB0815
```

15 Select the target from the displayed data by using the cursor key, and press the [Enter] key.
The LUN connected to the target is displayed as shown below:

```
Here are Luns numbers 0001 thru 0001:

0001: Mode: Peripheral dev LUN: 0000
```

16 Select the LUN to be used for boot by using the cursor key, and press the [Enter] key.

```
              Selected Boot Device:
001: DID:0000EF WWN:202C00E0 00CB0815 Mode: Per LUN: 0000

           1. Boot this device via WWN.
           2. Boot this device via DID.
```

17 Select [1. Boot this device via WWN], and press the [Enter] key.
The following list is displayed:

```
01: DID:000000 WWN:202C00E0 00CB0815 Mode: Per LUN: 0000
02: DID:000000 WWN:00000000 00000000
03: DID:000000 WWN:00000000 00000000
04: DID:000000 WWN:00000000 00000000
05: DID:000000 WWN:00000000 00000000
06: DID:000000 WWN:00000000 00000000
07: DID:000000 WWN:00000000 00000000
08: DID:000000 WWN:00000000 00000000
```

18 Press the [Esc] key five times. The system returns to the state at EFI shell startup.

```
 Drv[22]  Ctrl[ALL]  Lang[eng] - Options set.  Action Required is None
None

Shell>
```

19 Apply the settings.
Reset the partition. From the [Power Control] window, select the [Reset] from [Power Control] pull-down menu of the partition to be reset, and click the [Apply] button. Otherwise, enter the reset command.

```
 Shell> reset
```

Remarks: For details, see Emulex Corporation's EFIBoot Web site.
http://www.emulex.com/ts/downloads/index.jsp

D.4.5 Notes on replacing an FC card

When an FC card to which the boot device is connected is replaced, use the procedure described in Appendix D.4.4, "Configuring the EFI driver," to set the boot device for the replaced FC card.

Also, make the required settings of the FC card according to the manuals for the FC switch and the storage devices to be connected.

- Change of zone setting for FC switch (when making the WWN zone setting)
- Change of ETERNUS Host-Affinity setting
- Change of EFI driver setting

D.5 Operating System Installation

For the operating system installation procedure, see Section 3.3, "Windows Installation."

Remarks:

- Install the operating system such that only the LUN on which the operating system is installed can be identified.
- Install the operating system in a single-path environment.
- Remove the internal disk before starting operating system installation. When installation is completed, mount the SCSI disk back in place in its IO Unit.
- After operating system installation, install ETERNUS MPD by following instructions in the ETERNUS MPD manual. ETERNUS MPD is validated only after OS boot.

Note: The following message is displayed when the [F6] key is pressed to install the FC driver during installation. Following on-screen instructions, connect the USB FDD to the KVM USB port, and press the [S] key. Do not connect the USB FDD to the USB port on an IO Unit.

```
Setup could not determine the type of one or more mass storage devices
     installed in your system, or you have chosen to manually specify an adapter.
     Currently, Setup will load support for the following mass storage device(s):

     <none>

     * To specify additional SCSI adapters, CD-ROM drivers, or special
       disk controllers for use with Windows, including those for
       which you have a device support disk from a mass storage device
       manufacturer, press S.

     * If you do not have any device support disks from a mass storage
       device manufacturer, or do not want to specify additional mass
       storage devices for use with Windows, press ENTER.
```

Path switching at boot

The boot entry for Windows Server 2003 for Itanium-based Systems is created based on globally unique identifier (GUID) information. The GUID represents a globally unique identifier. Therefore, if a failure occurs in a path between an FC switch and SAN storage, for example, the operating system can be booted provided that the boot device can be found through another path.

Appendix E Setting Item List

Refer to the tables below when a problem has occurred or you want to revert the settings back to their default during operation.

E.1 Setting Items for MMB

Table E.1 List of setting items for MMB

Window	Major category	Minor category	Setting item	Default value	Possible values	Remarks
System Event Log Filter Button	Setting of event log filtering conditions	Selection of severity for display	Severity	Check all	• Error • Warning • Info • Monitor * More than one can be selected.	
		Selection of partition to be displayed	Partition	All radio buttons	• All • Specified	Switching between All and Specified retains the check box selection data on the Specified side.
		Selection of target source for display	Source	all	• All • Specified	Switching between All and Specified retains the check box selection data on the Specified side.
		Selection of target unit for display	Unit	all	• All • Specified	Switching between All and Specified retains the check box selection data on the Specified side.
		Specification of display order	Sort by Date/ Time	New event first	• New event first • Old event first	

Window	Major category	Minor category	Setting item	Default value	Possible values	Remarks
System Event Log Filter Button	Setting of event log filtering conditions	Selection of whether to begin event output with the first event or specify the time	Start Date/ Time	First event	• First event • Specified Time	When Time is selected, the start time can be entered. Switching between First Event and Time retains the specified time data
		Selection of whether to end event log output with the last event or specify the time	End Date/ Time	End event	• End event • Specified Time	When Time is selected, the end time can be entered. Switching between Last Event and Time retains the specified time data
		Specification of the number of log events to be displayed	Number of events to display	100 events	An integer equal to or greater than 0 and less than the denominator of the displayed fraction	The denominator of the displayed fraction indicates the total number of logged events.
System Information	System name setting	Setting PRIMEQUEST system name	System Name	PRIMEQUEST brand name + Serial number	Up to 64 characters can be entered.	Used also as an SNMP system name
	Asset tag information setting	Asset management information setting	Asset Tag	None	Up to 32 characters can be entered.	
System Setup	Power-related setting	Setting power for PRIMEQUEST system	Power Feed Mode	Single	• Single (single power feed mode) • Dual (dual power feed mode)	
		Setting procedure for power recovery	Power Restore Policy	Restore	• Always OFF • Always ON • Restore	
		Setting procedure when redundancy is lost	Power Fault Reaction	Continue	• Continue • Shutdown	
		Setting delay time till OS shutdown begins after UPS detects AC Lost	Shutdown Delay after UPS detects AC Lost	5 s	0 to 9999 s	

Window	Major category	Minor category	Setting item	Default value	Possible values	Remarks
System Setup	Setting of GSWB OFF at shutdown (only for PRIMEQUEST 580A/540A/ 580/540/480/ 440)	Setting to synchronically turn off the power to the cabinet and GSWB	Power Linkage Mode	Checked (Turn off the power to the cabinet and GSWB synchronically.)	Checked: When all partitions are shut down, the power to the cabinet and GSWB is synchronically turned off. Not checked: Even when all partitions are shut down, the power to the cabinet and GSWB is kept on.	
	Setting of mounting altitude	Setting mounting altitude	Altitude	Altitude <= 15 00m	• Altitude <= 1500m • 1500m < Altitude <= 2000m • 2000m < Altitude <= 2500m • 2500m < Altitude	
	Setting of Mirror Mode	Setting Mirror Mode	Mirror Mode (setting)	Enabled	• Enable (Mirror Mode) • Disable (Non Mirror Mode)	To change the Mirror Mode setting, the chassis must be powered off. For this reason, apply the above setting to the system before the chassis is powered off.
System Power Control	Cabinet power ON/OFF control	Power control of PRIMEQUEST system	System Power Control	None	• Power On - all defined partition(s) are powered on. • Power On chassis only (*) • Power Off-The chassis is powered off after all partition(s) are shutdown. • Force Power Off	No set value * Only for the PRIMEQUEST 580A/540A/580/ 540/480/440.
Power Control	Partition power control	Setting forced power-off	Force Power Off Delay	No setting	If forced power-off is specified, time (1 to 9 minutes) can be specified.	The partition power is forcibly turned off if the specified time has elapsed.
Schedule Control	Partition scheduled-operation setting	Power-on/off setting for each partition	Schedule Control	Off	• On • Off	

Window	Major category	Minor category	Setting item	Default value	Possible values	Remarks
Schedule List	Schedule setting	Setting power-on/off schedule of each partition	Schedule List	None	Set the schedule of each partition. 1 Daily: Execute power-on/off every day. Specify the period (start date to end date) of the daily power-on/off schedule. 2 Weekly: Execute power-on/off every week. Specify the day of the week on which power-on/off is executed weekly and the period (start month to end month) of the weekly power-on/off schedule. 3 Monthly: Execute power-on/off every month. Specify the duration (start date to end date) of the monthly power-on/off and the period (start month to end month) of the monthly power-on/off schedule. 4 Special: Execute power-on or power-off on a specific day. Specify the date on which power-on or power-off is executed. Specify whether to turn power on or off on the specified execution date. Specify the time at which power is turned on or off in 24-hour format in steps of 10 minutes (00, 10, 20, 30, 40, or 50).	Use the Add button to create a schedule. Alternatively, select an existing schedule, and edit it (Edit button) or delete it (Remove button).

Window	Major category	Minor category	Setting item	Default value	Possible values	Remarks
Console Redirection Switch	Console Redirection Switch	Setting OS serial output destination	Connect to	to COM	• COM • MMB	
		Setting console redirection port number	Port	None	Port number 1024 or greater can be entered.	
		Setting console redirection connection protocol (Telnet/SSH)	Telnet/SSH	None	• Telnet • SSH • None	This option is enabled when MMB is selected for "Connect to." If None is selected, only the [WebUI Console Redirection] page is displayed.
Partition Configuration	Partition setting	Setting partition name	Partition Name	NULL	Up to 16 characters	It can easily be identified if the host name defined on the OS is used for this name.
Home of Partition	Selection of home IOU	Setting home IOU	Home IOU	None	IO Unit assigned to each partition, i.e., an IO Unit containing a BMM	
Reserved SB Configuration	Setting of reserved SB	Setting reserved SB	Reserved SB Configuration	None	Free SB, or SB already defined as a Reserved SB of a partition	
Boot Control	Specification of boot device	Specification of boot device	Boot Selector	No Override	• No Override • Force boot into EFI Boot Manager • Force PXE • Force boot from DVD	
	Setting of POST (Power On Self Test)	Setting POST (Power On Self Test)	POST	• Standard Diagnosis	• Fast Boot • Standard Diagnosis • Full Diagnosis	
ASR Control	ASR Control setting	Setting the number of retries involving the OS restart	Number of Restart Tries	5	0 to 10	
		Setting remedial action when the specified retry count is exceeded	Action after exceeding Restart tries	Stop rebooting and Power Off	• Stop rebooting and Power Off • Stop rebooting • Diagnostic Interrupt assert	
		Setting the power-on delay time for automatic rebooting	Automatic Power On Delay	0	0 to 10	
		Canceling OS boot monitoring	Cancel Boot Watchdog	No check	Check: Boot Watchdog cancel	

Window	Major category	Minor category	Setting item	Default value	Possible values	Remarks
Mode	Setting various types of mode	Setting Partition PCI Address Mode (PRIMEQUEST 580A/540A/ 580/540/480/ 440 only)	PCI Address Mode (setting)	PCI Bus Mode	• PCI Bus Mode • PCI Segment Mode	
		Mirror Mode	Mirror Mode (setting)	Standard Mirror Mode	• Standard Mirror Mode • Extended Mirror Mode	The specified mode is enabled after partition reboot. If the PRIMEQUEST system is set to Non-mirror Mode, Mirror Mode cannot be selected here.
		Hyper Threading	Hyper Threading (setting)	Disable	• Enable • Disable	
		Dynamic Partitioning	Dynamic Partitioning (setting)	Disable	• Enable • Disable	
Add/Edit User	Setting user account	Setting user name	User name	None	8 to 32 characters. The following characters can be used to specify a user name: 0 to 9, a to z, A to Z, -, and _. The first character must be a letter from a to z or A to Z.	
		Setting password	Password	None	Specify a password consisting of 8 to 32 characters. The password cannot be one that is easily guessed. If the specified password is inappropriate, the system prompts for another password. The following characters can be used to specify the password: Digits: 0 to 9 Letters: a to z and A to Z Special characters: ! " # $ % & ' ( ) = - ^ ~ \ @ `[ ] { } : * ; + ? < .>, / _ |	
		Setting user account privileges	Privilege	Admin (Add User)/current Privilege (Edit User)	• Admin • Operator • User • CE	

Window	Major category	Minor category	Setting item	Default value	Possible values	Remarks
Add/Edit User	Setting user account	Enable/disable the use of user account	Status	Enable (Add User)/current Status (Edit User)	• Enabled • Disabled	
Date/Time	Definition of MMB date/time adjustment	Date setting	Date	None	Date	
		Setting hour:minute: second	Display hour:minute: second (24-hour format)	None	hour:minute:second (24-hour format)	
		Timezone setting	Time zone	None	Select from the pull-down menu.	
		Enable/disable NTP function	NTP enable/ disable	Disable	• Enable • Disable	
		Setting IP address of primary NTP server	NTP 1	None	0 to 255, 0 to 255, 0 to 255, 0 to 255	
		Setting IP address of secondary NTP server	NTP 2	None	0 to 255, 0 to 255, 0 to 255, 0 to 255	
		Setting IP address of third NTP server	NTP 3	None	0 to 255, 0 to 255, 0 to 255, 0 to 255	
Network Interface	Setting system network	Setting virtual IP address (PRIMEQUEST 580A/540A/ 580/540/480/ 440)	Virtual IP Address		Specify the virtual IP address used to access the Web-UI.	
		Setting MMB IP address (PRIMEQUEST 520A/520/420)	IP Address		Specify the physical IP address assigned to the MMB interface.	
		Setting MMB#0 IP address (PRIMEQUEST 580A/540A/ 580/540/480/ 440)	MMB#0 IP Address		Specify the physical IP address assigned to the MMB#0 interface.	
		Setting MMB#1 IP address (PRIMEQUEST 580A/540A/ 580/540/480/ 440)	MMB#1 IP Address		Specify the physical IP address assigned to the MMB#1 interface.	
		Specification of whether to use a DNS server	DNS	Disable	• Enable • Disable	

Window	Major category	Minor category	Setting item	Default value	Possible values	Remarks
Management LAN Port Configuration	Setting management LAN	Setting MMB HUB VLAN mode	VLAN Mode	VLAN mode	• No VLAN mode • VLAN mode • Port disable mode	
		Setting MMB#0 Port Speed/ Duplex (PRIMEQUEST 580A/540A/ 580/540/480/ 440)	Speed/Duplex for MMB#0	Auto	• Auto • 100M/Full • 100M/Half • 10M/Full • 10M/Half	Hidden when MMB#0 is not mounted
		Setting MMB#1 Port Speed/ Duplex (PRIMEQUEST 580A/540A/ 580/540/480/ 440)	Speed/Duplex for MMB#1	Auto	• Auto • 100M/Full • 100M/Half • 10M/Full • 10M/alf	Hidden when MMB#1 is not mounted
		Setting MMB Port Speed/Duplex (PRIMEQUEST 520A/520/420)	Speed/ Duplex for MMB	Auto	• Auto • 100M/Full • 100M/Half • 10M/Full • 10M/Half	
Network Protocols	HTTP/HTTPS setting	HTTP setting	HTTP	Disable	• Enable • Disable	
		Setting HTTP Port Number	HTTP Port#	8081	1024 to 65535	
		Enable/disable HTTPS	HTTPS	Disable	• Enable • Disable	
		Setting HTTPS Port Number	HTTPS Port#	432	432,1024 to 65535	
		Setting HTTP/ HTTPS connection timeout	HTTP/ HTTPS Timeout	600 s	0,60-9999 s	
	Telnet setting	Enable/disable telnet	Telnet	Disable	• Enable • Disable	
		Setting the port used for telnet	Telnet port	23	23,1024 to 65535	
		Setting telnet connection timeout	Telnet Timeout	600 s	0,60-9999 s	
	SSH setting	Enable/disable SSH	SSH	Disable	• Enable • Disable	
		Setting SSH port	SSH port	22	22,1024 to 65535	
		Setting SSH connection timeout	SSH Timeout	600 s	0,60-9999 s	

Window	Major category	Minor category	Setting item	Default value	Possible values	Remarks
Network Protocols	SNMP setting	Enable/disable SNMP Agent	SNMP Agent	Disable	• Enable • Disable	
		Setting the port used for SNMP Agent	SNMP Agent port	161	161, 1024 to 65535	
		Enable/disable SNMP Traqp	SNMP Trap	Disable	• Enable • Disable	
		Setting the port used for SNMP Trap	SNMP Trap port	162	162, 1024 to 65535	
Refresh Rate	Setting automatic refresh of WebUI	Setting refresh	Refresh Rate	Auto-Refresh = Disable	5 to 999 s	
SNMP Community	Setting system SNMP	Setting SNMP System Location	System Location	None	Character string	
		Setting SNMP System Contact	SNMP System Contact	None	Character string	
		Setting SNMP community string	Community/ User	None	Character string	
		Setting access-enabled IP Address or subnet	IP Address/ MASK	1	0 to 255, 0 to 255, 0 to 255, 0 to 255	
		Setting SNMP Version	SNMP Version	Read Only	• 1 • 2 • 3	
		Enable read only or read/ write	Access	None	• Read Only • Read Write	
		Setting security level	Auth	None	• noauth • auth • priv	

Window	Major category	Minor category	Setting item	Default value	Possible values	Remarks
Create CSR	Creation of SSL certificate	Length of private key (bits)	Key length	1024	• 1024 • 2048	
		ISO country code of owner	Country Name	None	• Japan: JP • USA: US	
		State or province of owner	State or Province Name	None	Up to 56 characters	
		Owner locality name	Locality Name	None	Up to 56 characters	
		Owner organization name (company name)	Organization Name	None	Up to 56 characters	
		Owner organization unit name	Organization Unit Name	None	Up to 56 characters	
		Owner server FQDN	Common Name	None	Up to 56 characters	
		Email address	Email Address	None	Up to 40 characters	
Create Selfsigned Certificate	Creation of SSL certificate	Term of self-signing certificate validity	Term	None	Number of days	
		Length of private key (bits)	Key length	1024	• 1024 • 2048	
		ISO country code of owner	Country Name	None	• Japan: JP • USA: US	
		State or province of owner	State or Province Name	None	Up to 56 characters	
		Owner locality name	Locality Name	None	Up to 56 characters	
		Owner organization name (company name)	Organization Name	None	Up to 56 characters	
		Owner organization unit name	Organization Unit Name	None	Up to 56 characters	
		Owner server FQDN	Common Name	None	Up to 56 characters	
		Email address	Email Address	None	Up to 40 characters	

Window	Major category	Minor category	Setting item	Default value	Possible values	Remarks
SNMP Trap	SNMP trap-send destination setting	System or user name setting	Community/ User	None		
		IP address setting of the trap-send destination	IP Address	None	0 to 255, 0 to 255, 0 to 255, 0 to 255	
		SNMP version setting	SNMP Version	None	• 1 • 2 • 3	
		Security level setting	Auth	None	• noauth • auth • priv	
		Hash function setting	Auth Type	None	• MD5 • SHA	Valid only for SNMP version 3
Edit User	User setting required for MMB control with RMCP	Setting user name	User name	user 0 to user 23	8 to 16	Only en-sized alphabetic characters (uppercase and lowercase letters) and en-sized numeric characters can be used.
		Password setting	Password	None	8 to 16	Only en-sized alphabetic characters (uppercase and lowercase letters) and en-sized numeric characters can be used.
		Setting user account privileges	Privilege	No Access	• Admin • Operator • User • CE • No Access	A user for which "No Access" is set does not have remote access to the system.
		Setting for enabling or disabling a user account	Status	Disabled	• Enabled • Disabled	
Access Control	Access control setting for the network protocol to ensure MMB security	Subnet mask of an IP address that can be used for connection	Subnet Mask	None	0 to 255	Example: 255.255.255.0

Window	Major category	Minor category	Setting item	Default value	Possible values	Remarks
Add/Edit Filter	Definition of MMB IP Filtering	Setting IP Filtering	Protocol	SSH	• HTTP • HTTPS • Telnet • SSH • SNMP	
		Enable/disable Access Control	Access Control	Disable	• Enable • Disable	
		IP address enabled for connection	IP Address	None	0 to 255, 0 to 255, 0 to 255, 0 to 255	Example: 192.168.0.0
		Subnet Mask of IP Address enabled for connection	Subnet Mask	None	0 to 255, 0 to 255, 0 to 255, 0 to 255	Example: 255.255.255.0
Alarm E-Mail	Setting e-mail address for event occurrence notification	Setting alarm email	Alarm Email	Disable	• Enable • Disable	
		Setting sender email address	From:	None	Email address	
		Setting recipient email address	To:	None	Email address	
		Setting SMTP server IP address or FQDN	SMTP Server	None	SMTP server IP address or FQDN	FQDN can be set only when DNS is set.
		Setting mail subject	Subject	None	Character string	
Alarm E-Mail Filter Button	Setting of notification destination (e-mail) in predictive monitoring	Selection of display severity check box	Severity	All check boxes	• Error • Warning • Info * More than one option can be selected.	
		Selection of display partition check box	Partition	All check boxes	Select partition(s). * More than one option can be selected.	
		Selection of display target unit	Unit	All	Select the unit to be displayed.	
		Selection of display target source	Source	All	Select the source to be displayed.	
Custom TimeZone	Setting a custom time zone	Setting a custom time zone	Custom TimeZone	None	TimeZone	
SNMP v3 Configuration	Setting of system SNMPV3	Setting Engine ID specific to SNMP v3	SNMP v3 Configuration	Engine ID: None User Name: None Auth Type: MD5 Authpassphrase /Privpassphrase: None	Engine ID specific to SNMP v3	
Mode License	Setting of mirror license	Setting system mirror	System Mirror	None	License for permitting the System Mirror function	

Window	Major category	Minor category	Setting item	Default value	Possible values	Remarks
XPAR License	XPAR license setting	XPAR setting	License	None	License for enabling XPAR	
32CPU License (PRIMEQUEST 580A/540A/ 580/540)	32-CPU license setting	Setting for enabling operation as a 32-CPU system	License	None	License for enabling the functions for operation as a 32-CPU system.	
32CPU License (PRIMEQUEST 480/440)	32-CPU license setting	Setting for enabling operation as a 32-CPU system	License	None	License for enabling the functions for operation as a 32-CPU system.	

E.2 Setting Items for PSA

Table E.2 List of setting items for PSA

Major category	Minor category	Setting item	Default value	Possible values	Remarks
Process List	Process list	Refresh Time	None	• None • 5 sec • 10 sec • 30 sec • 60 sec	
		Signal	SIGTERM	• SIGTERM • SIGHUP • SIGKILL • SIGINT • SIGQUIT	
S.M.A.R.T. setting		S.M.A.R.T. Monitoring	Enable	• Enable • Disable	
Watchdog setting	Software Watchdog setting	Watchdog	Disable	• Enable • Disable	
		TimeOut	3600 (sec)	60 to 6000 (sec)	This option can be specified only when Enable is set.
		Watchdog Action	No Action	• No Action • Reset • Power Off • Power Cycle/INIT	This option can be specified only when Enable is set.
	Boot Watchdog setting	Watchdog	Disable	• Enable • Disable	
		TimeOut	0 (sec)	60 to 6000 (sec)	This option can be specified only when Enable is set. The default value cannot be set.

Major category	Minor category	Setting item	Default value	Possible values	Remarks
AgentLog	AgentLog condition specification	Severity	Error/Warning/ Information (all)	• Error • Warning • Information * More than one option can be selected.	
		Unit	All	• All • SB • CPU • DIMM • IOU (IOU/IOX for PRIMEQUEST 520A/520/420) • PCI_Card • Disk • Software • MMB/BMC • Network * More than one option can be selected. • Enter the Unit name directly	
		Sort by Date/ Time	New event first	• New event first • Old event first	
		Start Date/Time	First event	• First event • Specified Time	
		End Date/Time	End event	• End event • Specified Time	
		Number of events to display	1000	• 100 • 200 • 300 • 400 • 500 • 1000	
Export List	Export list	Select File	Top file (latest)	File to be downloaded or deleted * Only one option can be selected.	
	Export indication	Keyword	Blank	Up to 50 alphanumeric, blank, and/or symbols, excluding the following: <>%&”,\	

Appendix F Overall View of Management LAN IP Addresses

The PRIMEQUEST management LAN uses the IP addresses shown in Figure F.1 and Figure F.2.

PRIMEQUEST 580A/540A/580/540/480/440

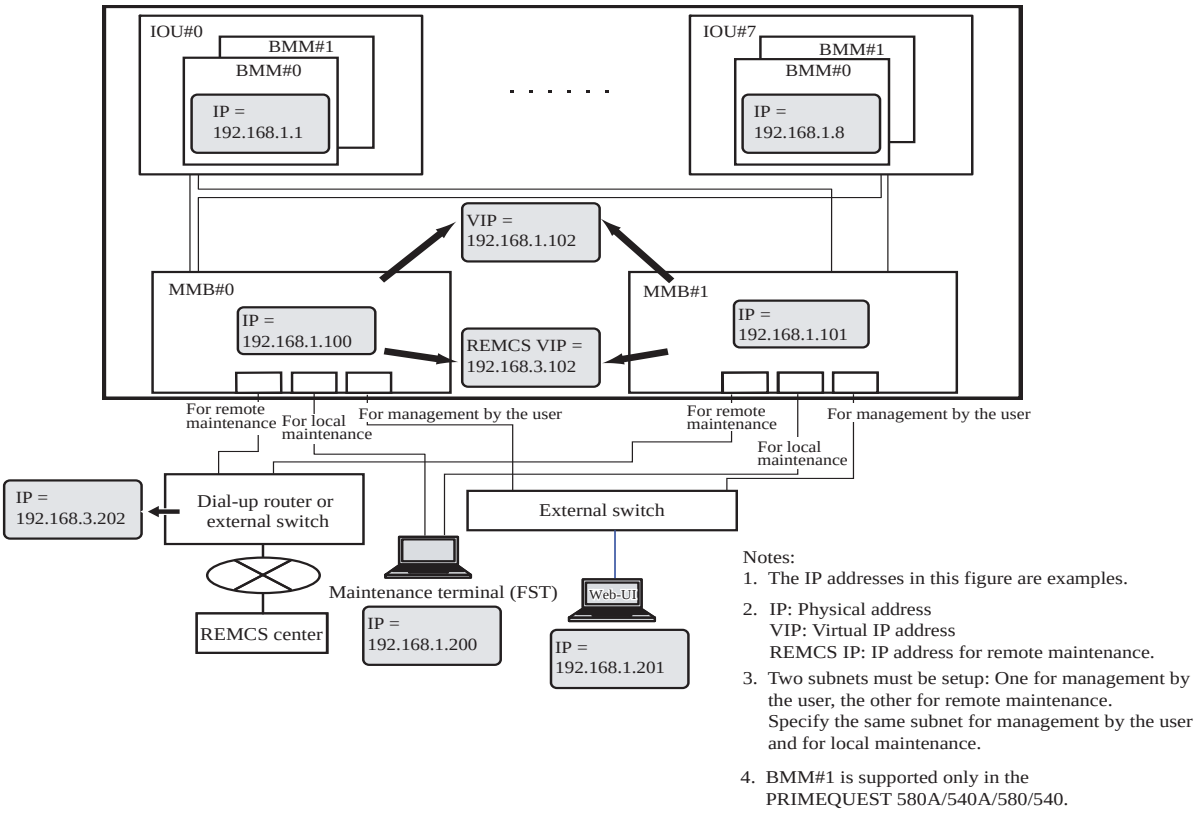


Figure F.1 Management LAN network configuration and IP addresses (PRIMEQUEST 580A/540A/580/540/480/440)

The main applications of IP addresses are described below.

- MMB IP addresses

  Each of MMB #0 and #1 has one physical IP address. In addition to these IP addresses, a virtual IP address and a REMOTE MAINTENANCE connection use virtual IP address can be used for both MMBs. The physical IP address is used for linkage with PRIMECLUSTER and Systemwalker.

  The virtual IP address is used as the SNMP access destinations from the management server or the MMB Web-UI operation. GSWB and PSA Web-UI operations are also performed via the MMB Web-UI.

- IP address set by the OS on a partition

  One IP address must be assigned to the OS that runs on the partition. Physically, it must be set on the NICs in IOU#0 to IOU#7.

  These IP addresses are used for control of Web-UI linkage, SNMP linkage, and REMCS linkage between the PSA and the MMB or for linkage between the PRIMECLUSTER and the MMB.

  The BMMs in each IO Unit have two network interfaces, which are made redundant by Linux Bonding Driver or PRIMECLUSTER GLS for Linux, and by teaming of Intel PROset for Windows.

  Note:

  - If you want to use a switching hub that supports a loop guard function (such as the spanning tree protocol and domain separation) as an external switch, suppress the loop guard function by disabling [Spanning Tree Protocol] for the port for connection between the switching hub and the main unit or by turning on [Domain Separation].
  - The MMB transmits packets in communication of the following types: NTP, alarm e-mail, REMCS, and SNMP trap. If both a physical IP address and a virtual address are set for the MMB, the IP address of the packet sender becomes the physical IP address of the MMB.
    Under the following conditions, firewall, mail, and other servers must be configured such that the packets with the physical IP addresses of MMB#0 and MMB#1 can pass through:
    - The destination server is an external server outside the firewall.
    - IP addresses are restricted by the mail server used.

  Also, if the REMOTE MAINTENANCE port is used with the PRIMEQUEST 580A/540A under the above conditions, the servers must be configured such that the packets with the IP addresses for REMOTE MAINTENANCE can pass through.

PRIMEQUEST 520A/520/420

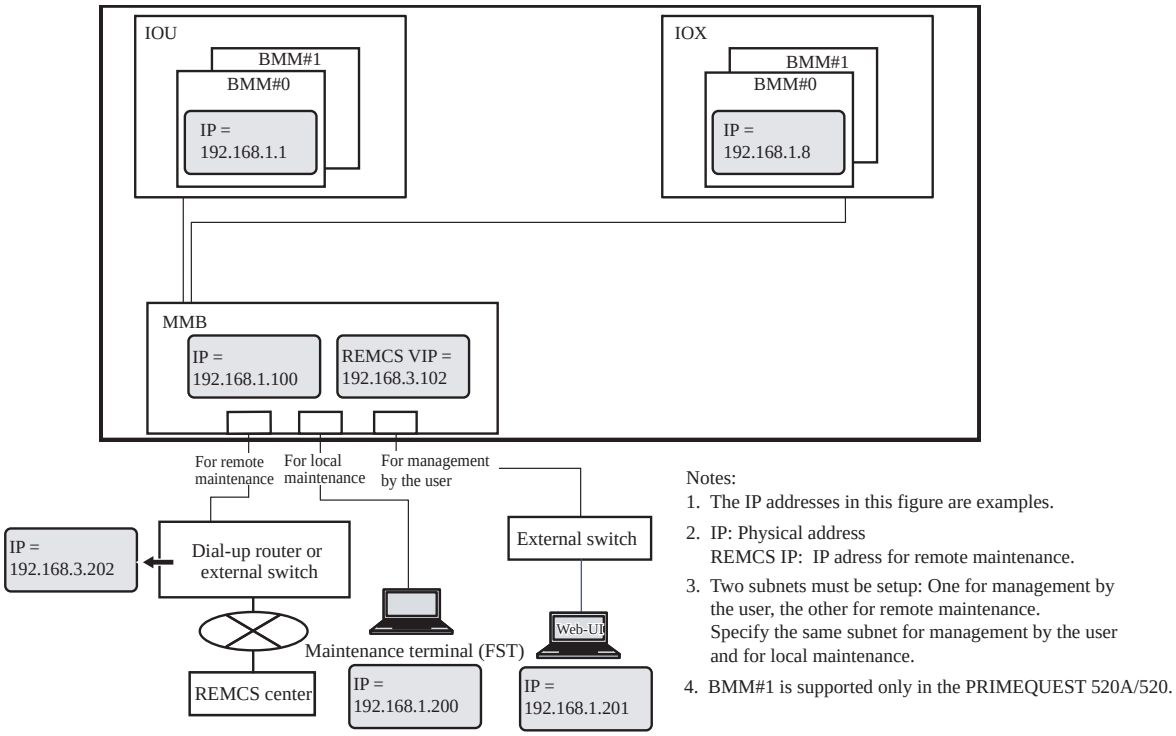


Figure F.2 Management LAN network configuration and IP addresses (PRIMEQUEST 520A/520/420)

The main applications of IP addresses are described below.

- MMB IP addresses

  MMB has one IP address for management and a virtual IP address for REMOTE MAINTENANCE.

  The IP address for management is used as the SNMP access destinations from the management server or the MMB Web-UI operation. PSA Web-UI operation is also performed via the MMB Web-UI.

  Note:

  - If you want to use a switching hub that supports a loop guard function (such as the spanning tree protocol and domain separation) as an external switch, suppress the loop guard function by disabling [Spanning Tree Protocol] for the port for connection between the switching hub and the main unit or by turning on [Domain Separation].

- The MMB transmits packets in communication of the following types: NTP, alarm e-mail, REMCS, and SNMP trap.
  Under the following conditions, firewall, mail, and other servers must be configured such that the packets with the physical IP address of MMB can pass through:
  - The destination server is an external server outside the firewall.
  - IP addresses are restricted by the mail server used.

Also, if the REMOTE MAINTENANCE port is used with the PRIMEQUEST 520A under the above conditions, the servers must be configured such that the packets with the IP addresses for REMOTE MAINTENANCE can pass through.

Glossary

ACS (AC Section)

AC power input section

ASIC (Application Specific Integrated Circuit)

Integrated circuit (IC) designed and manufactured for specific applications

API (Application Program Interface)

A set of instructions and functions used for developing operating systems and middleware

BIOS (Basic Input Output System)

Part of the operating system (OS) function. The BIOS is the system that controls input/output to devices. For the PRIMEQUEST-series machine, BIOS is a general term for PAL, SAL, and EFI.

BMC (Baseboard Management Controller)

The BMC is a system management controller that continuously monitors the system for serious hardware errors and notifies the OS of such errors.

BMM (BMC Module)

Board on which legacy I/O ports such as BMC, VGA, USB, and COM ports are mounted

BP (Backplane)

The backplane is connected to SBs, IO Units, and other devices. Together with the XAI and XDI, it constitutes the memory and I/O interconnect (crossbar).

Business LAN

LAN used to configure a user business system

CLI (Command Line Interface)

This interface with UNIX or DOS allows the user to enter commands and optional arguments to communicate with the OS.

CoA

Abbreviation for Certificate of Authenticity. This is a visual identifier that helps identify genuine Microsoft software and components.

COM Port (Communication Port)

RS-232C serial port for PC/AT compatible machines. A COM port is also called an "RS-232C port." Most PC/AT compatible machines each have two COM ports, which are often used to connect a modem, terminal adapter, or scanner. Most of these ports use D-Sub 25-pin or D-Sub 9-pin connectors.

CPCB (Clock and PCI_Box Control Board)

Board equipped with a system clock oscillator and a PCI_Box control interface

Crossbar

This concept covers the address crossbar and data crossbar that transfer data and control the data transfer between SBs and IO Units. Memory and I/O interconnect has the same meaning as crossbar.

DDR2 (Double Data Rate 2)

Standards for the next generation of memory that operates at higher speeds and consumes less power than conventional DDR memory

DIMM (Dual Inline Memory Module)

This compact memory module has pins on both sides and is mainly used in notebook PCs.

DP

Abbreviation for Dynamic Partitioning. This is a function for dynamically adding, deleting, or replacing CPU or memory resources as well as PCI cards and onboard I/O units in a partition while the operating system is running in the partition.

DVD-ROM (Digital Versatile Disc-Read-Only Memory)

Digital format for high-volume storage of data on optical disks

ECC (Error Checking Correction)

Error correction code or a method of using the error correction code to check for and correct errors

EFI (Extensible Firmware Interface)

Specifications for an interface between an OS and firmware. Instead of the BIOS, EFI is used for hardware control.

FC (Fibre Channel)

One of the serial interface standards. The Fibre Channel standard uses fiber cables as the transmission medium.

Firmware

Built-in software for basic hardware control

FWH (Firmware Hub)

LSI device from Intel Corporation. FWH is flash memory that stores SAL (BIOS). The PRIMEQUEST-series machine uses two types of FWH: one type is mounted on an SB and the other is mounted in an IO Unit.

GAC (Global Address Controller)

One of the ASICs developed by Fujitsu for the PRIMEQUEST-series machine

GbE (Gigabit Ethernet)

Ethernet standards for high-speed communication of up to 1 Gbps

GDS

Abbreviation for PRIMECLUSTER GDS

GDX (Global Data Xbar)

One of the ASICs developed by Fujitsu for the PRIMEQUEST-series machine

GLS

Abbreviation for PRIMECLUSTER GLS

GSWB (Gigabit Switch Board)

Board with a switching hub function and a connector that receives Gigabit Ethernet interface output from an IO Unit via the BP and outputs it to a destination outside the cabinet

HBA

Abbreviation for a host bus adapter

HDD (Hard Disk Drive)

Device that reads a hard disk. HDD may also be an abbreviation for the hard disk itself.

Hot Plug

Method of replacing components while power is on

HTTP (Hypertext Transfer Protocol)

Protocol used by Web servers and clients for data transmission

I2C (Inter Integrated Circuit)

Protocol used for high-speed communication between integrated circuits (ICs)

IA (Intel Architecture)

Generic term for the basic design (architecture) of Intel's microprocessors

IFT (Instruction Fetch)

Mechanism for reading instructions stored in memory

IHV (Independent Hardware Vendor)

This hardware provider has no special relationship with a particular hardware or OS maker.

IO Unit

I/O control unit that contains PCI card slot, HDD, SCSI controller, GbE controller, and other I/O interfaces

IP Address (Internet Protocol Address)

Identification number assigned to each computer connected to an IP network, such as the Internet and intranets

IPMI (Intelligent Platform Management Interface)

Standardized interface specifications established so that SNMP and server management software can monitor server hardware independently of specific hardware systems and OSs

ISV (Independent Software Vendor)

This application software provider has no special relationship with a particular hardware or OS maker.

KVM (KVM interface unit)

Unit used to select the USB interface for keyboard and mouse, or the VGA interface, for external output from a partition

LAN (Local Area Network)

Using optical fiber, for example, this network allows data to be transferred among computers and printers connected in a facility.

LDAP (Lightweight Directory Access Protocol)

Protocol used to access directory databases in a TCP/IP network, such as the Internet and intranets

LDX (Local Data Xbar)

One of the ASICs developed by Fujitsu for the PRIMEQUEST-series machine

LED

Abbreviation for a light emitting diode

MAC address (Media Access Control Address)

Unique address assigned to each network interface device, switch, or router mounted on a network interface card (NIC) or motherboard

Management LAN

This LAN connects the MMB to partitions and to LANs outside the cabinet so that the PRIMEQUEST system can be managed.

MIB (Management Information Base)

Information released by a network device managed by SNMP in order to post the device status to an external destination

Middleware

Software that runs under an OS and provides application software with more advanced and detailed functions than the OS. It is positioned between the OS and application software in terms of its characteristics.

MMB (Management Board)

This server management board is a system control unit whose tasks include control and monitoring of cabinet hardware, partition management, and system initialization.

NIC (Network Interface Controller)

Hardware that supports network functions

NTP (Network Time Protocol)

Standard time information protocol used on the Internet. Highly precise time information with consideration of line speeds and load changes in paths can be obtained with this protocol.

PAL (Physical Abstract Layer)

Firmware that provides platform initialization and operating system boot functions

Partition

System equipped with the functions of a processing unit. Each partition contains software resources such as an OS and applications as well as hardware resources such as SBs and IO Units.

PCI_Box

Device used for PCI slot expansion

PCI Hot Plug

Technology that enables PCI cards to be mounted and removed while the system is operating

PCI (Peripheral Component Interconnect)

Bus architecture established by PCI SIG for connecting PC components

PCIU (PCI Unit)

PCI-X card slot expansion unit that is mounted in a PCI_Box

PEXU

PCI Express card slot expansion unit that is mounted in a PCI_Box

Platform

OS type or environment that is the basis for operation of application software

POST (Power-On Self Test)

Hardware test that is automatically run when the computer is powered on

Private LAN

LAN used for internal control, under which firmware programs installed on hardware components communicate with one another. MMB firmware, GSWB firmware, and BMC firmware installed on IO Units can use a private LAN for communication with one another. OSs and applications cannot use a private LAN.

PSA (PRIMEQUEST Server Agent)

Software that performs hardware error monitoring and configuration management over PRIMEQUEST partitions

PSU (Power Supply Unit)

Component that converts AC voltage to DC voltage as a DC power supply

PXE

PXE (Preboot eXecution Environment) Network boot standard based on BIOS technology that enables remote operation of management tasks such as system start and OS installation/update

RAID (Redundant Array of Independent Disks)

Technology that increases reliability and processing speeds by using multiple hard disks as a single disk

REMCS (Remote Customer Support System)

Fujitsu's remote customer support service

Reserved SB

Standby SB reserved for possible failures

RHEL (Red Hat Enterprise Linux)

Linux distribution released by Red Hat, Inc.

SAF-TE

Abbreviation for a SCSI accessed fault-tolerant enclosure

SAL (System Abstraction Layer)

Firmware that supports processor initialization and error recovery functions

SAN (Storage Area Network)

Dedicated network for connections between a server and storage devices

SAS

Abbreviation for Serial Attached SCSI. This is one of the interfaces included in the SCSI standards. Serial Attached SCSI is an interface for connecting devices such as hard disks to a computer. With this interface, data is transferred in serial communication.

SB (System Board)

Board on which a CPU and memory are mounted

SCSI (Small Computer System Interface)

Standards for connections between PCs and peripherals. SCSI was established by the American Standards Association.

SDRAM (Synchronous DRAM)

Memory standard for access speeds that are higher than those of DRAM

SEL (System Event Log)

Information on the processing parameters, processing, and processing results logged during hardware and software operations

SERDES (Serializer Deserializer)

Parallel-to-serial converter (from low speeds to high speeds)

SIRMS (Software Product Information Collection for Remote Maintenance Support)

Software that collects configuration information on software installed in PRIMEQUEST partitions

S.M.A.R.T. (Self-Monitoring Analysis Reporting Technology)

Function that enables a hard disk to monitor its own conditions and notify the BIOS of any error detected

SMP (Symmetric Multiple Processor)

Parallel processing system in which all processors work together through common memory resources

SNMP (Simple Network Management Protocol)

TCP/IP-compliant protocol for managing devices in a network

SSL (Secure Sockets Layer)

Protocol under which information is encrypted for transmission. SSL was developed by Netscape Communications Corp.

System Mirror Mode

Mechanism for duplicating memory, system interconnects, and internal hardware components of chipsets so that operation can continue with another component in the event that one of duplicated components fails.

Systemwalker

One of Fujitsu's middleware products. Systemwalker is integrated operation management software.

Telnet

Protocol or standard method for remote control of computers connected to a TCP/IP network, such as the Internet and intranets

UPS (Uninterruptible Power Supply)

Power supply unit that stores power and protects against possible damage and loss of computer data from a momentary voltage drop or unexpected power failure

USB (Universal Serial Bus)

One of the standards on connecting peripheral devices such as keyboards and mice

VLAN (Virtual LAN)

Function that logically groups the ports of one switching hub so each group works as an independent LAN

Web UI (Web User Interface)

Interface that uses a Web browser for displaying information to users and for user operations

XAI (Xbar Address Interconnect Board)

Board that transfers address information and controls the information transfer between SBs and IO Unit boards

XDI (Xbar Data Interconnect Board)

Board that transfers data and controls the data transfer between SBs and IO Unit boards

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