

Hitachi Compute Blade 500 Series

Logical partitioning manager User's Guide

FASTFIND LINKS

[Document Organization](#)

[Product Version](#)

[Getting Help](#)

[Contents](#)

© 2012-2018 Hitachi, Ltd. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or stored in a database or retrieval system for any purpose without the express written permission of Hitachi, Ltd.

Hitachi, Ltd., reserves the right to make changes to this document at any time without notice and assumes no responsibility for its use. This document contains the most current information available at the time of publication. When new or revised information becomes available, this entire document will be updated and distributed to all registered users.

Some of the features described in this document might not be currently available. Refer to the most recent product announcement for information about feature and product availability, or contact Hitachi Data Systems Corporation at <https://portal.hds.com>.

Notice: Hitachi, Ltd., products and services can be ordered only under the terms and conditions of the applicable Hitachi Data Systems Corporation agreements. The use of Hitachi, Ltd., products is governed by the terms of your agreements with Hitachi Data Systems Corporation.

Hitachi is a registered trademark of Hitachi, Ltd., in the United States and other countries. Hitachi Data Systems is a registered trademark and service mark of Hitachi, Ltd., in the United States and other countries.

Archivas, Essential NAS Platform, HiCommand, Hi-Track, ShadowImage, Tagmaserve, Tagmasoft, Tagmasolve, Tagmastore, TrueCopy, Universal Star Network, and Universal Storage Platform are registered trademarks of Hitachi Data Systems Corporation.

AIX, AS/400, DB2, Domino, DS6000, DS8000, Enterprise Storage Server, ESCON, FICON, FlashCopy, IBM, Lotus, MVS, OS/390, RS6000, S/390, System z9, System z10, Tivoli, VM/ESA, z/OS, z9, z10, zSeries, z/VM, and z/VSE are registered trademarks or trademarks of International Business Machines Corporation.

All other trademarks, service marks, and company names in this document or website are properties of their respective owners.

Microsoft product screen shots are reprinted with permission from Microsoft Corporation.



Contents

Preface	ix
Intended Audience	x
Product Version	x
Release Notes	x
Referenced Documents	x
Document Organization	xi
Document conventions	xii
Convention for storage capacity values	xiii
Getting help	xiii
Comments	xiii
1 LPAR manager Functions	1-1
LPAR manager Overview	1-2
Logical Partitioning	1-3
Logical Partitioning of Processors	1-4
Scheduling mode dynamically change	1-5
Service Ratio	1-6
Idle Detection	1-7
Processor Capping	1-8
Processor Group	1-9
Hyper Threading	1-10
PRTE	1-12
Logical Partitioning of Memory	1-13
Guest NUMA	1-15
L3 cache allocation functionality	1-18
Logical Partitioning of PCI Devices	1-19
NIC (Network Interface Card)	1-22
Management Path	1-32
SR-IOV	1-40
FCoE	1-43
Port Multiple Assignment	1-44
Port Separate Assignment	1-44
TagVLAN	1-45
Teaming	1-54
Promiscuous Mode	1-55
Packet Filtering of Inter-LPAR	1-60

FC (Fibre Channel)	1-60
HBA-core dedicated mode	1-62
USB/KVM	1-65
2 System Operation	2-1
Web Console	2-2
HCSM	2-2
Server Management	2-2
SC/BSM	2-2
SC/DPM	2-2
HVM Navigator	2-3
LPAR Configuration	2-3
Monitoring	2-3
Viewer	2-3
Migration	2-3
Virtual COM Console	2-4
Logical VGA Snapshot	2-10
Time Adjustment	2-11
Power Saving	2-16
System Idle Loop	2-16
Power Capping Function	2-16
Transfer	2-17
Transfer to LPAR manager environment from Basic environment	2-17
Transfer to Basic environment from LPAR manager environment	2-18
IPv6 Setting for LP IP Addresses	2-18
LP communication settings	2-20
DNS	2-20
Performance tuning options	2-21
3 High Reliability Functions	3-1
Redundancy	3-2
Redundancy of Power Supply	3-2
Redundancy of Management Module	3-2
Redundancy of LAN switch / FC switch	3-3
RAID configuration and duplex controllers	3-3
N+M Cold Standby	3-3
Microsoft Cluster Service/Microsoft Failover Cluster	3-7
UPS	3-9
Role-Based Access Control	3-11
User types	3-11
Role types	3-12
Assigning roles	3-12
Access permissions	3-13
Changing access permissions	3-15
LPAR manager operations from the management module	3-15
Configuration example	3-17
Notes on access permissions	3-17
User Authentication	3-18
Scope of support	3-19
User authentication settings	3-19
Specify the method of user authentication	3-20

Local authentication	3-20
LDAP authentication	3-24
RADIUS authentication	3-26
User authentication logs	3-28
Audit log	3-28
Scope of support	3-28
Audit log settings	3-29
Audit log format	3-29
LPAR manager Security	3-32
Certificates in LPAR manager	3-32
Security for functions and tools that use a management network	3-37
4 Maintenance Functions	4-1
Guest Memory Dump Collection Command	4-2
LPAR manager Dump Collection Command	4-6
Backup Functions	4-8
Backup of System Area	4-8
Backup of Data Area	4-10
Backup of LPAR manager	4-12
LPAR manager Firmware Upgrade / Update	4-13
Relation between server blade and LPAR manager firmware	4-13
Selecting the bank of LPAR manager firmware	4-14
LPAR Migration	4-16
Safe mode	4-17
5 Setup of LPAR manager	5-1
Setup Overview	5-2
Setup of Terminal Software	5-4
Connects LPAR manager Screen	5-6
LPAR manager Settings	5-7
Creating LPAR	5-10
Adding LPAR	5-10
Configuration of Processor	5-12
Configuration of Memory	5-16
Configuration of PCI Device	5-18
Assign VNICS (Virtual NICs) to LPARs	5-26
Assign Shared FCs to LPARs	5-28
Save Configuration Changed on LPAR manager Screen	5-30
Boot the Guest OS	5-32
Activating LPAR	5-32
Boot order setting	5-33
Boot setting	5-33
Creating boot option	5-40
Changing Boot order	5-52
Deleting Boot order	5-61
Display settings for Guest OS	5-63
Display settings for Windows	5-64
Display settings for Linux	5-64
Deactivation of LPAR	5-65
Shutdown of Guest OS	5-65
Deactivation of LPAR	5-65

Termination of LPAR manager	5-67
Shutting down of LPAR manager	5-67
6 LPAR manager backup	6-1
LPAR manager backup files	6-2
Operations required creating backup files	6-2
Save/backup/restore tools for LP configuration	6-3
Backing up the LPAR manager configuration as of a time before device isolation	6-3
Creating backup files	6-4
Restoring backup files	6-5
7 Operation by LPAR manager Screen	7-1
LPAR manager Key Operations	7-2
Summary of LPAR manager Screen	7-4
Common items for all screens	7-6
LPAR manager Menu	7-6
Logical Partition Configuration	7-9
Logical Processor Configuration	7-28
Physical Processor Configuration	7-32
PCI Device Information	7-35
PCI Device Assignment	7-39
Virtual NIC Assignment	7-44
Shared FC Assignment	7-56
Allocated FC Information	7-61
System Configuration	7-63
System Service State	7-76
Date and Time	7-81
LP Options	7-105
LPAR Usage	7-118
Front Panel	7-124
LP system logs	7-128
Firmware Version Information	7-131
8 LPAR manager Dump Collection	8-1
Check the LPAR manager Dump	8-2
Collects the LPAR manager Dump	8-2
Exports LPAR manager Dump	8-4
9 Messages	9-1
LPAR manager Boot Messages	9-2
LPAR manager Screen messages	9-10
LP system logs Screen Messages	9-27
Error Level	9-27
Warn Level	9-37
Info Level	9-45
Audit log messages	9-56
Notation used in audit log messages	9-57
List of audit log messages	9-57
HCSM Alert Messages	9-94

10 Notes	10-1
Note for the LPAR manager Setup	10-2
Restriction of SMP configuration	10-2
Setting FC Switch	10-3
Requirements for LPAR manager Startup	10-3
Notes on temporary LP licenses	10-4
Maximum Resolution	10-5
Note for the LPAR manager operation	10-5
LPAR manager boot up	10-5
LPAR Memory Fragmentation	10-5
Memory allocation to LPARs	10-8
PCI Device Assignment	10-8
Using inter-LPAR communication in a redundant network configuration	10-9
Displaying shared NIC/virtual NIC by ethtool command	10-11
Use Dedicated NIC	10-11
Use Shared NIC	10-11
Availability of Shared FC	10-12
Timeout in Saving Configuration	10-12
Boot Option Settings	10-13
LPAR manager Shutdown	10-13
Notes for System Management	10-13
Restriction when Dual-core CPU is installed in CB 520H A1/B1/B2/B3/B4 model	10-13
Restriction when TPM (Trusted Platform Module) is installed	10-14
Isolation/degradation for CPU, memory, or PCI device	10-14
CPU core degradation	10-14
Restrictions on use of Onboard LAN	10-14
Restrictions on use of Emulex 10Gb NIC	10-15
Restrictions of the numbers of NIC ports assignment for Windows	10-16
Multicast communication errors	10-18
Performance Slowdown on the Management Path	10-19
Expansion of VNIC System No	10-20
Remote Console Function	10-20
NETM/Remote Control	10-21
Server Conductor/Blade Server Manager	10-21
Server Conductor/Deployment Manager	10-22
Server Conductor/Advanced Agent	10-22
Power Capping	10-22
A Setting Item Catalogue	A-1
Server Blade which LPAR manager supports	A-2
PCI device which LPAR manager supports	A-2
OSs which LPAR manager supports	A-4
Functions which LPAR manager supports	A-9
SR-IOV functions which LPAR manager supports	A-17
LPAR manager licenses	A-23
Differences in supported items depending on the guest OSs	A-24
B Setting Item List	B-1
LPAR manager Setting Items	B-2
EFI Driver Setting Items	B-8

C Console Types C-1
 Console Types C-2

D LPAR manager use Port numbers D-1
 LPAR manager use Port numbers D-2

E System Configuration E-1
 Recommended LPAR manager Configuration (SAN Boot) E-2

F HvmGetPerf Command F-1
 HvmGetPerf Command F-2

G Software License Information G-1
 Software License Information G-2



Preface

This document describes how to use the Compute Blade 500. (The introduction of the preface states the purpose of the document, briefly introduces the subject of the document, and provides links to the sections of the preface.)

Notice: The use of Compute Blade 500 and all other Hitachi Data Systems products is governed by the terms of your agreement(s) with Hitachi Data Systems.

- ☐ [Intended Audience](#)
- ☐ [Product Version](#)
- ☐ [Release Notes](#)
- ☐ [Referenced Documents](#)
- ☐ [Document Organization](#)
- ☐ [Document conventions](#)
- ☐ [Convention for storage capacity values](#)
- ☐ [Getting help](#)
- ☐ [Comments](#)

Intended Audience

This document is intended for the personnel who are involved in planning, managing, and performing the tasks to prepare your site for Compute Blade installation and to install the same.

This document assumes the following:

- The reader has a background in hardware installation of computer systems.
- The reader is familiar with the location where the Compute Blade will be installed, including knowledge of physical characteristics, power systems and specifications, and environmental specifications.

Product Version

This document revision applies to Logical partitioning manager 02-62.

Release Notes

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

Referenced Documents

- Hitachi Compute Blade 500 Series Server Blade Setup Guide
- Hitachi Compute Blade 500 Series Management Module Setup Guide
- Hitachi Compute Blade 500 Series Web Console User's Guide
- Hitachi Compute Blade 500 Series EFI User's Guide
- Hitachi Compute Blade Series Hitachi Compute Rack Series OS Installation Guide for Windows Server
- Hitachi Compute Blade Series OS Installation Guide for Red Hat Enterprise Linux
- Hitachi Compute Blade Emulex Adapter User's Guide for Driver
- Hitachi Compute Blade Emulex Adapter User's Guide for Hardware
- Server installation and monitoring tool OS Setup Guide
- Hitachi Gigabit Fibre Channel Adapter USER'S GUIDE (BIOS/EFI Edition)
- Hitachi Compute Blade HVM Navigator User's Guide - Getting Started
- Hitachi Compute Blade HVM Navigator Installation Manual
- Hitachi Compute Blade HVM Navigator User's Guide - LPAR Configuration
- Hitachi Compute Blade HVM Navigator User's Guide - Monitoring
- Hitachi Compute Blade HVM Navigator User's Guide - Viewer
- Hitachi Compute Blade HVM Navigator User's Guide - Migration

- Hitachi Compute Blade HVM Navigator User's Guide - Operation Quick Reference
- Hitachi Compute Blade LPAR Migration Guide
- Hitachi Compute Blade Logical VGA SnapShot
- HVM Management Command (HvmSh) Operation Guide
- Hitachi Command Suite Compute Systems Manager User Guide

Document Organization

The table below provides an overview of the contents and organization of this document. Click the chapter title in the left column to go to that chapter. The first page of each chapter provides links to the sections in that chapter.

Chapter	Description
Chapter 1, LPAR manager Functions	Explains the basic functions of LPAR manager.
Chapter 2, System Operation	Describes the system operation.
Chapter 3, High Reliability Functions	Explains High Reliability Functions.
Chapter 4, Maintenance Functions	Explains Maintenance Functions.
Chapter 5, Setup of LPAR manager	Explains setup of LPAR manager by using the LPAR manager screen. Contents on the screens might be changed depend on the version.
Chapter 6, LPAR manager backup	Explains LPAR manager backup.
Chapter 7, Operation by LPAR manager Screen	Explains LPAR manager operation by using the LPAR manager screen.
Chapter 8, LPAR manager Dump Collection	Explain the over view of LPAR manager at this chapter.
Chapter 9, Messages	Describes the Displaying Message.
Chapter 10, Notes	Explains Notes for LPAR manager. For notes for the system unit, see each User's Guides.
Appendix A, Setting Item Catalogue	Setting Item Catalogue
Appendix B, Setting Item List	Setting Item List
Appendix C, Console Types	Console Types
Appendix D, LPAR manager use Port numbers	LPAR manager use port numbers
Appendix E, System Configuration	System Configuration
Appendix F, HvmGetPerf Command	HVMGetPerf Command
Appendix G, Software License Information	Software License Information

Document conventions

The term "Compute Blade" see all the models of the Compute Blade, unless otherwise noted.

The Hitachi Virtualization Manager (HVM) name has been changed to Hitachi logical partitioning manager (LPAR manager, or LP). If you are using HVM based logical partitioning feature, substitute references to Hitachi logical partitioning manager (LPAR manager, or LP) with HVM.

This document uses the following typographic conventions:

Convention	Description
Regular text bold	In text: keyboard key, parameter name, property name, hardware labels, hardware button, hardware switch. In a procedure: user interface item
<i>Italic</i>	Variable, emphasis, reference to document title, called-out term
screen/code	Command name and option, drive name, file name, folder name, directory name, code, file content, system and application output, user input
< > angled brackets	Variable (used when italic is not enough to identify variable).
[] (square bracket)	Optional values
{ } braces	Required or expected value
vertical bar	Choice between two or more options or arguments

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

Icon	Meaning	Description
 WARNING	WARNING	This indicates the presence of a potential risk that might cause death or severe injury.
 CAUTION	CAUTION	This indicates the presence of a potential risk that might cause relatively mild or moderate injury.
NOTICE	NOTICE	This indicates a risk of severe damage to the equipment or damage to nearby items.
 Note	Note	This indicates notes not directly related to injury or severe damage to equipment.
 Tip	Tip	This indicates advice on how to make the best use of the equipment.

The following table shows abbreviations of logical partitioning manager and logical partition.

Term	Abbreviation
logical partitioning manager	LPAR manager or LP

Term	Abbreviation
logical partition	LPAR

Convention for storage capacity values

Physical storage capacity values (for example, disk drive capacity) are calculated based on the following values:

Physical capacity unit	Value
1 kilobyte (KB)	1,000 (10^3) bytes
1 megabyte (MB)	1,000 KB or $1,000^2$ bytes
1 gigabyte (GB)	1,000 MB or $1,000^3$ bytes
1 terabyte (TB)	1,000 GB or $1,000^4$ bytes
1 petabyte (PB)	1,000 TB or $1,000^5$ bytes
1 exabyte (EB)	1,000 PB or $1,000^6$ bytes

Logical storage capacity values (for example, logical device capacity) are calculated based on the following values:

Logical capacity unit	Value
1 block	512 bytes
1 KB	1,024 (2^{10}) bytes
1 MB	1,024 KB or $1,024^2$ bytes
1 GB	1,024 MB or $1,024^3$ bytes
1 TB	1,024 GB or $1,024^4$ bytes
1 PB	1,024 TB or $1,024^5$ bytes
1 EB	1,024 PB or $1,024^6$ bytes

Getting help

The Hitachi Data Systems customer support staff is available 24 hours a day, seven days a week. If you need technical support, log on to the Hitachi Data Systems Portal for contact information: <https://portal.hds.com>.

Comments

Please send us your comments on this document: doc.comments@hds.com. Include the document title and number including the revision level (for

example, -07), and refer to specific sections and paragraphs whenever possible. All comments become the property of Hitachi Data Systems Corporation.

Thank you!

LPAR manager Functions

This chapter explains the basic functions of LPAR manager.

- ☐ [LPAR manager Overview](#)
- ☐ [Logical Partitioning](#)
- ☐ [Logical Partitioning of Processors](#)
- ☐ [Logical Partitioning of Memory](#)
- ☐ [Logical Partitioning of PCI Devices](#)
- ☐ [NIC \(Network Interface Card\)](#)
- ☐ [FC \(Fibre Channel\)](#)
- ☐ [USB/KVM](#)

LPAR manager Overview

LPAR manager logically partitions the physical resources of one server blade to create multiple server environments, each of which can operate independently.

Each of the server environments constructed in this way from partitioned physical resources is called an LPAR (Logical PARTition). It is possible to run a different operating system on each LPAR simultaneously.

The operating system on an LPAR is called a guest OS. Each LPAR operates as a completely independent and isolated server environment, and the guest OS running on an LPAR is not affected by other LPARs.

The mode in which a server blade is logically partitioned to allow the operation of multiple LPARs is called the LP mode. The conventional mode of operating a server blade without partitioning is called the Basic mode.

Unless explicitly specified, the terms "physical" and "logical" are used in this chapter as defined in the table below.

Table 1-1 Physical and Logical resources

Term	Description
Physical	Indicates the resources that actually exist in the system. "Physical" is sometimes omitted, except where this would cause confusion.
Logical	Indicates the logical resources that exist on an LPAR or for software on LPARs. Thus, there may or may not exist an actual resource for each logical resource.

An image when the system is booted in the LP mode is as follows:

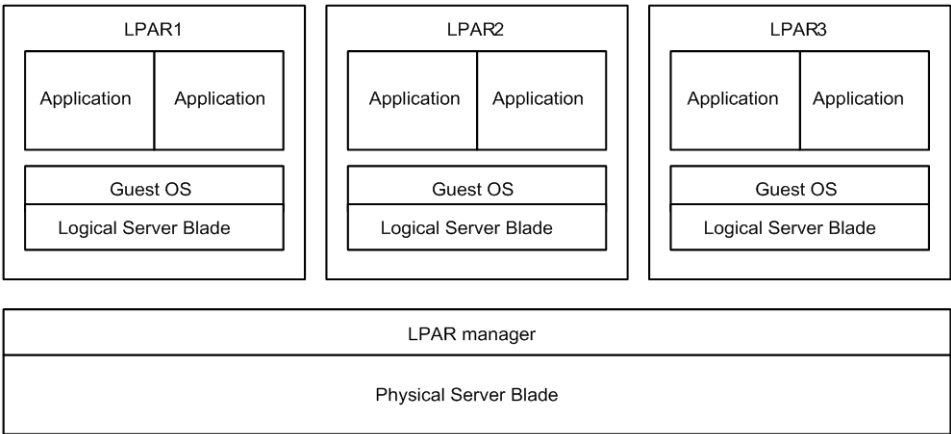


Figure 1-1 System Activation in the LP mode

In addition, in this chapter:

- Symbols embraced by square brackets [] indicate keys on the keyboard.
- If two keys are joined by a "+", such as "**A** + **B**", it means the two keys are to be pressed together

Logical Partitioning

Dedicated Resources and Shared Resources

Although the LP mode makes it possible to logically partition the hardware resources of a server blade, the method of logical partitioning varies depending on the hardware resource.

Some types of logical partitioning are shown in the table below.

Table 1-2 Type of Logical Partitioning

Term		Description	Typical Hardware Resources
Dedicated		The LPAR to which a hardware resource has been allocated dedicatedly uses the hardware resource and other LPARs cannot use the hardware resource. To switch the LPAR that can use resources, make sure to shut down the LPAR once to change the configuration definition.	Processors Memories PCI devices
Shared	Time-shared	The particular LPARs to which a hardware resource has been allocated timeshare the hardware resource. LPAR manager keeps switching LPARs that can use the device at very short time intervals.	Processors PCI devices
	Exclusive-shared	One of the particular LPARs to which a hardware resource has been allocated exclusively uses the hardware resource. The LPAR using the resource can be switched dynamically.	Serial ports USB devices Remote Console

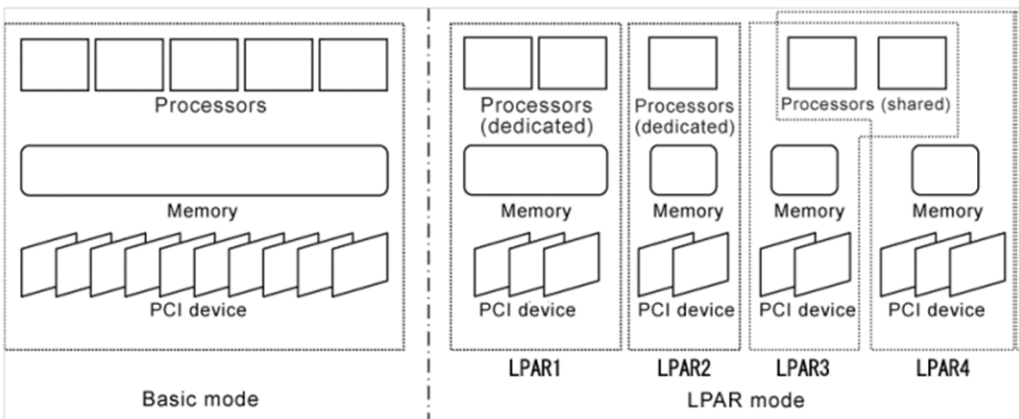


Figure 1-2 Logical Partitioning of Hardware Resources

Logical Partitioning of Processors

The method of logically dividing the physical processor is referred to as the scheduling mode. You can select dedicated mode or shared mode for the scheduling mode. Different features of each mode are shown in the table below.

Table 1-3 Processor Scheduling Mode

Mode	Description	Recommended System
Dedicated Mode	• The logical processor on an LPAR dedicatedly uses the corresponding physical processor. • Since there is no overhead for switching the physical processors between the logical processors, the LPAR performs faster. • For each LPAR, it is possible to specify the number of dedicated logical processors assigned. (However, it is not possible to specify more than the number of physical processors available.)	• System required high processing performance • System required critical time period and high processing in performance
Shared Mode	• Physical processors are time-shared among the logical processors defined in the LPAR for which the shared mode is specified. • The utilization rate of the physical processors can be set dynamically for each LPAR, allowing flexible use of physical processor resources. • The number of logical processors to be used in the shared mode can be set for each LPAR. (It is possible to specify more than the number of physical processors available, but this operations may cause the extremely slow down.)	• System required cost efficiency and flexibility rather than high processing performance • System required balanced processing between LPARs

Dedicated Mode

Example of Dedicated Mode is below

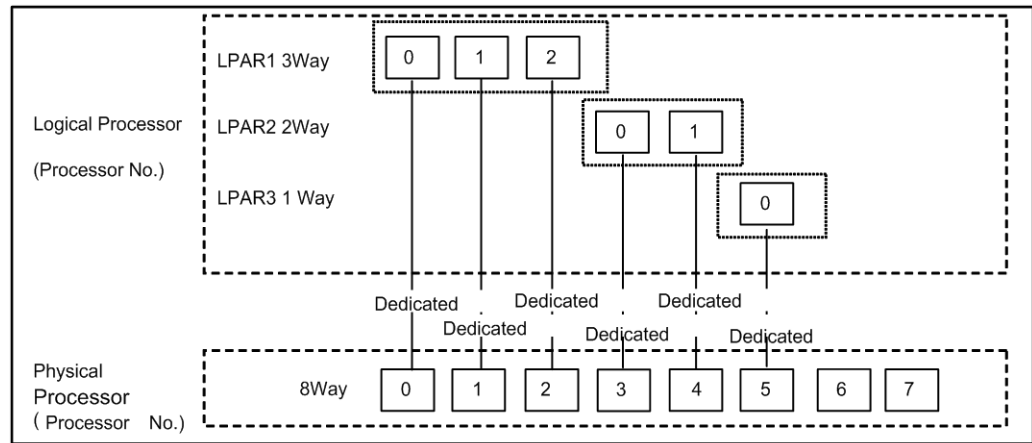


Figure 1-3 Processor Assignment of Dedicated Mode

Shared Mode

Example of Dedicated Mode is below

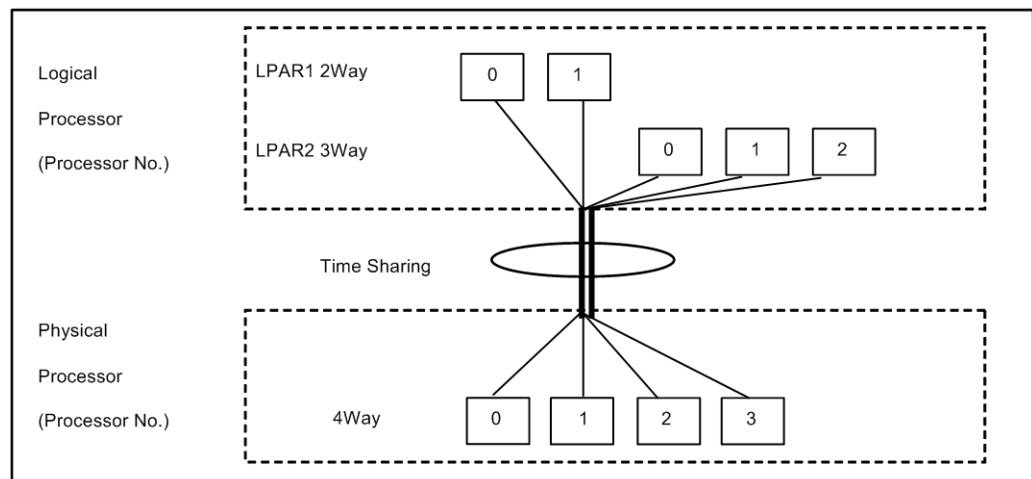


Figure 1-4 Processor Assignment of Shared Mode

Scheduling mode dynamically change

Shared and dedicated LPARs can be switched dynamically without deactivating.

- The Scheduling mode of arbitrary Logical processor can be changed from dedicated mode to shared mode.
- The Scheduling mode of arbitrary Logical processor can be changed from shared mode to dedicated mode.

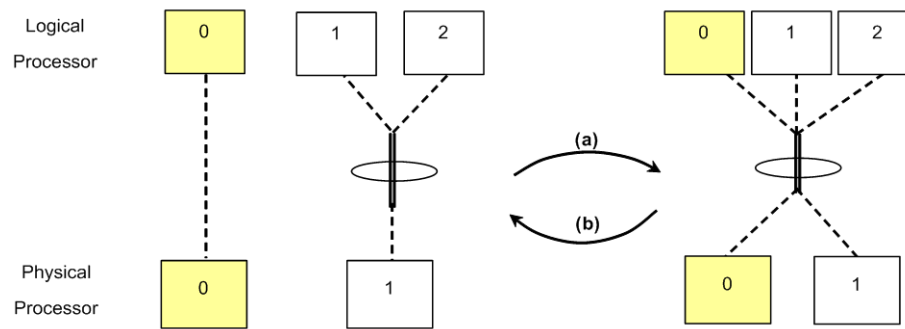


Figure 1-5 Scheduling mode dynamically change

Service Ratio

To the LPARs in the Shared Processor Mode, you can set the relative processor resource allocation rate (called 'Service Ratio'), which represents the ratio of the time period in which the LPAR actually run on the physical processors (called 'Service Time'). The Service Ratio can be specified from 1 to 999.

LPAR manager partitions the performance of the physical processor used in shared mode in 1 percent unit. LPAR manager calculates the relative allocation rate of the service time with 10-millisecond time-slice accuracy, which equals 1% of a unit processor time (1 second).

Service ratio has a meaning only to LPAR of shared mode. Service ratio does not have any meaning to LPAR of shared mode, and cannot be assigned.

The examples of the relations between Service Ratio and allocation rate are as follows.

(Example 1)

This example shows the allocation rates of LPAR1 (Service Ratio=100, the number of the logical processors=2) and LPAR2 (Service Ratio=100, the number of the logical processors=2) when the number of the physical processor can be used by the shared mode LPARs is 3.

	Service Ratio	Actual resource allocation rate	Actual allocation of the time period of physical processor (millisecond) per unit time (1 sec)
LPAR1 (# of logical processors=2)	100	50%	1,500
LPAR2 (# of logical processors=2)	100	50%	1,500
Total	200	100%	3,000 (*1)

*1: Total available time period in an entire system in a unit time (1 sec) = 3,000 milliseconds
 ("1 sec = 1000 milliseconds" X "Number of physical processors = 3" = 3000 milliseconds)

Figure 1-6 Service Ratio Example 1

(Example 2)

This example shows the allocation rates of LPAR1 (Service Ratio=100, the number of the logical processors=2), LPAR2 (Service Ratio=100, the number of the logical processors=2) and LPAR3 (Service Ratio=100, the number of the logical processors=3), when the number of the physical processor can be used by the shared mode LPARs is 3, and LPAR3 is added while LPAR1 and LPAR2 are running.

	Service Ratio	Actual resource allocation rate	Actual allocation of the time period of physical processor (millisecond) per unit time (1 sec)
LPAR1 (# of logical processors=2)	100	50%	1,500
LPAR2 (# of logical processors=2)	100	50%	1,500
Total	200	100%	3,000

↓ Add LPAR

LPAR1 (# of logical processors=2)	100	33.33%	1,000
LPAR2 (# of logical processors=2)	100	33.33%	1,000
LPAR3 (# of logical processors=2)	100	33.33%	1,000
Total	300	100%	3,000

Figure 1-7 Service Ratio Example 2

LPAR manager modifies the allocation rate from the shared LPAR definition when it meets the following condition:

- If the allocation rate for the calculation per logical processor is less than 1 %, the service rate is compensated so that the time in which a single logical processor uses the physical processor becomes 1% (10 milliseconds) of the unit processor time (1 second).
- If the number of logical processors allocated to a single LPAR does not satisfy the assigned allocation rate, the allocation rate is compensated to the one that is based on the number of logical processors.

Idle Detection

A shared mode LPAR, which enabling its idle detection and not using so much CPU compared to the allocated rate, can give its processor time to another shared mode LPAR requiring it. The busy shared mode LPAR that takes over the processor time can use more processor-time than the allocation rate. As a result, the system can use CPUs time more efficiently.

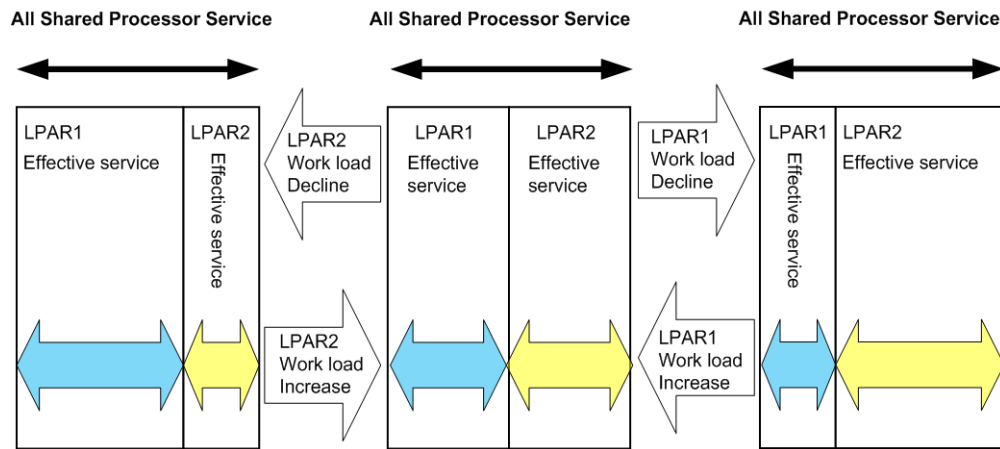


Figure 1-8 Idle Detection

Processor Capping

With the processor capping function on, the shared mode LPAR does not take on the unused (idle) capacity of other LPARs even if the LPAR requires more performance than its allocation rate (busy status). Therefore, the LPAR's processor-time never uses more processor-time the allocation rate, even if it is busy. However, because the LPAR manager allocation rate control allows a tolerance of 1% for each unit of processor-time, a shared mode LPAR is allocated a maximum processor-time that is 1% greater than the total service time of the physical processors assigned to it, and may exceed the allocation rate.

Note that the processor capping function does not affect the execution of the dedicated mode LPARs. Also processor capping has a meaning only to LPAR of shared mode. Processor capping does not have any meaning to LPAR of dedicated mode, and it cannot assign.

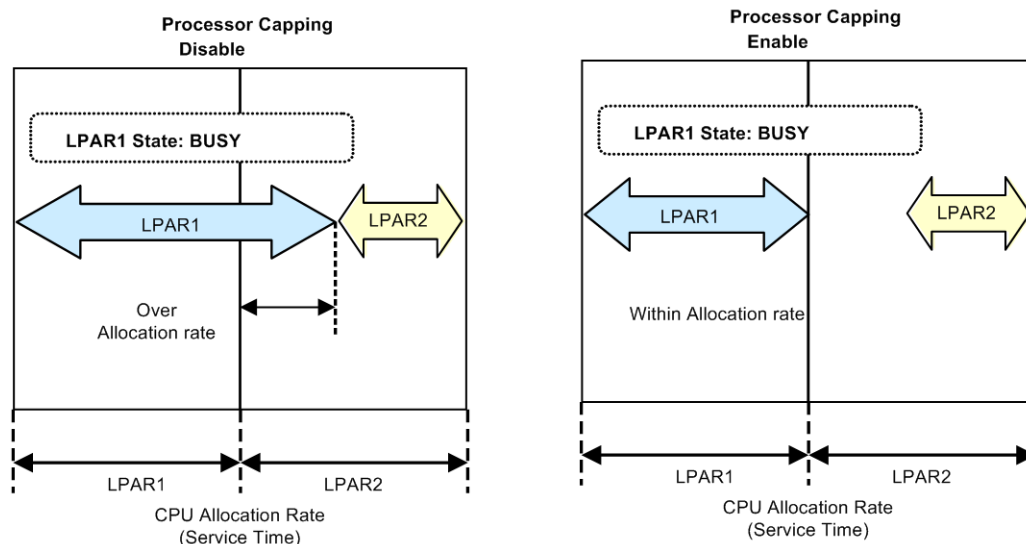


Figure 1-9 Processor Capping

Processor Group

You can restrict the use of physical processors for a group of LPARs by forming a group of physical processors with one processor at the least. Any number can be defined as a number of a physical processor group. A processor with no processor number defined belongs to the processor group "0". A processor group number can be specified by the core.

Overview

A function which defines a processor core as a group and restricts the range of a shared processor to being in a group. It is possible to restrict in a group with effect of load-fluctuating by above mentioned. It is possible to define group by every user section and charge to an allocated processor performance.

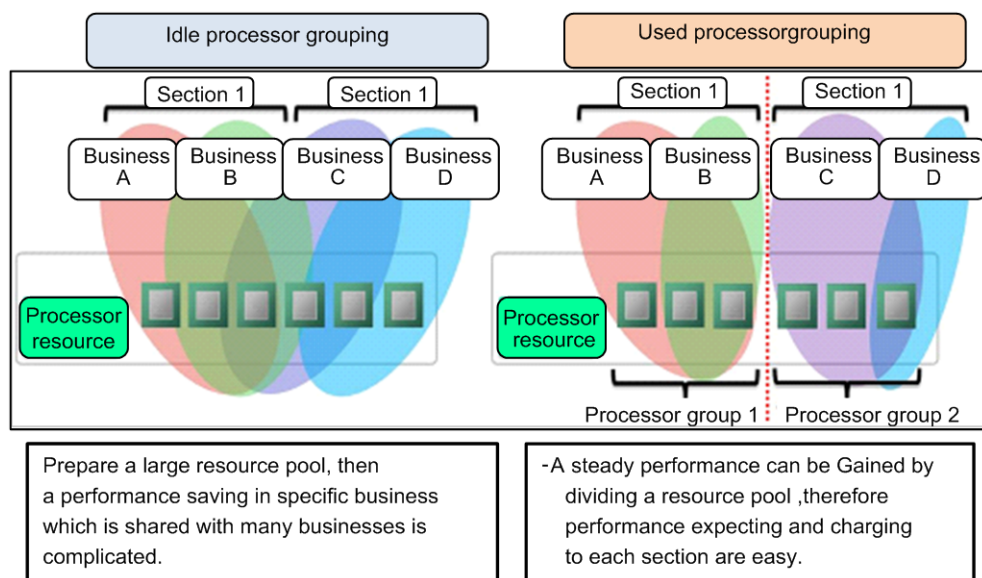


Figure 1-10 Assignment of Processor Group

Change Group Assignment of Processor

Performance of processor group can be changed by changing group assignment of processors. Definition of processor which changed group assignment can change from shared mode to dedicated mode. Changing group assignment of processor number 2 is shown below.

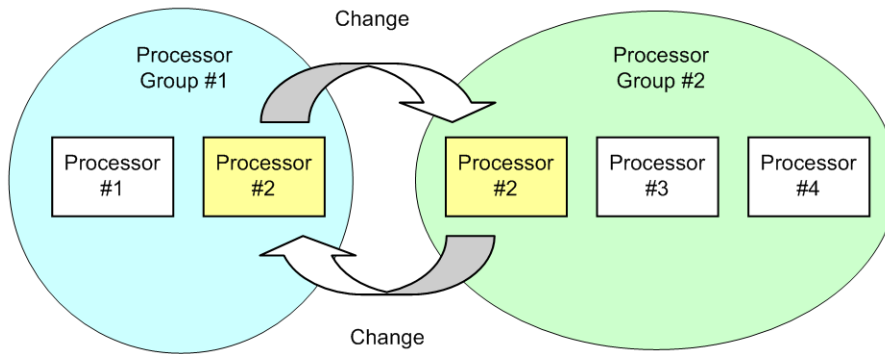


Figure 1-11 Change of Processor Group

Change Processor Group Assignment of LPAR

Assigned processor group can dynamically change to other group. All of assigned processors to the LPAR have to define to shared mode before changing the group.

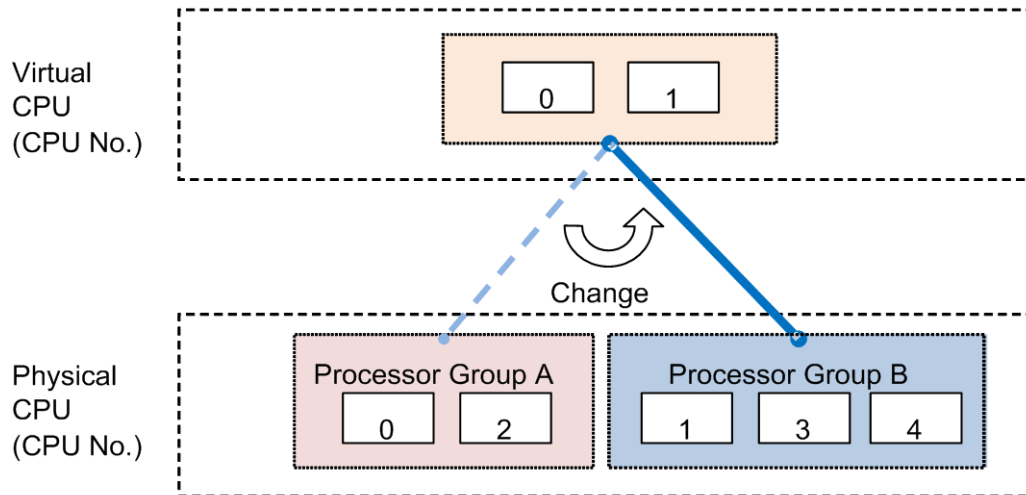


Figure 1-12 Change Assignment of Processor Group

Hyper Threading

Total performance of the LPAR manager increases up to 20% by enabling Hyper Threading definition.

The LPAR manager performance is affected by processor assignment.

Table 1-4 Processor Assignment Mode

Assignment Mode (Processor Number)		Description
LPAR1	LPAR2	
Dedicated (2)	Dedicated (4)	Performance of LPARs not interfere each other. Performance increases by assigning of even number processors.

Assignment Mode (Processor Number)		Description
LPAR1	LPAR2	
		Assign threads which are on the same core to the identical LPAR. (Don't assign the threads to the different cores) Proper assignment for Database servers / Application servers.
Dedicated (2)	Dedicated (3)	Processor number can be assigned more than physical number. Odd or even number processors can be assigned to the one LPAR. Proper assignment for File servers / Web servers
Dedicated (3)	Dedicated (3)	Not recommend (LPAR performance is affected from load of other LPARs)
Dedicated (3)	Dedicated (2)	Not recommend (LPAR performance is affected from load of other LPARs)
Dedicated (3)	Dedicated (3)	Not recommend (LPAR performance is affected from load of other LPARs)

Assigned even number processors to LPAR with Dedicated mode.

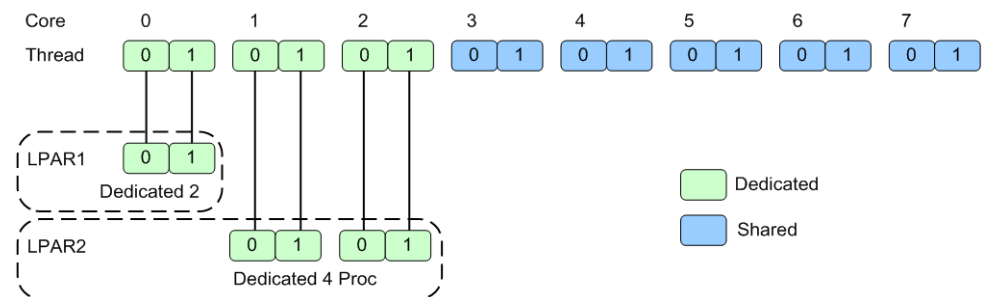


Figure 1-13 Processor Assignment Mode 1

Assigned processors to LPAR with Shared mode.

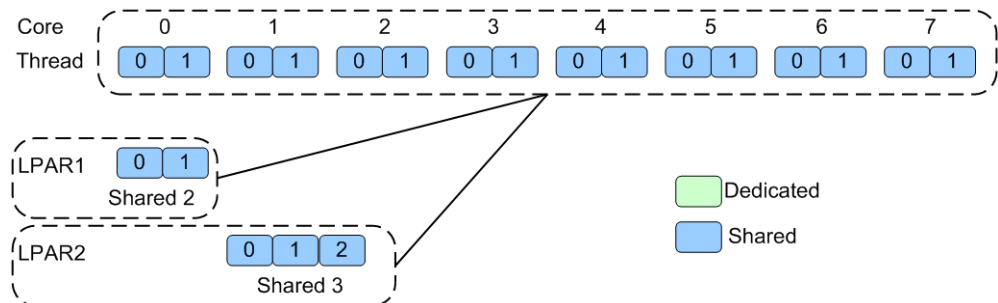


Figure 1-14 Processor Assignment Mode 2

Assigned odd number processors to LPAR with Dedicated mode.

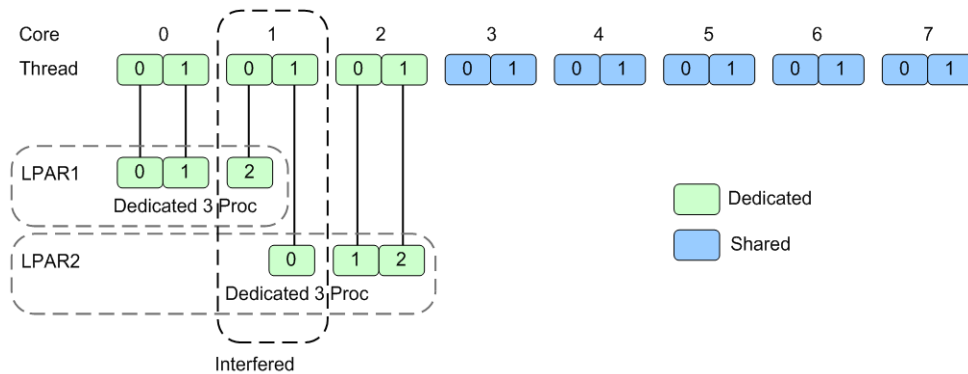


Figure 1-15 Processor Assignment Mode 3

Assigned odd number processors to LPAR with Dedicated / Shared mixing mode.

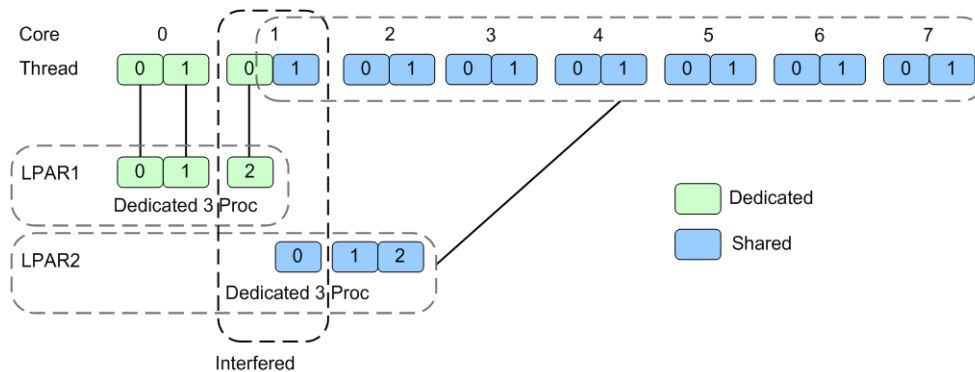


Figure 1-16 Processor Assignment Mode 4

Assigned odd number processors to LPAR with Shared / Dedicated mixing mode.

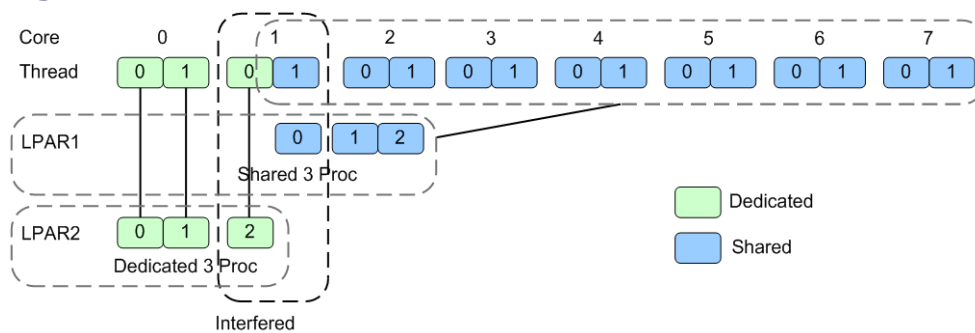


Figure 1-17 Processor Assignment Mode 5

PRTE

The PRTE function provides a timer that can be referred without intervention of the LPAR manager.

We recommend that you basically set the PRTE function to "No": a default value.

Enabling the PRTE function may bring performance improvement of programs that frequently retrieve time, in Windows.



Note:

- Enabling this function brings guest OS operation different from that with this function disabled. When you enable or disable the PRTE function, we recommend that you evaluate guest OS behavior in advance.
-

Restriction

The following shows restrictions for this function.

- Do not assign more than 64 of logical processors to an LPAR with its PRTE function enabled.
- Do not use the NIC teaming functionality an LPAR with its PRTE function enabled.

Supported OS

The following OSs support the PRTE function.

Make sure not to set the PRTE function to "Yes" for other OSs.

- Windows Server 2012
- Windows Server 2012 R2

Method of setting the PRTE function

You are able to change the setting of the PRTE function only for deactivated LPARs.

The method of setting the PRTE function is as follows.

1. Connect to the **LPAR manager** screen, and then display the **Logical Partition Configuration** screen.
2. Use the **F11** and **F12** keys to scroll the page to the left and right. Place the cursor on the **PRTE** column of the LPAR row, and then press **Enter**. The sub-screen is displayed.
3. Select **Yes**, and then press **Enter**.

Logical Partitioning of Memory

The memory size to be allocated to each LPAR can be specified for each LPAR (in multiples of 256 MB). Each guest OS has an exclusive use of the memory assigned to its LPAR. LPAR manager automatically determines which physical memory offset area(s) to allocate to an LPAR when the LPAR is activated.

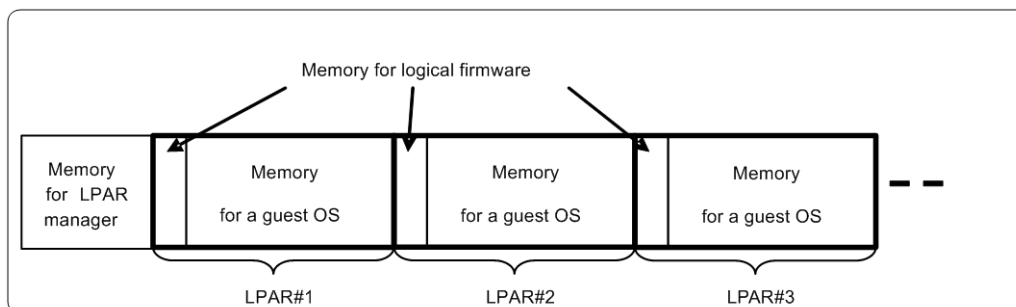


Figure 1-18 Memory Mapping of Logical Partitioning

- Memory for LPAR manager
The following table describes the physical memories that are used with LPAR manager.

Server blade type	Amount of memory necessary for operating LPAR manager
CB 520H A1/B1/B2	2048 MB
CB 520H B3	2560 MB
CB 520H B4	4096 MB (when MM Config Base is set to 2048 MB ¹)
	6144 MB (when MM Config Base is set to 3072 MB ¹)
CB 520A A1	2048 MB
CB 540A A1/B1	2048 MB
CB 520X B1/B2	3072 MB
CB 520X B3	6144 MB
Notes:	
1. For the value of MM Config Base, see Table 5-2 Server Blade and EFI settings on page 5-4	

- Memory for logical firmware
Logical firmware uses a part of memory space assigned to each LPAR. Memory that logical firmware uses, in general, can be estimated from the following calculation formulas:
 - [Less than 8 GB memory assigned to LPAR]
 - 0.6% of memory assigned to LPAR + number of logical processors x 2.25 MB + 65 MB
 - [8 GB or larger memory assigned to LPAR]
 - 0.25% of memory assigned to LPAR + number of logical processors x 2.25 MB + 80 MB
- Memory for a guest OS
Memory space available for a guest OS is calculated by subtracting the amount of memory the logical firmware uses from the amount assigned to the LPAR. This memory size is usually same as the available memory size for a guest OS (indicated memory size in a guest OS). However, all

allocated memory size may not be available depending on the specification and environment of guest OS.



Note:

- When the amount of memory for a guest OS is not enough against the amount applications use, memory swap may happen to cause performance degradation. When assigning an amount of memory, make sure to take the memory amount.

Guest NUMA

Overview

NUMA (Non-Uniform Memory Access) is an architecture where memory is shared in a multiprocessor computer system. To create an LPAR that meets all of the conditions listed below, we recommend that you use a NUMA configuration so you can easily improve memory access and memory bandwidth. The NUMA running on an LPAR is called a guest NUMA.

- You are creating an LPAR on a server blade in an SMP configuration.
- You are creating an LPAR with the processor scheduling mode set to dedicated mode.

LPAR manager supports the following two methods for configuring logical processors for the guest NUMA: physical processor binding (for 02-0X or later) and physical NUMA node binding (for 02-40 or later). Physical processor binding is the method for associating logical processors with physical processors. Physical NUMA node binding is the method for associating logical processors with physical NUMA nodes. The table below explains specific differences between these binding methods with regard to how to configure an LPAR.

Item	Physical processor binding	Physical NUMA node binding
How to set the number of logical processors	Sets the number of logical processors in the entire LPAR.	Sets the number of logical processors for each node
How to select a physical processor to be assigned to a logical processor	Before the LPAR is activated, the user specifies the number of the physical processor that the user will manually assign.	When the LPAR is activated, LPAR manager selects, in the ascending order of numbers, physical processors that exist in the automatically specified node and can be assigned.

Setting up a guest NUMA

The following describes how to set up a guest NUMA:

If the physical processor binding is used, follow the procedure below.

1. Configure the NUMA for the EFI.

Make sure that the NUMA setting for the EFI is enabled on the Web console.

For details, see the *Hitachi Compute Blade 500 Series Web Console User's Guide*.

2. Check the guest NUMA support of LPAR manager.
Make sure that the LPAR manager firmware version is 02-0X or later.
For details, see [Firmware Version Information on page 7-131](#).
3. Configure the guest NUMA for the LPAR.
Enable the guest NUMA setting of the LPAR.
For details, see [Logical Partition Configuration on page 7-9](#).
4. Specify the method for configuring logical processors for the guest NUMA.
For the LPAR manager firmware version 02-2x or earlier:
Can not changed configuring logical processors for the guest NUMA.
Always behavior physical processor binding.
For the LPAR manager firmware version 02-40 or later:
Specify physical processor binding as the method for configuring logical processors for the guest NUMA. Note that the default method is the physical processor binding if you change the guest NUMA setting from "disabled" to "enabled".
For details, see the *HVM Management Command (HvmSh) Operation Guide*.
5. Set the processor scheduling mode.
Set the processor scheduling mode to dedicated mode.
For details, see [Logical Partition Configuration on page 7-9](#).
6. Specify the number of logical processors.
Specify the number of logical processors in the entire LPAR. For details, see [Logical Partition Configuration on page 7-9](#).
If you want to assign processors from multiple nodes, you must ensure that each of the nodes will have the same number of processors assigned.
7. Assign a processor.
Specify the number of logical processors in the entire LPAR.
For details, see [Logical Processor Configuration on page 7-28](#).
For details about the node to which the physical processor belongs, see [Physical Processor Configuration on page 7-32](#).
8. Specify the memory.
Manually specify the memory on the node to which the physical processor belongs.
For details, see [Logical Partition Configuration on page 7-9](#).

If the physical NUMA node binding is used, follow the procedure below.

1. Configure the NUMA for the EFI.
Make sure that the NUMA setting for the EFI is enabled on the Web console.
For details, see the *Hitachi Compute Blade 500 Series Web Console User's Guide*.

2. Check the guest NUMA support of LPAR manager.
Make sure that the LPAR manager firmware version is 02-40 or later.
For details, see [Firmware Version Information on page 7-131](#).
3. Configure the guest NUMA for the LPAR.
Enable the guest NUMA setting of the LPAR.
For details, see [Logical Partition Configuration on page 7-9](#).
4. Specify the method for configuring logical processors for the guest NUMA.
Specify physical NUMA node binding as the method for configuring logical processors for the guest NUMA.
For details, see the *HVM Management Command (HvmSh) Operation Guide*.
5. Set the processor scheduling mode.
Set the processor scheduling mode to dedicated mode.
For details, see [Logical Partition Configuration on page 7-9](#).
6. Specify the number of processors.
Specify the number of logical processors for each node. For details, see the *HVM Management Command (HvmSh) Operation Guide*.
If you want to assign processors from multiple nodes, you must ensure that each of the nodes will have the same number of processors assigned.
7. Specify the memory.
Specify the memory for each node.
For details, see [Logical Partition Configuration on page 7-9](#).

Notes on the guest NUMA

Remember the following if you want to use the guest NUMA:

- If you change the MM Config Base setting for EFI, the memory size that can be allocated to each node changes. For this reason, activation of the LPAR for which a memory node is specified might fail due to insufficient memory on the target node. If you change the MM Config Base setting, you must review the memory node number and the memory size allocated to each LPAR. For details on how to review the memory node number and the memory size allocated to each LPAR, see [Logical Partition Configuration on page 7-9](#).
- If the guest NUMA is enabled in an LPAR, the default method for configuring logical processors for the guest NUMA is physical processor binding. This default method applies under the following circumstances:
 - A change is made to enable the guest NUMA, which has previously been disabled.
 - LPAR configuration information is inherited in which the guest NUMA is enabled. This LPAR configuration information was previously saved in LPAR manager when LPAR manager did not support the physical NUMA node binding.

L3 cache allocation functionality

Overview of the L3 cache allocation functionality

You can use the L3 cache allocation functionality to divide the L3 cache among multiple LPARs and allocate part of the divided cache to each LPAR. This functionality uses Cache Allocation Technology (CAT), which is provided as part of Intel Resource Director Technology (RDT).

If, for example, you operate an LPAR that requires response performance (web server) and an LPAR that puts a high load on the memory (database) at the same time, data of the LPAR (web server) might be forced out from the L3 cache, and degradation or variance in response performance might occur. You can prevent such degradation or variance in response performance by using the L3 cache allocation functionality to secure the L3 cache space required for the LPAR (web server).

By default, the entire L3 cache is allocated to each LPAR, but you can dynamically change the size of the L3 cache space that is allocated to each LPAR. Note, however, that you can change the L3 cache allocation only for LPARs to which processors have been allocated in dedicated mode.

You can allocate L3 cache space to LPARs by using the capacity bit mask (CBM) format (a mask value format). By using a CBM, you can specify not only the size of the L3 cache space to be allocated to LPARs, but also detailed settings such as the distance and overlapping of L3 cache allocation among LPARs. Each specified CBM value must be in the range of the implemented bit width of the CBM and must be a combination of consecutive ones (1). For example, if the implemented bit width of the CBM is 20, FFFFFh, 0FF00h, and 0003Ch are acceptable, but values such as 10001h, 00100h, and 0F0F0h are not acceptable. As shown below, there are three possible combinations of CBMs for multiple LPARs. In the following figure, the implemented bit width of CBMs is 8.

(1) Default bit mask

	M7	M6	M5	M4	M3	M2	M1	M0
LPAR1	A	A	A	A	A	A	A	A
LPAR2	A	A	A	A	A	A	A	A
LPAR3	A	A	A	A	A	A	A	A

(2) Duplicated bit mask

	M7	M6	M5	M4	M3	M2	M1	M0
LPAR1	A	A	A	A	A	A	A	A
LPAR2					A	A	A	A
LPAR3							A	A

(3) Isolated bit mask

	M7	M6	M5	M4	M3	M2	M1	M0
LPAR1	A	A	A					
LPAR2				A	A	A		
LPAR3							A	A

Figure 1-19 L3 cache allocation to LPAR

In the case indicated by (1), all three LPARs can access the entire L3 cache. In the case indicated by (2), the L3 cache space allocated to the LPAR of lower priority can be shared with the LPAR of higher priority. In the case indicated by (3), the cache can be divided among isolated LPARs.

To allocate L3 cache space to LPARs, use the HVM management command (HvmSh). You can also use the HVM management command (HvmSh) to display the CAT-related configuration information required to use the L3 cache allocation functionality, and the usage status of the L3 cache allocation functionality. For details, see the *HVM Management Command (HvmSh) Operation Guide*.

Enabling the L3 cache allocation functionality

To enable the L3 cache allocation functionality:

1. From the Web console, enable Performance tuning options.
For details, see [Performance tuning options on page 2-21](#).
2. Specify the L3 cache allocation settings by using the HVM management command (HvmSh), execute the `opr LparCatCbm` command.
For details, see the *HVM Management Command (HvmSh) Operation Guide*.

Logical Partitioning of PCI Devices

The method of logically dividing the physical processor is referred to as the scheduling mode. You can select dedicated mode or shared mode for the scheduling mode. Different features of each mode are shown in the table below.

Table 1-5 Assignment Mode of PCI Device

Scheduling Mode	Features	Recommended System
Dedicated Mode	A single PCI device is assigned to a single LPAR (guest OS). The guest OS uses the assigned PCI device exclusively, so that its I/O performance is stable. When 2 ports are implemented in a PCI device, each port cannot be assigned to a separate LPAR.	System required high processing performance System required critical time period and high processing in performance
Shared Mode	A single PCI device is assigned to multiple LPARs (guest OSs). Each guest OS can use the assigned PCI device at the same time without knowing that the PCI device is shared with other OSs. NIC performance of an LPAR is affected by I/O load of other LPARs.	System required cost efficiency and flexibility rather than high processing performance System required balanced processing between LPARs
Exclusive shared mode	A single PCI device is assigned to a single LPAR (guest OS). PCI device assignment can be changed without stopping operation of LPAR. A single LPAR can be used, multiple LPARs cannot be used at the same time.	USB/KVM, and remote console

Dedicated Mode

Example of Dedicated Mode is below.

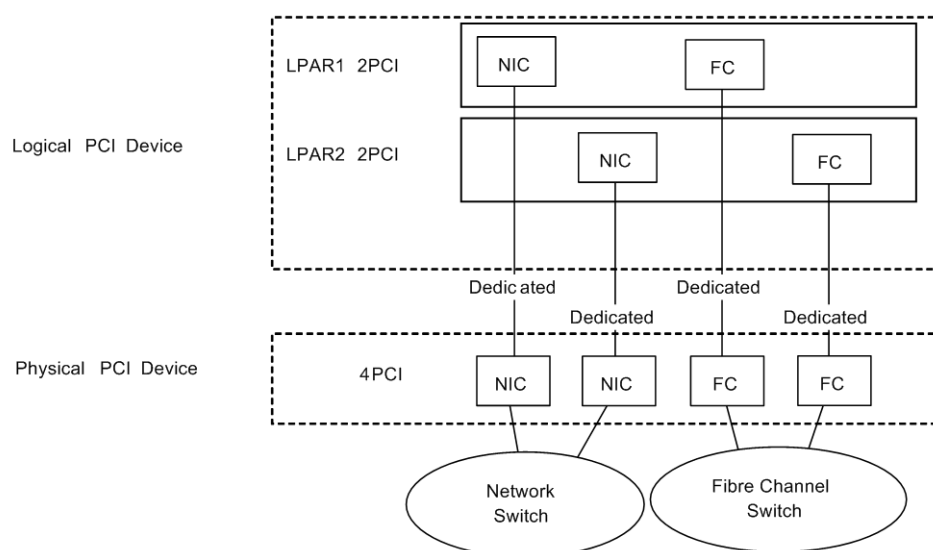


Figure 1-20 PCI Device Assignment of Dedicated Mode

Shared Mode

Example of Dedicated Mode is below.

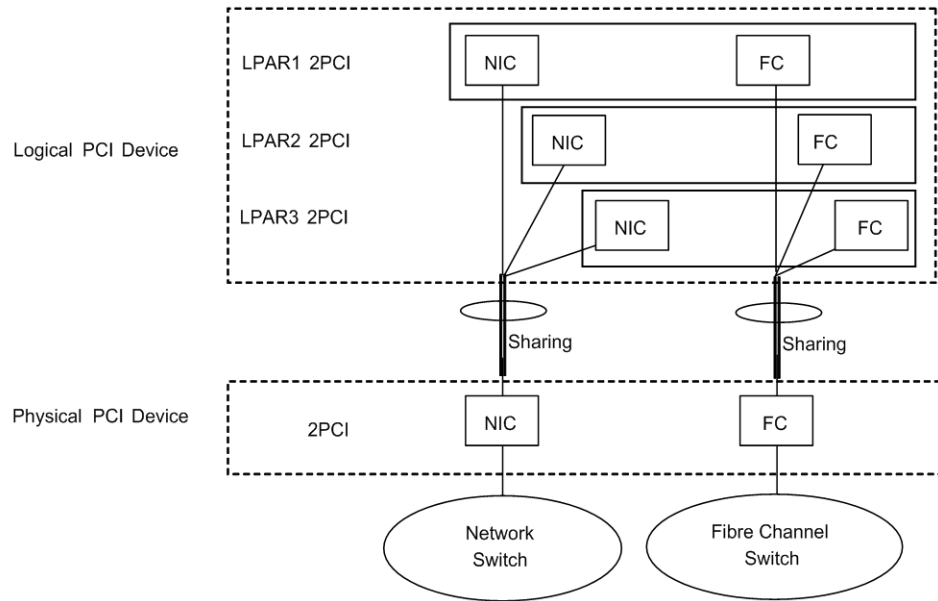


Figure 1-21 PCI Device Assignment of Shared Mode

Exclusively Shared Mode



Note:

- In CB 520X B1/B2/B3, a KVM device or a remote console are assigned to a LPAR by Exclusive Shared Mode, however, a USB device is assigned to a LPAR by Dedicated Mode.

Example of Exclusive Shared Mode is below.

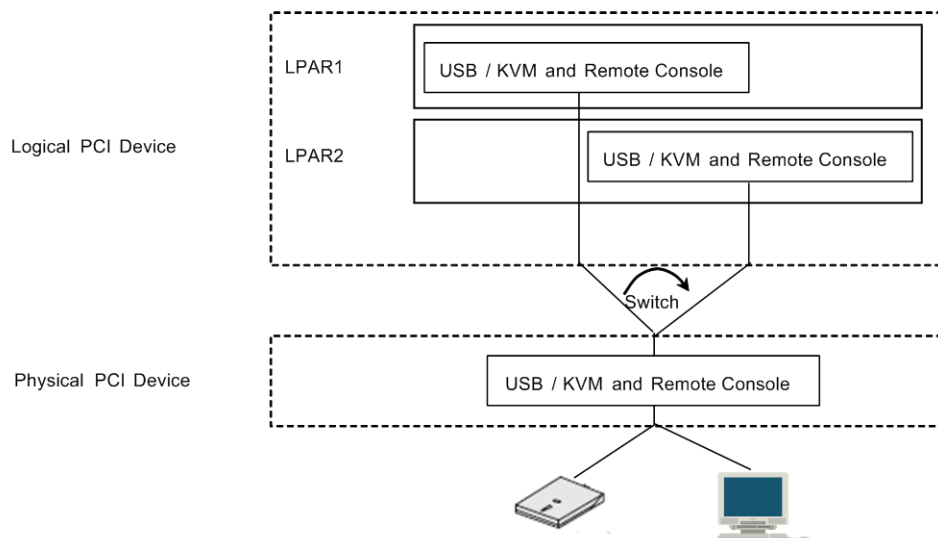


Figure 1-22 PCI Device Assignment in Exclusive Shared Mode

NIC (Network Interface Card)

LPAR manager supports the following four virtual NIC functions. A shared NIC, VF NIC, and virtual NIC are collectively called "Logical NIC".

Item	Description
Dedicated NIC	- Stable performance: not affected by other LPARs - High-speed data transmission
Shared NIC	- A physical NIC can be shared by multiple LPARs. - Performance depends on the number of LPARs and traffic volume. - Less restrictions on NIC functions than VF NIC.
VF NIC	- SR-IOV, a physical NIC function, is used. Supported physical NIC, server blade, and OS are limited. - High-speed data transmission equivalent to Dedicated NIC - Lighter load on physical processors than Shared and Virtual NIC - Transmission bandwidth can be limited by the 100 Mbps.
Virtual NIC	- Available only for inter-LPAR transmission - No physical NIC is required.

Dedicated NIC

LPAR manager supports assigning of Dedicated NIC. Shared NIC is useful for solving lack of hardware resources and increasing use efficiency of devices on the virtual environment.

Dedicated NIC brings high performance for communication without influences from other LPARs.

Shared NIC

Network segments for shared NICs can be assigned when the NIC scheduling mode is set to shared mode.

NIC assigned the network segments is called "Shared NIC".

Network segments can be set on Virtual NIC Assignment Screen.

The maximum number of physical LAN controllers which can be assigned to LPAR manager is 8 and the maximum number of physical ports which can be assigned to LPAR manager is 16.

The following tables show a combination of logical port numbers, a detection number of LAN controller and network segments for each hardware configuration as examples.

Network segment 1a and 1b below are set as management paths.

Table 1-6 Example for CB 520H A1/B1/B2 when Onboard LAN Card is installed (Emulex 10Gb 2ports)

Physical NIC	Physical Port No. ¹	Logical Port No. ²	Detection No. of LAN controller	Network segment
Onboard LAN (Emulex 10Gb 2ports)	0	0	1	1a
	1	1		1b
Notes:				
1. The physical port number which exists on the system.				
2. The logical port number which displays on the LPAR manager screen.				

Table 1-7 Example for CB 540A A1/B1 when Onboard LAN Card is installed (Emulex 10Gb 2ports)

Physical NIC	Physical Port No. ¹	Logical Port No. ²	Detection No. of LAN controller	Network segment
Onboard LAN1 (Emulex 10Gb 2ports)	0	0	1	1a
	1	1		1b
Onboard LAN2 (Emulex 10Gb 2ports)	0	0	2	2a
	1	1		2b
Notes:				
1. The physical port number which exists on the system.				
2. The logical port number which displays on the LPAR manager screen.				

Table 1-8 Example for CB 520H A1/B1/B2/B3/B4 when Onboard LAN Card is not installed (Emulex 10Gb 4ports)

Physical NIC	Physical Port No. ¹	Logical Port No. ²	Detection No. of LAN controller	Network segment
Mezzanine Card 1 (Emulex 10Gb 4ports)	0	0	1	1a
	1	1		1b
	2	2	2	2a
	3	3		2b
Notes:				
1. The physical port number which exists on the system.				
2. The logical port number which displays on the LPAR manager screen.				

Table 1-9 Example for CB 520A A1 when Onboard LAN Card is not installed (Emulex 10Gb 4ports)

Physical NIC	Physical Port No. ¹	Logical Port No. ²	Detection No. of LAN controller	Network segment
Mezzanine Card 1 (Emulex 10Gb 4ports)	0	2	2	2a
	1	3		2b
	2	0	1	1a
	3	1		1b
Notes:				
1. The physical port number which exists on the system.				
2. The logical port number which displays on the LPAR manager screen.				

Table 1-10 Example for CB 540A A1/B1, CB 520X B1/B2/B3 when Onboard LAN Card is not installed (Emulex 10Gb 4ports)

Physical NIC	Physical Port No. ¹	Logical Port No. ²	Detection No. of LAN controller	Network segment
Mezzanine Card 1 (Emulex 10Gb 4ports)	0	0	1	1a
	1	1		1b
	2	2	2	2a
	3	3		2b
Mezzanine Card 3 (Emulex 10Gb 4ports) ³	0	0	3	3a
	1	1		3b
	2	2	4	4a
	3	3		4b
Notes:				
1. The physical port number which exists on the system.				
2. The logical port number which displays on the LPAR manager screen.				
3. NIC cannot be installed on Mezzanine Card 3 for CB 520X B1.				

Table 1-11 Example for CB 520H A1/B1/B2/B3/B4 when Onboard LAN Card is not installed (Broadcom 1Gb 4ports)

Physical NIC	Physical Port No. ¹	Logical Port No. ²	Detection No. of LAN controller	Network segment
Mezzanine Card 1	0	0	1	1a
	1	1		1b

Physical NIC	Physical Port No. ¹	Logical Port No. ²	Detection No. of LAN controller	Network segment
(Broadcom 1Gb 4ports)	2	2		1c
	3	3		1d
Notes:				
1. The physical port number which exists on the system.				
2. The logical port number which displays on the LPAR manager screen.				

Table 1-12 Example for CB 520A A1 when Onboard LAN Card is not installed (Broadcom 1Gb 4ports)

Physical NIC	Physical Port No. ¹	Logical Port No. ²	Detection No. of LAN controller	Network segment
Mezzanine Card 1 (Broadcom 1Gb 4ports)	0	0	1	1a
	1	1		1b
	2	2		1c
	3	3		1d
Notes:				
1. The physical port number which exists on the system.				
2. The logical port number which displays on the LPAR manager screen.				

Table 1-13 Example for CB 540A A1/B1, CB 520X B1/B2/B3 when Onboard LAN Card is not installed (Broadcom 1Gb 4ports)

Physical NIC	Physical Port No. ¹	Logical Port No. ²	Detection No. of LAN controller	Network segment
Mezzanine Card 1 (Broadcom 1Gb 4ports)	0	0	1	1a
	1	1		1b
	2	2		1c
	3	3		1d
Mezzanine Card 3 (Broadcom 1Gb 4ports) ³	0	0	2	2a
	1	1		2b
	2	2		2c
	3	3		2d
Notes:				
1. The physical port number which exists on the system.				
2. The logical port number which displays on the LPAR manager screen.				

Physical NIC	Physical Port No. ¹	Logical Port No. ²	Detection No. of LAN controller	Network segment
3. NIC cannot be installed on Mezzanine Card 3 for CB 520X B1.				

Table 1-14 Example for CB 520H A1/B1/B2/B3/B4 when Onboard LAN Card is not installed (Broadcom 1Gb 8ports)

Physical NIC	Physical Port No. ¹	Logical Port No. ²	Detection No. of LAN controller	Network segment
Mezzanine Card 1 (Broadcom 1Gb 8ports)	0	0	1	1a
	1	1		1b
	2	2		1c
	3	3		1d
	4	4	2	2a
	5	5		2b
	6	6		2c
	7	7		2d
Notes:				
1. The physical port number which exists on the system.				
2. The logical port number which displays on the LPAR manager screen.				

Table 1-15 Example for CB 520A A1 when Onboard LAN Card is not installed (Broadcom 1Gb 8ports)

Physical NIC	Physical Port No. ¹	Logical Port No. ²	Detection No. of LAN controller	Network segment
Mezzanine Card 1 (Broadcom 1Gb 8ports)	0	0	1	1a
	1	1		1b
	2	2		1c
	3	3		1d
	4	4	2	2a
	5	5		2b
	6	6		2c
	7	7		2d
Notes:				
1. The physical port number which exists on the system.				
2. The logical port number which displays on the LPAR manager screen.				

Table 1-16 Example for CB 540A A1/B1, CB 520X B1/B2/B3 when Onboard LAN Card is not installed (Broadcom 1Gb 8ports)

Physical NIC	Physical Port No. ¹	Logical Port No. ²	Detection No. of LAN controller	Network segment
Mezzanine Card 1 (Broadcom 1Gb 8ports)	0	0	1	1a
	1	1		1b
	2	2		1c
	3	3		1d
	4	4	2	2a
	5	5		2b
	6	6		2c
	7	7		2d
Mezzanine Card 3 (Broadcom 1Gb 8ports) ³	0	0	3	3a
	1	1		3b
	2	2		3c
	3	3		3d
	4	4	4	4a
	5	5		4b
	6	6		4c
	7	7		4d
Notes:				
1. The physical port number which exists on the system.				
2. The logical port number which displays on the LPAR manager screen.				
3. NIC cannot be installed on Mezzanine Card 3 for CB 520X B1.				

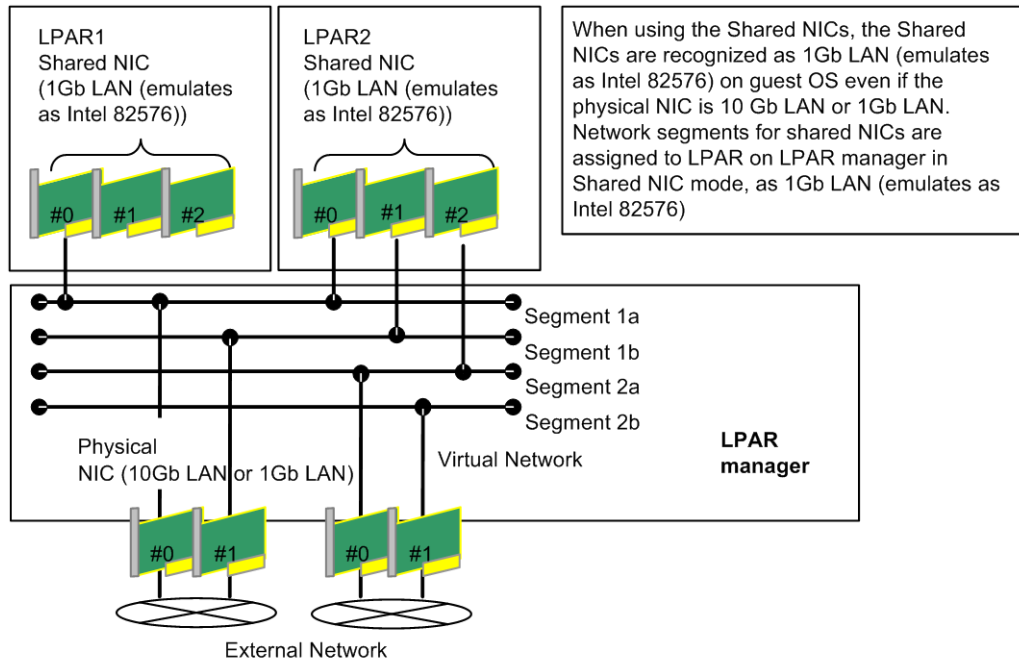


Figure 1-23 Definition of Network Segment ID on LPAR manager

In the figure above, an external network is used to establish communication between shared NIC #0 of LPAR1 set to segment 1a and shared NIC #1 of LPAR2 set to segment 1b or shared NIC #2 of LPAR2 set to segment 2a.



Note:

- Total throughput of shared NICs is 3 Gbps per LPAR manager.



Tip:

- For communication between shared NICs set to a same network segment, an external network is not used.
However, for communication between shared NICs to different network segments, an external network is used.

VF NIC

A network segment of VF NIC can be set when SR-IOV as a hardware function of physical NIC is available on LPAR manager, and NIC scheduling mode is shared mode.

NIC assigned the network segments is called "VF NIC".

VF NIC is set on the "Virtual NIC Assignment" screen.

For LPAR manager, up to 8 physical LAN controllers can be assigned and up to 16 physical ports can be assigned.

The following tables show a combination of logical port numbers, a detection number of LAN controller and network segments for each hardware configuration as examples.

Table 1-17 Example for CB 520H A1/B1/B2 when Onboard LAN Card is installed (Emulex 10Gb 2ports)

Physical NIC	Physical Port No. ¹	Logical Port No. ²	Detection No. of LAN controller	Network segment
Onboard LAN1 (Emulex 10Gb 2ports)	0	0	1	1av
	1	1		1bv
Notes:				
1. The physical port number which exists on the system.				
2. The logical port number which displays on the LPAR manager screen.				

Table 1-18 Example for CB 540A A1/B1 when Onboard LAN Card is installed (Emulex 10Gb 2ports)

Physical NIC	Physical Port No. ¹	Logical Port No. ²	Detection No. of LAN controller	Network segment
Onboard LAN1 (Emulex 10Gb 2ports)	0	0	1	1av
	1	1		1bv
Onboard LAN2 (Emulex 10Gb 2ports)	0	0	2	2av
	1	1		2bv
Notes:				
1. The physical port number which exists on the system.				
2. The logical port number which displays on the LPAR manager screen.				

Table 1-19 Example for CB 520H A1/B1/B2/B3/B4 when Onboard LAN Card is not installed (Emulex 10Gb 4ports)

Physical NIC	Physical Port No. ¹	Logical Port No. ²	Detection No. of LAN controller	Network segment
Mezzanine Card 1 (Emulex 10Gb 4ports)	0	0	1	1av
	1	1		1bv
	2	2	2	2av
	3	3		2bv
Notes:				
1. The physical port number which exists on the system.				
2. The logical port number which displays on the LPAR manager screen.				

Table 1-20 Example for CB 520A A1 when Onboard LAN Card is not installed (Emulex 10Gb 4ports)

Physical NIC	Physical Port No. ¹	Logical Port No. ²	Detection No. of LAN controller	Network segment
Mezzanine Card 1 (Emulex 10Gb 4ports)	0	2	2	2av
	1	3		2bv
	2	0	1	1av
	3	1		1bv
Notes:				
1. The physical port number which exists on the system.				
2. The logical port number which displays on the LPAR manager screen.				

Table 1-21 Example for CB 540A A1/B1, CB 520X B1/B2/B3 when Onboard LAN Card is not installed (Emulex 10Gb 4ports)

Physical NIC	Physical Port No. 1	Logical Port No. 2	Detection No. of LAN controller	Network segment
Mezzanine Card 1 (Emulex 10Gb 4ports)	0	0	1	1av
	1	1		1bv
	2	2	2	2av
	3	3		2bv
Mezzanine Card 3 (Emulex 10Gb 4ports) ³	0	0	3	3av
	1	1		3bv
	2	2	4	4av
	3	3		4bv
Notes:				
1. The physical port number which exists on the system.				
2. The logical port number which displays on the LPAR manager screen.				
3. NIC cannot be installed on Mezzanine Card 3 for CB 520X B1.				

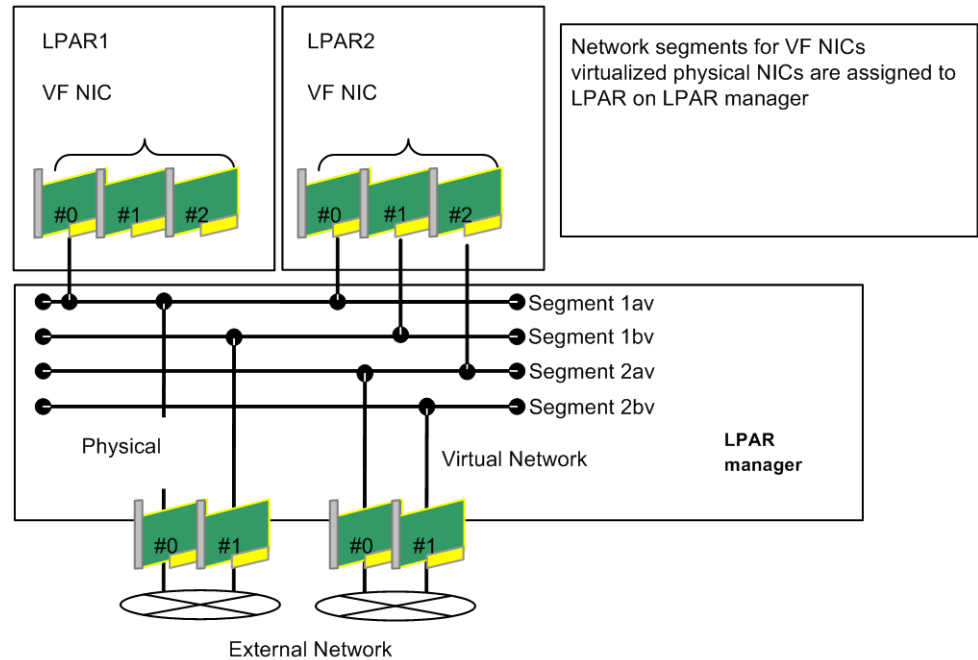


Figure 1-24 Definition of Network Segment ID on LPAR manager

Communications between NIC#0 on LPAR1 (assigned to segment 1av), NIC#1 on LPAR2 (assigned to segment 1bv) and NIC#2 on LPAR2 (assigned to segment 2av) have to go through external network.



Tip:

- Communication between VF NICs connected to the same network segment does not use an external network. In contrast, communication between VF NICs connected to different network segments takes place over an external network.

Virtual NIC

Up to 4 Network Segment for Virtual NIC can be defined on an LPAR manager. NIC assigned the network segments is called "Virtual NIC". Virtual NIC can communicate through no physical NIC network between LPARs.

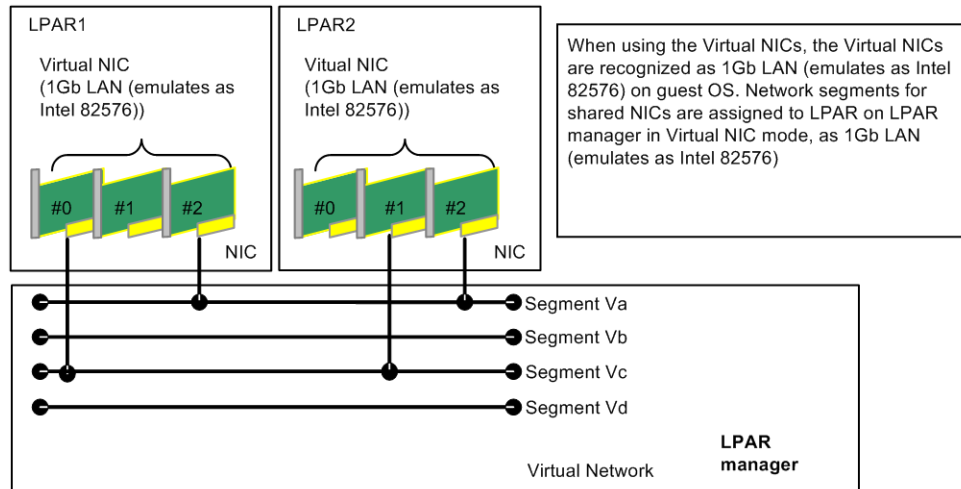


Figure 1-25 Assignment of Virtual NIC

Assignments of Virtual NIC to Network Segment are assigned on the Virtual NIC Assignment Screen. Usable Network Segment IDs are Va, Vb, Vc, Vd.

On the above chart, NIC #0 on LPAR1 (which is assigned to Segment Vc) can communicate to NIC #1 on LPAR2, but NIC #0 on LPAR1 cannot communicate to NIC #2 on LPAR2 (because their segments are different). Virtual NICs on the same Segment can communicate each other.



Note:

- Total throughput of virtual NICs is 3 Gbps per LPAR manager.



Tip:

- Each Virtual NIC on the same Network Segment can communicate each other.

However Virtual NICs on the different Network Segment cannot communicate each other.

Management Path

The network path configured for server operation is called "operation path". The network path configured for management and operation of server and LPAR manager is called "management path".

Before starting LPAR manager, you must configure a management path to be used for communication between LPAR manager and the management module. The scheduling mode must be set to shared mode for the NIC to be set for the management path.

Also, the IP address of the LPAR manager to be used for the management paths is called the LP IP address.

The dedicated NIC for the management path is not mounted in CB 500. Thus, NIC used for LPAR (guest OS) is used in the shared mode. (LPAR manager

automatically sets the NIC used for the management path in the shared mode. You cannot set the NIC in the dedicated mode.)

The LPAR manager firmware for which the version is earlier than 02-2X uses the port 0 and port 1 (which are 1a and 1b in the virtual network segment) of the Onboard NIC 1 (or the LAN Mezzanine card 1 if no Onboard NIC is installed) as the management path. You cannot specify a NIC to be used as the management path.

For an LPAR manager firmware version 02-2X or later, you can specify any two ports on the NICs installed on the server blades, as the management path. If you specify ports on different NICs as the management path, the management path communication can be maintained in case of a NIC failure.

If the state of the ports or network failure does not occur, either of the two ports become active state. The other port as the standby system. This port used to communication with the network when the port of active state has failed. Note that the primary management path does not become active instead of the secondary management path even if the primary management path recovers when the secondary management path works. A redundant configuration is maintained after recovery of the primary management path.

You can also specify only one port as the management path. In this case, the management path is non-redundant.

If you do not specify the management path, the port 0 and port 1 (which are 1a and 1b in the virtual network segment) of the Onboard NIC 1 (or the LAN Mezzanine card 1 if no Onboard NIC is installed) are used as the management path.



Tip:

- We strongly recommend that you explicitly specify a NIC to be used for management path communication.
If you do not explicitly specify a NIC to be used for management path communication, the scheduling mode of the NIC to be selected as a management path needs to be able to be set to the shared mode. If the NIC cannot be set to the shared mode, LPAR manager cannot start.
-

Specifying the management path

NICs specifiable for the management path

As the management path, you can specify ports on NICs installed on the following:

- Onboard
- LAN mezzanine card

you cannot specify a port on NICs that cannot be set in the shared mode as the management path.

Applicable blades

The function to specify NICs used as the management path is available by LPAR manager installed on the following server blades:

- CB 520H B3/B4
- CB 520X B1/B2/B3

Firmware combinations

To use this function, the firmware of the versions below should be used.

Table 1-22 Firmware combinations

Server blade	Server blade firmware	Management Module firmware	LPAR manager firmware
CB 520H B3	08-29 or later	A0245 or later	02-20 or later
CB 520H B4	10-03 or later	A0305 or later	02-50 or later
CB 520X B1	07-28 or later	A0245 or later	02-20 or later
CB 520X B2	09-17 or later	A0270 or later	02-27 or later
CB 520X B3	11-07 or later	A0320 or later	02-56 or later

Method of specification for the management path

You can specify ports to be used for the management path by the operation below. This setting should be done when the server blades are powered off.

Table 1-23 Web Console

Item	Operation
Management path setting	Resources tab > Modules > All Modules > Server Blades > Server Blades x > LPAR Manager tab > Edit > System Settings

The scheduling mode of the NIC that is used as the management path

The initial value of the scheduling mode of the NIC that is used as the management path is the shared mode; therefore, you can use the NIC as the management path without having to change the scheduling mode.

If you want to change the management path of the operating LPAR manager, before changing the management path, change the scheduling mode of the NIC you want to use as the new management path to the shared mode.

If a port you specified as the management path is on a NIC that is set in the dedicated mode, LPAR manager operates as follows:

- The scheduling mode of the specified NIC changes to the shared mode. As a result, if the number of controllers of the NICs in the shared mode

exceeds 8, or if the number of the ports exceeds 16, the scheduling mode of the NIC that has the largest PCI bus number among the existing shared-mode NICs changes to the dedicated mode (so that the number of controllers and the number of ports on the shared-mode NICs are within the upper limits).

- If the NIC for which the scheduling mode changed as above has been allocated to an existing LPAR, the NIC allocation to that LPAR is released.
- If these changes occur, one of the messages below is recorded in the LP system log messages. A log message is also recorded in the system event log (SEL) of the system unit, and an alert is sent to HCSM.

Table 1-24 LP system logs Screen Messages

Level	Message
Info	Configuration will not be saved during safe mode.
Info	LP changed Management Path.
Info	LP changed NIC to dedicated mode.
Warn	LP changed Management Path and LPAR configuration was changed.
Warn	LP changed NIC to dedicated mode and LPAR configuration was changed.

Table 1-25 HCSM Alert Messages

ID	Level	Message
0xFF40	Warning	The scheduling mode for a NIC assigned to an LPAR was changed.
0xFF41	error	An error event on a management NIC was detected.
0xFF42	Warning	A warning event on a management NIC was detected.
0xFF43	Information	LP started, with the specified ports set as the LP management NIC ports.
0xFF44	error	An error event occurred on the management NIC port.
0xFF45	Warning	A warning event occurred on the management NIC port.
0xFF46	Information	An event occurred on the management NIC port.

- If an LPAR for which the NIC allocation is released exists, the LPAR manager starts in the safe mode and the following operations are disabled.
 - Activating LPARs
 - Saving the configuration

If LPAR manager changes to the safe mode, confirm the ports specified as the management path and the configuration of the LPAR for which allocation is released, and modify the configuration if needed.

After confirming the LPAR configuration, release the safe mode and then, if needed, save the configuration. Alternatively, if the ports specified as the management path are incorrect, shut down LPAR manager and then specify the correct ports.

In this case, the "Auto Activate" setting of the LPAR is also suppressed. The LPAR for which "Auto Activate" is set is not automatically activated after the safe mode is released. Activate the LPAR manually, or restart LPAR manager and then execute the "Auto Activate" function.

Downgrading the firmware

To restore the version of LPAR manager, management module, and server blade firmware to a previous version, reset "Specify management NIC" of the management path setting to "Disable" in advance, and then connect the management path to 1a / 1b.

N+M cold standby

The versions of LPAR manager firmware, management module firmware, and the server blade firmware on the standby server blade must be equal to or later than those on the active server blade. If one or more firmware versions are earlier than those indicated in the "Firmware combinations" table, the standby server uses not the specified ports but the default ports (1a/1b) as the management path after failover, so LPAR manager fails to start or starts in an unexpected state.

For details on the firmware combinations, see [Firmware combinations on page 1-34](#).

Cloning

The cloning function of SC/BSM does not inherit the setting of ports used as the management path. At the cloning target, manually set the ports before booting LPAR manager.

The status of the management path

Displays the state of the management path. In addition, if a link-down or network failure occurs, an alert is sent to HCSM. The following lists each status:

Table 1-26 The status of the management path

Item	Description
Active	This indicates the path is in the active state, and is used for communication with the management module.
Standby	This indicates the path is in the standby state, and can be used for external communication.
Error	This indicates the path is in a network failure state.
Link down	This indicates the path is in a link-down state. The management path is in a blocked state.
Unknown	This indicates LPAR manager is unable to communicate externally.
-----	This indicates no port is specified for the path.

To update the management path status, perform a diagnosis of the management path.

You can display the management path status by the following operation:

Table 1-27 Web Console

Item	Operation
Displaying management path status	Resources tab > Modules > All Modules > Server Blades > Server Blades x > LPAR Manager tab

Table 1-28 LPAR manager screen

Item	Operation
Displaying management path status	System Service State > SVP Network Path State

Table 1-29 HVM management command (HvmSh)

Item	Command name
Displaying management path status	get ConfigAll > MANAGEMENT_PATH record in the indication result

Diagnosing the management path

LPAR manager diagnoses the path status of the standby system. To diagnose the communication state periodically, enable management path periodical diagnosis. You can display the current status by the following operations:

Table 1-30 Web Console

Item	Operation
Manual management path diagnosis	Resources tab > Modules > All Modules > Server Blades > Server Blades x > LPAR Manager tab > Edit LP options
Periodical management path diagnosis	Resources tab > Modules > All Modules > Server Blades > Server Blades x > LPAR Manager tab > Diagnose the management paths

Table 1-31 HVM management command (HvmSh)

Item	Command name
Manual management path diagnosis	get MgmtStandbyPortStatus
Periodical management path diagnosis	opr MgmtStandbyPortDiagnosis



Note: The following precautions are for the management path.

- Communication between management module and LPAR manager:

The management module communicate with the LPAR manager via network of outside the chassis. The LPAR manager uses the firmware and configuration information of the management module when activating the LPAR manager. Thus the communication path must be configured between the management module and the LPAR manager due to activating and operating LPAR manager.

- Do not perform or change the following items in a incommunicable state between a management module and LPAR manager.
 - Performing Force Recovery
 - Changing the scheduling mode of PCI device
 - Changing the VNIC System No
 - Changing the LP ID
 - Changing the language for alert messages
 - Changing the number of virtual console port
 - Setting the FC driver option by HvmSh

Because an LPAR manager fails in communication with a management module. LPAR manager Assist error occurs. Check out communication settings between management module - LPAR manager when such a state occurs.

You can check the situation that LPAR manager fails in communication with a management module by performing the following outputs.

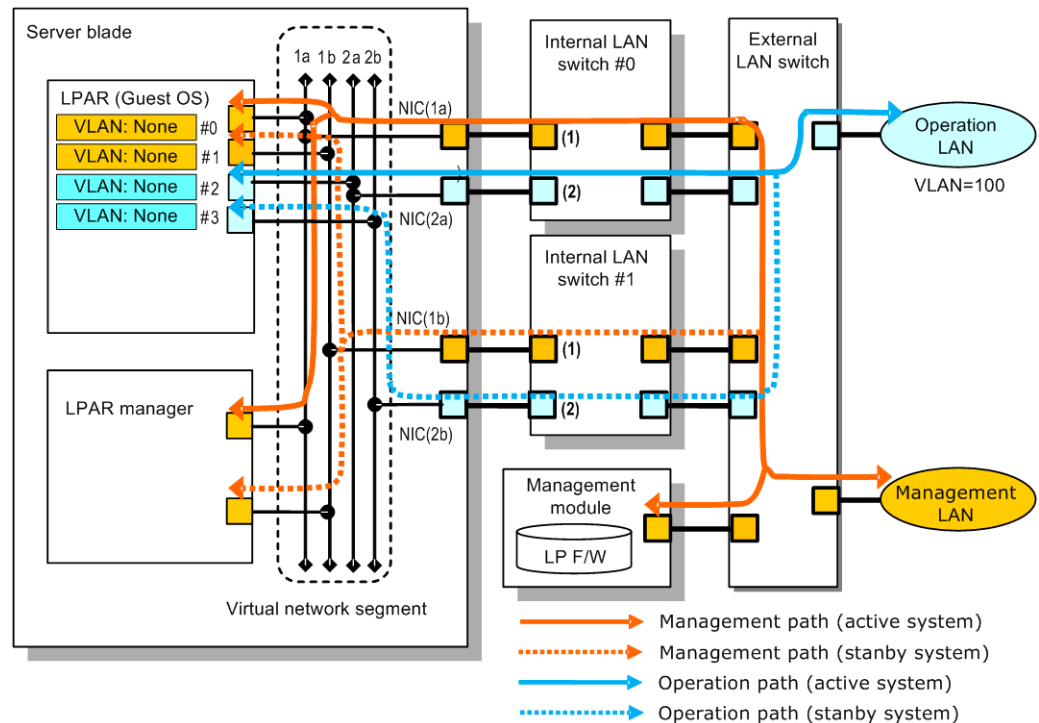
- LP System Log
Communication is disabled when "LP detected error of network communication for SVP access." is displayed. After that, communication is recovered when "LP detected recovery of network communication at SVP access." is displayed.
- System Event Log (SEL)
Communication is disabled when "Communication Failure between LP and Management module." is displayed. After that, communication is recovered when "Communication Recovery between LP and Management module." is displayed.
- System Service State screen
Communication is disabled when "SVP Network Path State" displays "Connect:Fail". Communication is enabled when it displays "Connect:Success".
Communication between the management module and LPAR manager is disabled when "State:Active" is not displays at "SVP Network Path State".
- Do not configure VLAN settings for the management path in the OS or LPAR manager.
When a VLAN is used for the management path, use the port base VLAN functionality of the internal LAN switch module or the native VLAN functionality.

- If the performance of the management path is reduced, check the processor usage for network communication in SYS2 of the LPAR Usage screen.

If the value of Dsp (ms) of SYS2 is 1800 ms or higher, the problem is most likely caused by the overloading of the shared NIC. To reduce the load, review the network configuration of the shared NIC or remove the cause of the heavy load on the shared NIC.

When using different NICs for the management LAN and the operation LAN

The example of configuration shows as follows.



- VLAN settings for the management path and operation path

Guest OS	LPAR manager	Internal LAN switch	
VLAN: None (management path)	Not configured	(1)	VLAN: None
VLAN: None (operation path)		(2)	Access port settings VLAN ID: 100

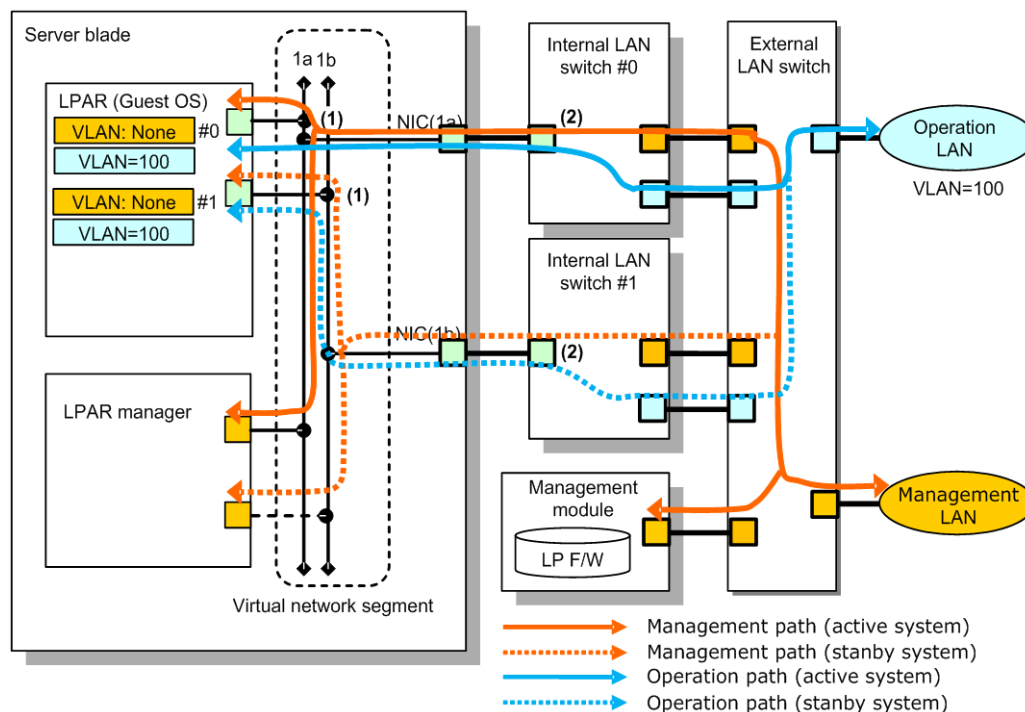


Note:

- Do not set the VLAN configuration on OS or LPAR manager for the management path.

When using the same NIC for the management LAN and the operation LAN

The examples of configuration show as follows.



- VLAN settings for the management path and operation path

Guest OS	LPAR manager	Internal LAN switch
VLAN: None (management path) VLAN ID: 100 (operation path)	(1) Tagged VLAN ID: 100	(2) Trunk port settings VLAN IDs: 1, 100 Native VLAN ID: 1 (default)



Note:

- Do not set the VLAN configuration on OS or LPAR manager for the management path.

SR-IOV

Overview

LPAR manager supports SR-IOV, which is hardware functionality of a physical NIC. You can use VF NICs by enabling SR-IOV and setting the NIC scheduling mode to shared mode. The features of SR-IOV are as follows:

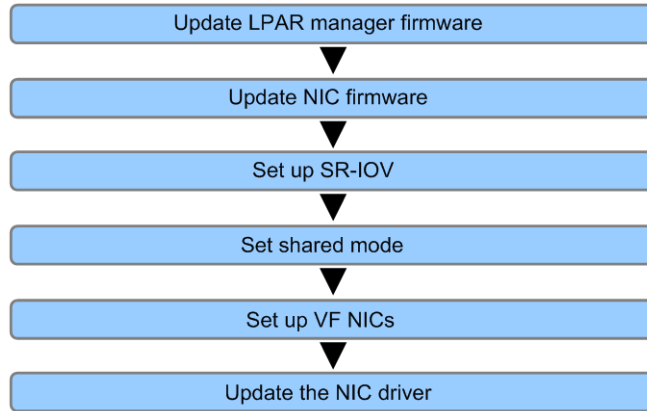
- Capable of transferring data at a high speed comparable to dedicated NICs
- The load on the physical processor is low compared to a shared or virtual NIC
- Transmission bandwidth limitations can be set in 100-Mpbs increments.

Supported specifications

For details about supported specifications, see [SR-IOV functions which LPAR manager supports on page A-17](#).

Using SR-IOV functions

The following procedure shows how to use SR-IOV functions.



Update LPAR manager firmware

If your LPAR manager firmware does not support SR-IOV, update it to one that supports SR-IOV. For details about updating LPAR manager firmware, see the *Hitachi Compute Blade 500 Series Management Module Setup Guide*.

Update NIC firmware

If your NIC firmware does not support SR-IOV, update it to one that supports SR-IOV. For details about updating NIC firmware, see the *Server Blade 10Gb CNA/LAN Product Firmware Update Guide*. Note that in LP mode you cannot update NIC firmware. Change to Basic mode before updating NIC firmware.

Set up SR-IOV

For details about setting up SR-IOV, see the *Hitachi Compute Blade Emulex Adapter User's Guide for Hardware*. Note that in LP mode you cannot set up SR-IOV. Change to Basic mode before setting up SR-IOV.

Set shared mode

On the PCI Device Assignment screen for LPAR manager, set the NIC scheduling mode to shared mode. For details, see [PCI Device Assignment on page 7-39](#).

Set up VF NICs

On the Virtual NIC (VNIC) Assignment screen for LPAR manager, set the following items. For details, see [Virtual NIC Assignment on page 7-44](#).

- VF NIC (such as 1av) assignment (required)
- VLAN setting (optional)
- Transmission bandwidth limitation setting (optional)

Update the NIC driver

If your NIC driver does not support SR-IOV, update it to one that supports SR-IOV. For details about updating the NIC driver, see the *Hitachi Compute Blade Emulex Adapter User's Guide for Driver*.

Notes

Note the following when using the SR-IOV functionality:

- In a Windows environment, you cannot use LPARs to which both a dedicated NIC and a VF-NIC are allocated.
- Note the following when configuring a teaming interface with VF NIC ports.
 - When you configure a teaming interface, you need to specify the MAC address originally set for one of the VF NIC ports to be set in the same team, for all of the VF NIC ports.
Also, when you remove a teaming interface, reset the original MAC address for each VF NIC port.
 - If HCSM detects duplication of a MAC address, HCSM does not allow you to migrate the LPARs on an LPAR manager.
 - HVM Navigator does not allow you to set a MAC address for multiple VF NIC ports.

For the method for configuring a teaming interface and that for removing a teaming interface, see the following.

Configuring a teaming interface

- a. Boot a guest OS to which VF NIC ports assigned, with the original MAC address set for each of the VF NIC ports to be set in a team.
Note that, when you remove a teaming interface, you need to reset the original MAC address for each of the VF NIC ports. We recommend that you take a note of the original MAC addresses.
- b. Confirm that each VF NIC port can communicate by issuing the `ping` command.
- c. Shut down the guest OS.
- d. Push **F6** on the **Virtual NIC Assignment** screen. Then, specify the MAC address originally set for one of the VF NIC ports, for all of the VF NIC ports.
For example, to configure a team with VNIC#0 and VNIC#1, specify the MAC address of VNIC#0 for VNIC#1.
- e. Boot the guest OS.
- f. Confirm that the same MAC address is set for all of the VF NIC ports to be set in a team.
For confirming a MAC address, select [Start]-[Control Panel]-[Network and Internet]-[Network and Sharing Center]-[Change adapter settings], and then double-click a network device. In the opened dialog, push [Details], and then see the value of "Physical Address".

- g. Configure a teaming interface with the VF NIC ports.
- h. Configure the driver option for the teaming interface, and then confirm operation of the teaming interface.

Removing a teaming interface.

- a. Remove a teaming interface on a guest OS.
 - b. Shut down the guest OS.
 - c. Push **F6** on the **Virtual NIC Assignment** screen. Then, reset the original MAC address for each of the VF NIC ports in the team.
 - d. Boot the guest OS.
- Notes on using Emulex adapters in a Linux environment
When VF NICs of Emulex Blade Engine 3 are assigned and RHEL7.1 or RHEL7.2 is booted as a guest OS, the following message might be output. However, operation of the guest OS is not affected.
be2net 0000:XX:XX.X: VF is not privileged to issue opcode 125-1
XX:XX.X : Bus:Dev.Func

FCoE

Overview

To perform an FCoE boot, which is hardware functionality of a physical NIC, enable FCoE.

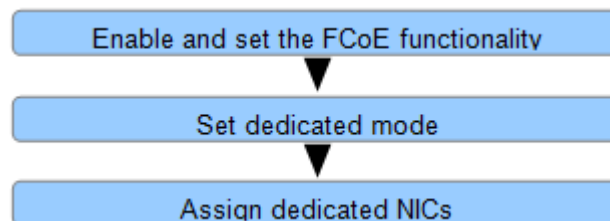
Supported specifications

The following is the supported specifications.

- The FCoE functionality is supported only by onboard LANs (Emulex XE104).
- If the FCoE functionality is enabled, the SR-IOV functionality is disabled on LPAR manager.

Using FCoE functions

The following procedure shows how to use FCoE functions.



Enable and set the FCoE functionality

Enable the FCoE functionality, and then specify the FCoE functionality settings. For details, see the *Hitachi Compute Blade Emulex Adapter User's Guide for Hardware*.

Set dedicated mode

Set the NIC scheduling mode to dedicated mode in the PCI Device Assignment screen of the LPAR manager screen. For details, see [PCI Device Assignment on page 7-39](#).

Assign dedicated NICs

Assign dedicated NICs to LPARs in the PCI Device Assignment screen of the LPAR manager screen. For details, see [PCI Device Assignment on page 7-39](#).

Port Multiple Assignment

Logical NIC supports the Port Multiple Assignment function. Port Multiple Assignment can be set on the Virtual NIC Assignment screen.

This function makes it possible to assign multiple ports of physical NIC the target LPAR.

The function is efficient especially when small number of NIC cards are installed, because the number of segments more than the number of physical NICs can be assigned.

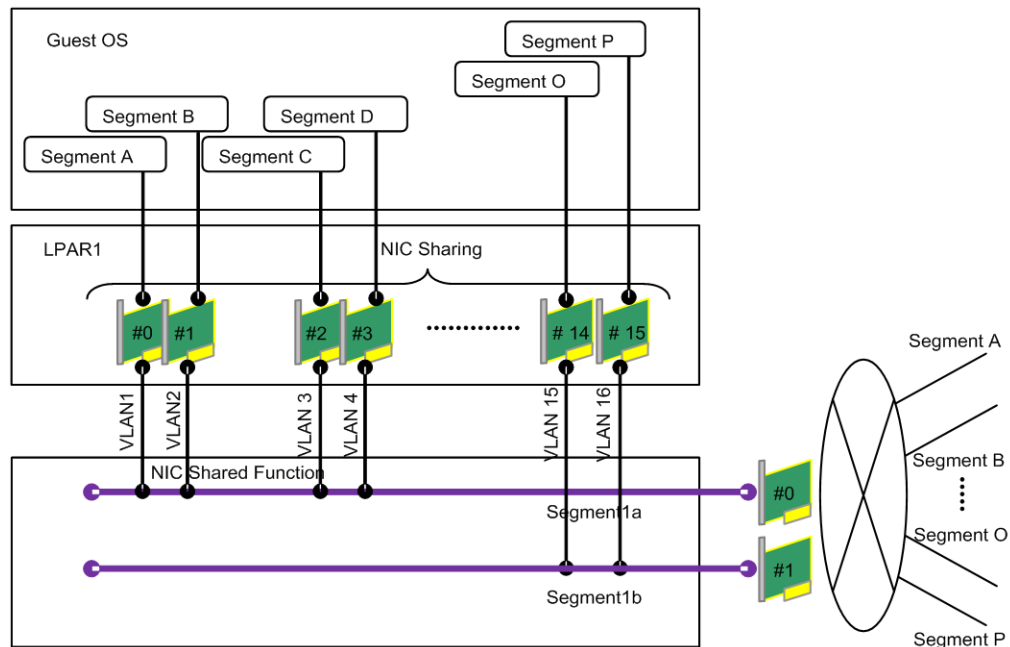


Figure 1-26 Port Multiple Assignment of Logical NIC

Port Separate Assignment

Logical NIC is also supporting the Port Separate Assignment function. Port Separate Assignment can be set on the Virtual NIC Assignment screen.

This function makes it possible to assign each port (for example; "1a" and "1b") on the physical NIC separately to the target LPARs. So, the availability

of Guest OS is expected to be improved by using two ports on the different controller rather than on the single controller, when assigning the two ports.

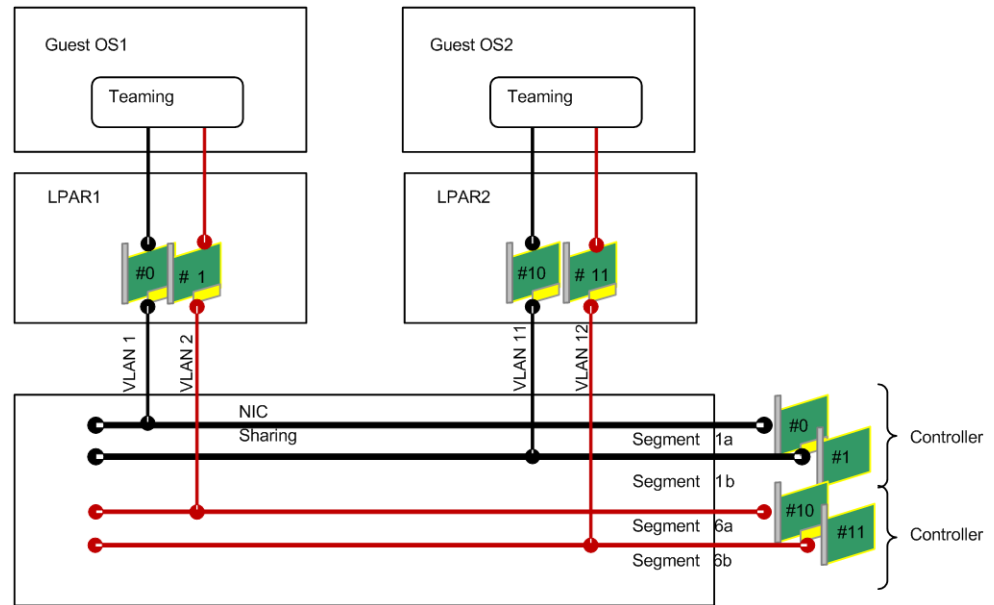


Figure 1-27 Port Separate Assignment of Logical NIC

TagVLAN

Summary

Logical NIC support the TagVLAN function which is based on the IEEE 802.1Q. Flexible network environment can be built by using the TagVLAN function.

- Multiple broadcast domain can be built by using only a physical NIC.
- Multiple VLAN ID can be assigned to Logical NIC.
- Network interface between physical NIC and network switch uses the tag whose form is the IEEE 802.1Q.

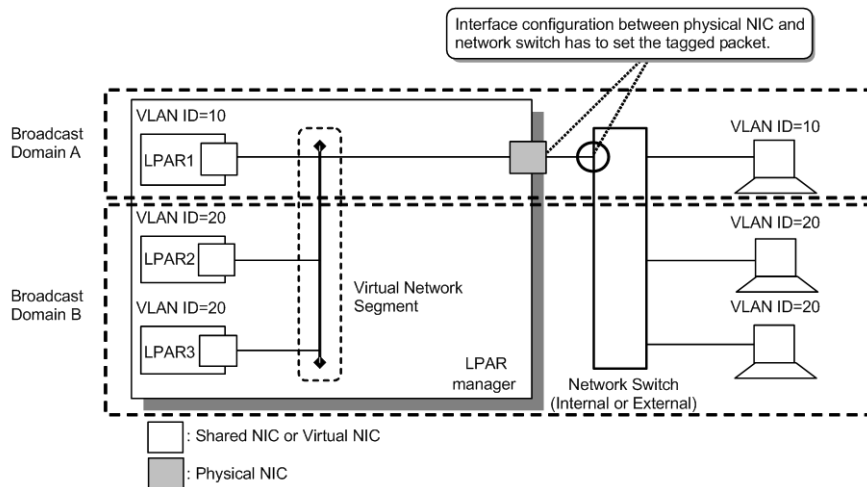


Figure 1-28 Outline of Tagged VLAN Function

TagVLAN Function

TagVLAN function has two modes. And the function is enabled by setting mode to either one. (This function can be set on the "Virtual NIC Assignment" screen)

- **Untagged Port**

This setting is for receiving untagged frames from one specified VLAN group.

A Logical NIC for which "untagged port" is specified receives only frames from the group with the same VLAN ID number, and these frames do not include tags. When transferring frames from a Logical NIC specified as an "untagged port" to an external switch or to a Logical NIC specified as a "tagged port" in the same VLAN group, the frames are tagged with the IEEE802.1Q format.

If "untagged" is specified, only one VLAN ID can be specified.

- **Tagged Port**

With this setting, a NIC receives frames containing IEEE 802.1Q-format tags and untagged frames that include any of the specified VLAN IDs.

A Logical NIC for which "tagged port" is specified can receive both tagged frames with the specified VLAN ID and untagged frames. Tagged frames sent from a Logical NIC with the "tagged port" specification are sent to the same group as the VLAN ID in the tag, and untagged frames are sent to groups for which no VLAN has been set.

When frames are transferred to external switches, they are transferred as they are, with or without tags. When specifying "tagged" for a Logical NIC, you can set up to 16 VLAN IDs for one Logical NIC. To use more than 17, set "ALL" to allow all VLAN IDs to be received.

Table 1-32 Tagged VLAN Mode

VLAN mode	Description	Configurable VLAN ID
Undef	VLAN is not used.	-
Tag	Judged that the Logical NIC is connected to the Tagged port. ¹	Up to decimal values from 1 to 4094 or all IDs are allowed.
Untagged	Judged that the Logical NIC is connected to the Untagged port. ²	One out of the range from 1 to 4094
Notes: 1. This port is a trunk port that can handle tagged packets and configure multiple VLAN IDs. 2. This port handles untagged packets and can configure one VLAN ID.		

TagVLAN Action

- Receiving Frames

When conditions for a received frame, VLAN mode configured to the port that receives frames and VLAN ID correspond with each other, the port receives the frame. Filtering the receiving frames is described in the table below.

Table 1-33 Tagged VLAN Mode for Receiving

VLAN mode of receiving ports	Receiving Frame		
	Untagged	Tagged (=VLAN ID)	Tagged (≠VLAN ID)
Undef	Accept	Reject	Reject
Tagged	Accept	Accept	Reject
Untagged	Accept (Adding Tags)	Reject	Reject

- Sending Frames

MAC address table selects ports for transfer among ports in which conditions for received frames, VLAN mode, and VLAN ID correspond with each other. Then frames will be transferred. Frames are sent from the port for transfer. Filtering the sending frames is described in the table below.

Table 1-34 Tagged VLAN Mode for Sending

VLAN mode of sending ports	Sending Frame		
	Untagged	Tagged (=VLAN ID) ¹	Tagged (≠VLAN ID) ¹
Undef	Sent	- ²	- ²

VLAN mode of sending ports	Sending Frame		
	Untagged	Tagged (=VLAN ID) ¹	Tagged (≠VLAN ID) ¹
Tagged	Sent	Sent	- 2
Untagged	- 2	Sent (Deleting Tags)	- 2
Notes: 1. Untagged frames are received at the untagged ports. Frames that have got tagged are included. 2. Not selected as the addressed port for frames.			

By combining the above Logical NIC settings and guest OS VLAN settings, you can divide broadcast domains as follows.

- Divide a virtual network into multiple broadcast domains for each Logical NIC

On the Virtual NIC (VNIC) Assignment screen, specify "untagged port" for the Logical NIC and the VLAN ID to which it belongs. There is no need to make VLAN settings in the guest OS because there will be no tags on the packets received by the Logical NIC. This means that the guest OS will not be aware of the VLAN, so you can divide the broadcast domain for each Logical NIC.

- Assign one Logical NIC to multiple broadcast domains within the same virtual network

By making VLAN settings for the Logical NIC from the guest OS, you can use the functions equivalent to the physical NIC to operate tags and perform frame filtering. In addition, on the Virtual NIC (VNIC) Assignment screen, specify "tagged port" for the Logical NIC and specify all the VLAN IDs specified for the Logical NIC in the guest OS.

This will make it possible to handle more than one VLAN ID per Logical NIC and assign the Logical NIC to more than one broadcast domain.

Example of TagVLAN Function

The following is an example of using VLAN functions.

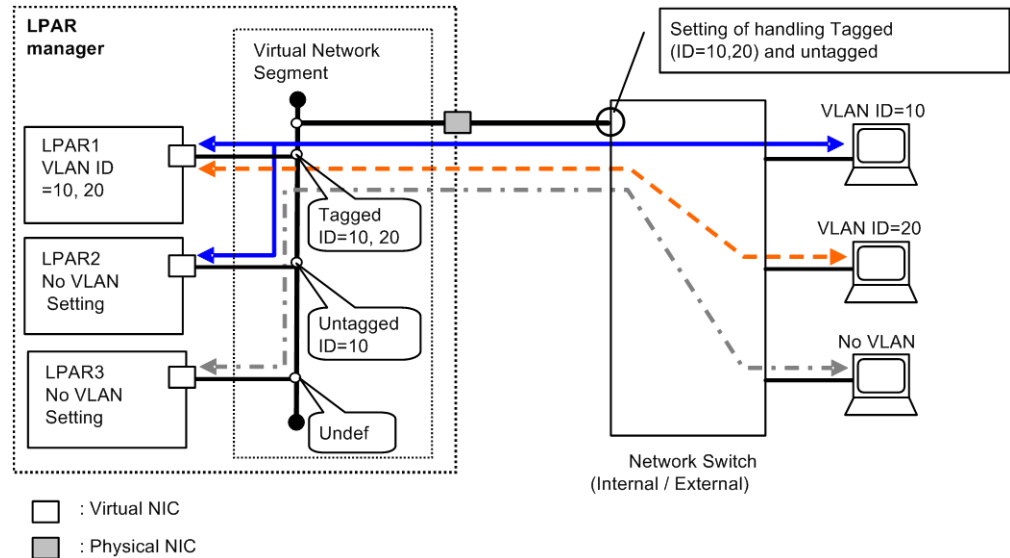


Figure 1-29 Example of Tagged VLAN Function

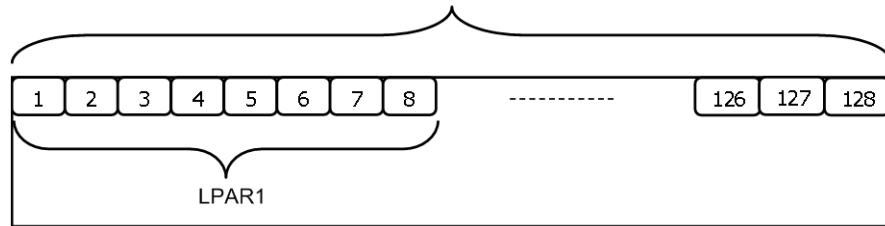
<<Setting Example>>

- When setting TagVLAN on OS:
Set the Tagged mode and VLAN ID to the corresponding port on the Virtual NIC (VNIC) Assignment screen of LPAR manager.
- When sending/receiving Tagged packets to/from the external switch without setting TagVLAN on OS:
Set the Untagged mode and VLAN ID to the corresponding port on the Virtual NIC (VNIC) Assignment screen of LPAR manager.
- When sending/receiving Untagged packets to/from the external switch without setting TagVLAN on OS:
Set the Undef mode to the corresponding port on the Virtual NIC (VNIC) Assignment screen of LPAR manager.

Virtual Switch Image

The following describes the image of Virtual Switch.

- Image of Virtual NIC switch
The following example is for 128-ports (8 ports/LPAR) layer 2-switch when the number of LPARs is 16 and 8 Virtual NICs per LPAR.
 - Four switches are installed to Va to Vd.
 - All ports are configured with Virtual NIC ports.

**Figure 1-30 Image of VLAN Switch****Table 1-35 List of switch functions of virtual NIC**

Switch function	Target Port	Settings
Port Connection	Port1 - Port128	Assign to LPAR on the Virtual NIC (VNIC) assignment screen.
Port Speed	Port1 - Port128	Auto Negotiation (This setting cannot be changed) - Supports 1000BASE-TX
VLAN	Port1 - Port128	[VLAN mode] - Undef (default) - Tagged - Untagged Only one (1) VLAN mode per port can be set [VLAN ID] - Tagged: Up to 16 VLAN IDs out of the range from 1 to 4094, or assign all (ID). - Untagged: Only one (1) VLAN ID out of the range from 1 to 4094
Port mirroring	Port1 - Port128	- If promiscuous mode is "Restricted": Receives only the packets to the target LPARs (MAC addresses). - If promiscuous mode is "Through" (default): Receives all the packets in the same network segment.
Jumbo frame function	Port1 - Port128	Always enabled.
Uplink failover	Port1 - Port128	Always disabled. The ports are always linked up.
Flow control	Port1 - Port128	Always disabled.
IGMP Snooping	Port1 - Port128	Always disabled.
Spanning tree	Port1 - Port128	Always disabled.

- Image of Shared NIC switch

The following example is for 17-ports (1 port/LPAR) layer 2-switch when the number of LPARs is 16 and 1 shared NIC per LPAR.

- Up to 16 pieces of this switch can be mounted depending on the number of physical NICs with shared setting.
- Ports 1 – 16 are configured by the shared NICs and Port17 by the physical NIC port.

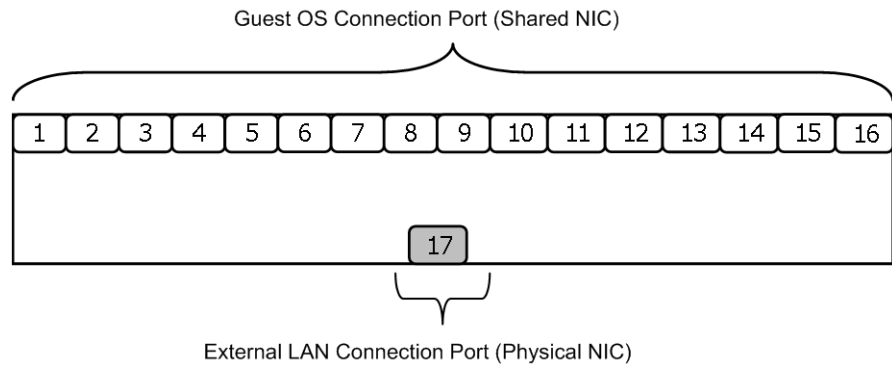


Figure 1-31 Image of VLAN Switch

Table 1-36 List of switch functions of shared NIC

Switch function	Target Port	Settings
Port Connection	Port1 - Port16	Assign to LPAR on the Virtual NIC (VNIC) Assignment screen.
	Port17	Connect to physical cables. With the Onboard NIC, no cable is required.
Port Speed	Port1 - Port16	Auto Negotiation (This setting cannot be changed.) - Supports 1000BASE-TX.
	Port17	Auto Negotiation (This setting cannot be changed.) - Supports 10/100/1000/10000BASE-TX
VLAN	Port1 - Port16	[VLAN mode] - Undef (Default) - Tagged - Untagged Only 1 VLAN mode can be set per LPAR. [VLAN ID] - Tagged: Up to 16 VLAN IDs out of the range from 1 to 4094, or Assign all (ID). - Untagged: Only one (1) VLAN ID out of the range from 1 to 4094
	Port17	Tagged All (This setting cannot be changed). Configured to transmit all packets.

Switch function	Target Port	Settings
Port mirroring	Port1 - Port17	- If promiscuous mode is "Restricted": Receives only the packets to the target LPARs (MAC addresses). - If promiscuous mode is "Through" (default): Receives all the packets in the same network segment.
Jumbo frame function	Port1 - Port17	Always enabled. Maximum value: 9000 bytes
Uplink failover	Port1 - Port17	Always enabled. If Port 17 is linked down, all the other ports from Port 1 to Port 16 are also linked down.
Flow control	Port1 - Port16	Always disabled.
	Port17	Always enabled.
IGMP Snooping	Port1 - Port17	Always disabled.
Spanning tree	Port1 - Port17	Always disabled.

- Image of VF NIC switch
 The following example is for 17-ports (1 port/LPAR) layer 2-switch when the number of LPARs is 16 and 1 VF NIC per LPAR.
 - Up to 16 pieces of this switch can be mounted depending on the number of physical NICs with shared setting.
 - Ports 1 – 16 are configured by the VF NICs and Port17 by the physical NIC port.

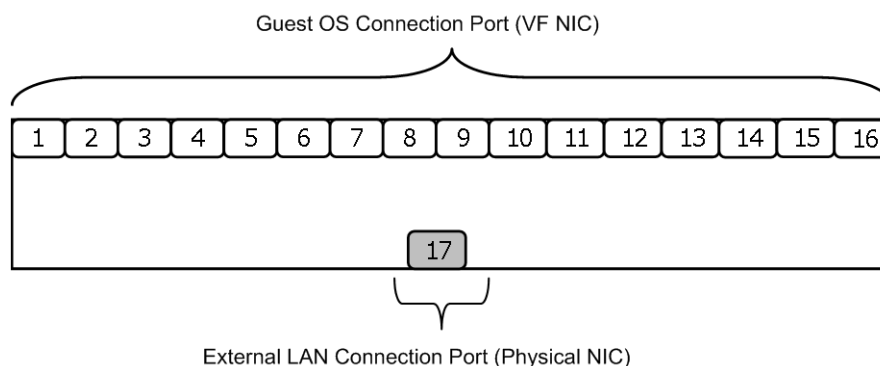


Figure 1-32 Image of VLAN Switch

Table 1-37 List of switch functions of VF NIC

Switch function	Target Port	Settings
Port Connection	Port1 - Port16	Assign to LPAR on the Virtual NIC (VNIC) Assignment screen.

Switch function	Target Port	Settings
	Port17	Connect to physical cables. With the Onboard NIC, no cable is required.
Port Speed	Port1 - Port16	Auto Negotiation (This setting cannot be changed.) - 10GBASE-KR - 1000BASE-KX
	Port17	Auto Negotiation (This setting cannot be changed.) - 10GBASE-KR - 1000BASE-KX
VLAN	Port1 - Port16	[VLAN mode] - Undef (not supported) - Tagged (default) - Untagged ¹ Only 1 VLAN mode can be set per LPAR. [VLAN ID] - Tagged: Assign all (ID). - Untagged: Only one (1) VLAN ID out of the range from 1 to 4094
	Port17	Tagged All (This setting cannot be changed). Configured to transmit all packets.
Port mirroring	Port1 - Port17	- If promiscuous mode is "Restricted" (default): Receives only the packets to the target LPARs (MAC addresses). - Through Not supported
Jumbo frame function	Port1 - Port17	Always enabled. Maximum value: 9000 bytes
Uplink failover	Port1 - Port17	Always enabled. If Port 17 is linked down, all the other ports from Port 1 to Port 16 are also linked down.
Flow control	Port1 - Port16	Always disabled.
	Port17	Always enabled.
IGMP Snooping	Port1 - Port17	Always disabled.
Spanning tree	Port1 - Port17	Always disabled.
Notes:		

Switch function	Target Port	Settings
1. Untagged cannot be used in a VF NIC configuration where guest OSs are Red Hat Enterprise Linux 6.7/7.1/7.2.		

Attention

- Logical NICs do not support advanced communication control functions (for example, IGMP snooping, access lists, and QoS). Use communication control functions of external switch modules. To control communications between LPARs on the same LPAR manager, use the VLAN function of a logical NIC or the Inter-LPAR communication packet filtering.
- Communication with external networks using VLANs Because IEEE802.1Q tagged packets pass through the external physical switches, it is necessary to set the VLAN ID used by the virtual network corresponding to the shared physical NIC to physical switch port at the tagged port.
- Priority control in the IEEE802.1P format Priority control in the IEEE802.1P format is not supported.
- When using VLAN functions and N+M cold standby at the same time, attentions are as follows.

Table 1-38 The attentions when using VLAN functions and N+M cold standby at the same time

Switch	Description
LAN Switch	Cooperation with "Cm2/Network Element Configuration" is required.
DCB Switch	Uses the AMPP function in DCB Switch.

Teaming

Teaming functions which are supported by the Logical NIC is below.

Table 1-39 OS Supported Teaming Functions

Item	Mode	Shared NIC / Virtual NIC	VF NIC
Windows Server 2008 Windows Server 2008 R2	AFT	Y	--
	SFT	Y	--
	ALB	Y	--
	RLB	Y	--
	LA/EC/3ad/Static	N	--
	Dyn3ad	N	--
Windows Server 2012	Not depend on the switch	Y	Y

Item	Mode	Shared NIC / Virtual NIC	VF NIC
Windows Server 2012 R2 Windows Server 2016	Static teaming	Y	Y
	LACP	N	N
Linux	balance-rr	N	N
	active-backup	Y	Y
	balance-xor	N	N
	broadcast	N	N
	802.3ad	N	N
	balance-tlb	Y	N
	balance-alb	Y	N
Legend: Y: Can be used N: Cannot be used --: Not supported			

Teaming image by using Logical NIC is below.

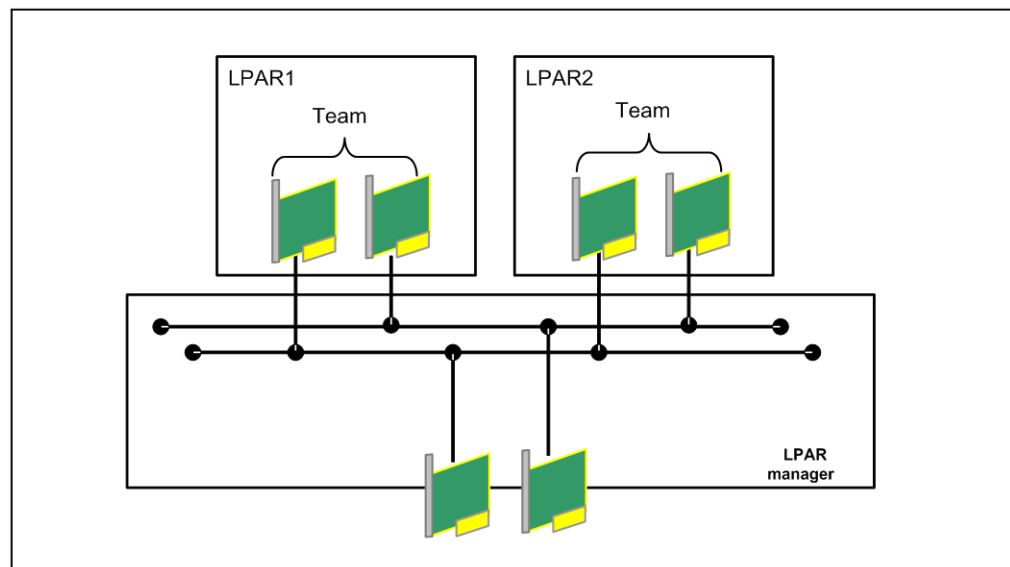


Figure 1-33 Teaming Function on the LPAR manager

Promiscuous Mode

Shared NIC and virtual NIC support Promiscuous mode.

That mode can be configured with Virtual NIC Assignment screen.

Table 1-40 Configuration of Promiscuous Mode

Configuration		Packet Receiving
Guest OS	LPAR manager Screen	
Disable	Restricted/Through	Receives only the packets to the target LPARs (MAC addresses).
Enable	Restricted	Receives only the packets to the target LPARs (MAC addresses).
	Through	Receives all the packets in the same network segment.

The following is an example of using Promiscuous mode.

Promiscuous mode has to set to "Through" for using on the following environment.

Table 1-41 Environment for Promiscuous Mode

Environment	When Promiscuous mode is "Restricted"
Case1: Bridge function has been installed to the guest OS.	LPAR cannot transfer any packet.
Case2: NLB of Windows is used.	NLB does not operate normally.
Case3: ALB of Windows Server 2008 or Windows Server 2008 R2 Intel(R) PROSet is used.	ALB does not operate normally.
Case4: NIC teaming of Windows Server 2012 or later is used.	Communication becomes impossible after a failover occurs.

- When the bridge function has been installed to the guest OS. Promiscuous mode has to set to "Through" against the internal virtual network switch. Packet transferring at this case is below.

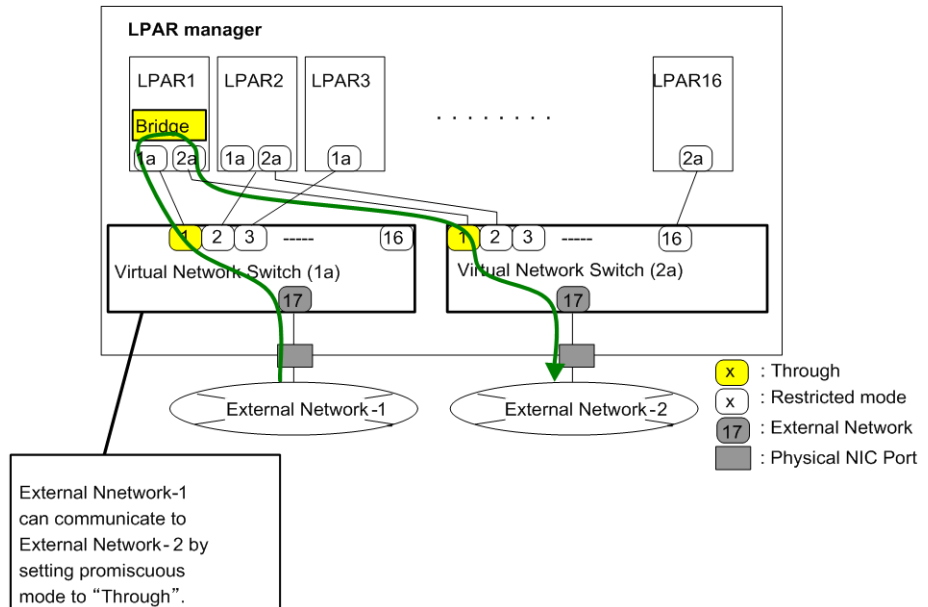


Figure 1-34 Promiscuous Mode with Bridge Function of OS

Port 1 of both Virtual Network Switch forwards all packets by setting promiscuous mode to "Through". Therefore External Network-1 and External Network-2 can communicate each other.

Packet Capturing

- Packet capture on the same network segment
When the promiscuous mode is Restricted, a unicast packet between LPARy and the external PC-1 cannot be captured. When the promiscuous mode is Through, a unicast packet between LPARy and the external PC-1 can be captured.

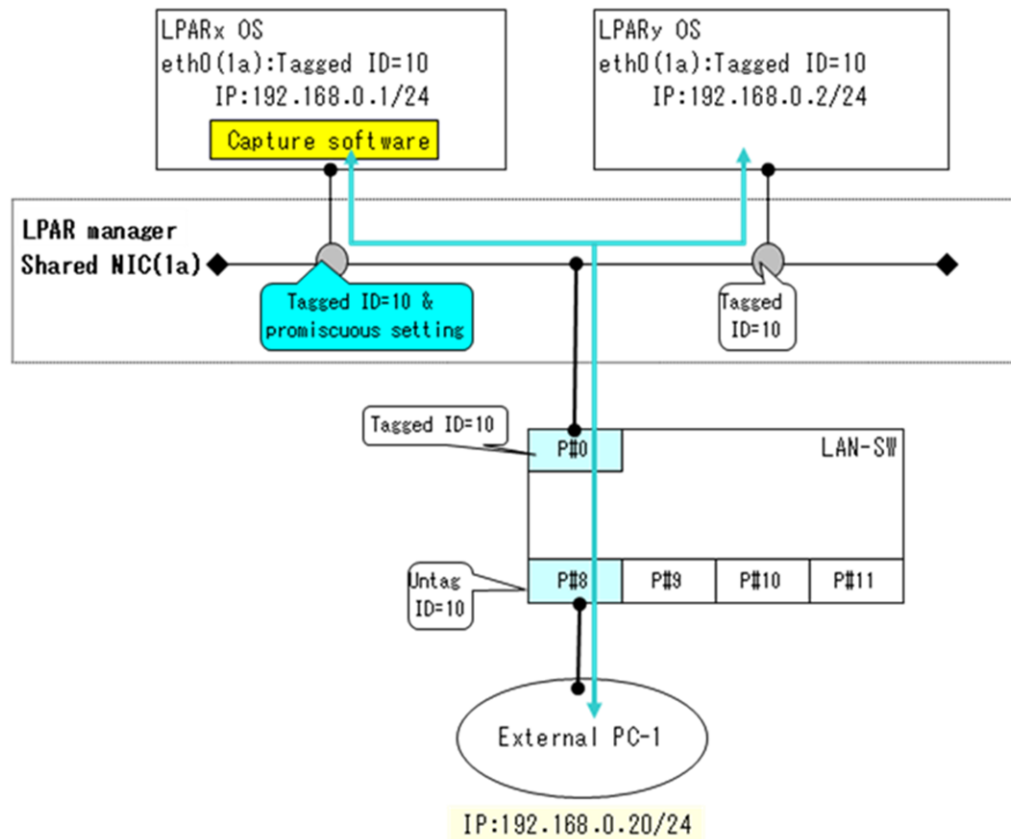


Figure 1-35 Packet Capturing on Same Segment

Table 1-42 Packet Capturing on Same Segment

Communicating Route	Promiscuous Mode	
	Restricted	Through
LPARx -> LPARy	Y	Y
LPARx -> External PC-1	Y	Y
LPARx Broadcast	Y	Y
LPARy -> LPARx	Y	Y
LPARy -> External PC-1	N	Y
LPARy Broadcast	Y	Y
Legend: Y: Capturable N: Non Capturable		

- Capturing packets on different network segment
Packets on the different network segment cannot be captured, even if it is on the same VNIC segment.

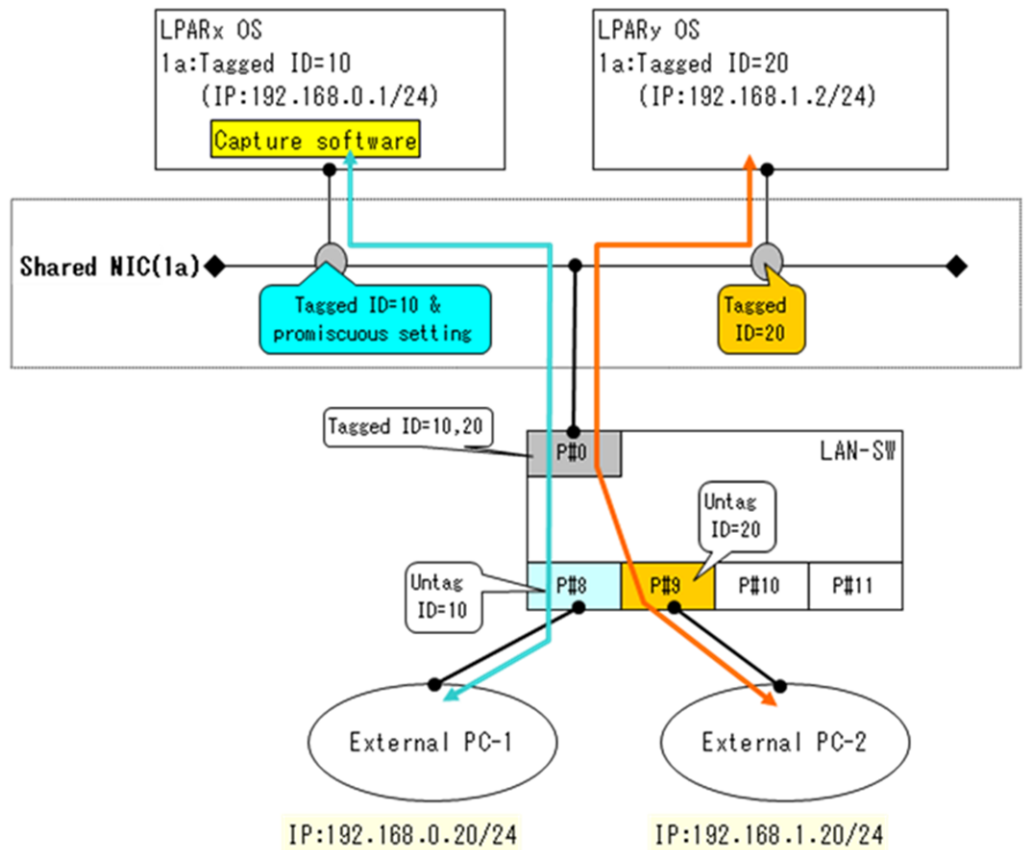


Figure 1-36 Packet Capturing on Different Segment

Table 1-43 Packet Capturing on Different Segment

Communicating Route	Promiscuous Mode	
	Restricted	Through
LPARx -> LPARy	-	-
LPARx -> External PC-1	Y	Y
LPARx Broadcast	Y	Y
LPARy -> LPARx	-	-
LPARy -> External PC-2	N	N
LPARy Broadcast	N	N
Legend: Y: Capturable N: Non Capturable -: No Packet		

Packet Filtering of Inter-LPAR

To ensure the independence of LPAR networks within the same server blade and to shield networks from external networks, communication packets between LPARs can be filtered. This subsection describes filtering setting values, descriptions of functionality, communication-destination environments, and behaviors.

Disable setting for inter-LPAR communication packet filtering

- This is the default value and the basic operation of the shared NIC.
- When the communication source and the communication destination are in the same network segment, LPAR manager transfers packets to the destination LPAR via the virtual switch.
- When the communication source and the communication destination are in different network segments, packets are transferred to the external network.

Enable setting for inter-LPAR communication packet filtering

- Even when the communication source and the communication destination are in the same network segment, LPAR manager disconnects inter-LPAR communication via the virtual switch.
- LPAR manager transfers all packets to the external network.
- Use this setting when systems that do not communicate each other are integrated into the same server blade.

Disable (ALL) setting for inter-LPAR communication packet filtering

- When the communication source and the communication destination are in the same network segment, LPAR manager transfers packets to the destination LPAR via the virtual switch, and then transfer the packets to the external network.
- When the communication source and the communication destination are in different network segments, LPAR manager transfers packets to the external network.
- Use inter-LPAR communication within the range of the maximum possible bandwidth of the LAN switch because all packets are transferred to the external network.
- Use this setting when employing a redundant network configuration through Intel(R) PROSet connection monitoring in Windows, Linux bonding, or similar. For details, see [Using inter-LPAR communication in a redundant network configuration on page 10-9](#)

FC (Fibre Channel)

FC (Fibre Channel) has 2 modes below.

Table 1-44 Mode of Fibre Channel

Mode		Description
Dedicated FC		1 LPAR dedicates 1 FC adapter.
Shared FC	HBA-core dedicated mode disabled	Multiple LPARs share a single FC adapter and multiple processing cores (HBA cores) existing in that FC adapter.
	HBA-core dedicated mode enabled	Multiple LPARs share a single FC adapter. Each LPAR exclusively uses a specific processing core (HBA core) that exists in that FC adapter.

Dedicated FC

1 LPAR dedicates 1 FC adapter. Multiple LPAR cannot use the dedicated FC adapter.

Same WWWN as vfcID=1 is used on dedicated FC.

The EFI driver setting to a vfcID=1 of dedicated FC is succeeded to the vfcID=1 of shared FC. Only "Connection Type" and "Data Rate" are succeeded to the vfcID=2 or subsequent vfcID of the shared FC.

Shared FC

Multiple LPARs share 1 FC adapter. The adapter is simultaneously used by those LPARs.

FC adapter has two detailed-modes on the Shared FC Mode.(Detailed-modes of Shared FC can be defined on the Shared FC Assignment Screen)

- Port separate assignment
When FC adapter has two or more ports, each ports can be assigned to different LPARs separately.
- Port sharing assignment
1 FC port can be assigned to multiple LPARs and shared.

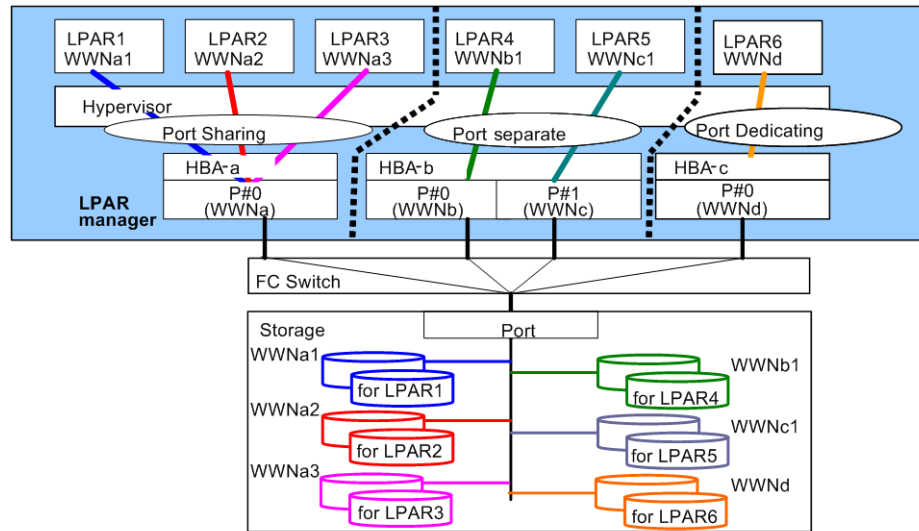


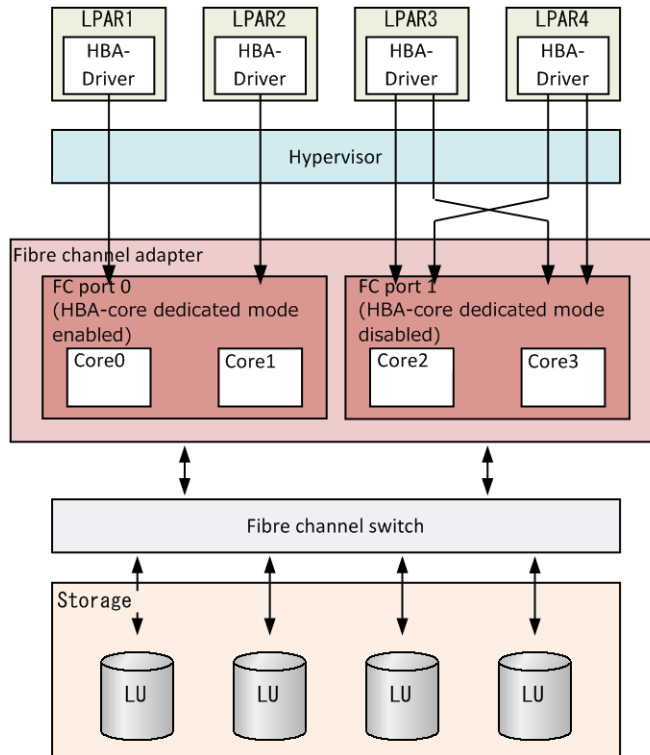
Figure 1-37 Definition of FC Port

HBA-core dedicated mode

Overview

HBA-core dedicated mode is an optional function for FC ports that are set for shared fibre channels (FCs). For an ordinary shared FC, multiple LPARs use multiple processing cores (HBA cores) existing in an FC adapter in a round-robin manner to send and receive data (see FC Port 1 (HBA-core dedicated mode is disabled) in the figure below). Therefore, for I/O processing between LPARs that share the same FC port, performance is determined on a best-effort basis, and performance cannot be guaranteed.

However, for a shared FC with HBA-core dedicated mode enabled, only specific HBA cores are responsible for sending and receiving data of specific LPARs, and are not affected by other LPARs (see FC Port 0 (HBA-core dedicated mode is enabled) in the figure below). This prevents performance degradation due to I/O load by other LPARs that share the same FC port, thus ensuring stable performance.



Requirement

Install a version of Fibre Channel driver and a version of Fibre Channel firmware supporting the HBA-core dedicated feature. For the versions of Fibre Channel driver and the versions of Fibre Channel firmware supporting the HBA-core dedicated feature, see the *HITACHI Gigabit Fibre Channel Adapter USER'S GUIDE (Support Matrix Edition)*.

FC adapters supporting this mode

The following lists FC adapters that support HBA-core dedicated mode:

Table 1-45 FC adapters that support HBA-core dedicated mode

Item	Number of coresport	Assignable vfcID ¹
Hitachi 16Gb 2-port fibre channel Mezzanine card	2	1 or 2
Hitachi 16Gb 4-port fibre channel Mezzanine card ²	1	1
Notes:		
1. In the same way as for an ordinary shared FC, vfcIDs can be assigned to LPARs. However, if HBA-core dedicated mode is enabled, the maximum value of the vfcID that can be assigned is limited to the number of HBA cores on the FC adapter. Although a vfcID greater than the number of HBA cores can be assigned to the LPAR, activation of the LPAR is suppressed.		

Item	Number of coresport	Assignable vfcID ¹
2.	HBA-core dedicated mode can be enabled, but only one LPAR can be used for one port.	

Setting procedure

You can use HvmSh to set HBA-core dedicated mode to FC ports that are configured as Shared FC.

Notes

Even if HBA-core dedicated mode is enabled, because it is inevitable that resources shared by other LPARs (for example, FC ports) exist in the system, the other LPARs might interfere with performance. To reduce the system's vulnerability to this interference, take the following points into account when you build the system:

- Make sure that the RAID group of the LU being used is not shared by other LPARs or systems.
- Set the maximum bandwidth for the FC port. As a result, LPARs that share the FC ports become less likely to be affected by the concentration of communication.
- For a system running in LPARs that share the same FC port, it is recommended that the system requests less large-volumed I/O processing and more small-volumed I/O processing for the storage.

Restrictions

The following shows major restrictions that are placed if HBA-core dedicated mode is enabled:

- Setting the HBA-core dedicated mode
You must deactivate the LPARs to which an FC port is assigned in advance when you change HBA-core dedicated mode to the FC port from a value of "enabled" to that of "disabled", and vice versa.
- Maximum number of FCs that can be shared
The maximum value of the vfcID that can be assigned is limited to the number of HBA cores in the FC adapter. Although a vfcID greater than the number of HBA cores can be assigned to the LPAR, activation of the LPAR is suppressed.
- Maximum performance
An LPAR cannot use HBA cores that are not allocated to the LPAR (even when they are idle). Therefore, the maximum IOPS that can be obtained with one core determines the overall maximum IOPS.
For example, if HBA-core dedicated mode is enabled for an FC adapter that has 2 cores per port, the maximum IOPS is half the maximum IOPS obtained when HBA-core dedicated mode is disabled.
- Core assignment

Only one core can be assigned to an LPAR.

- LPAR migration

The same vfcIDs that are used at the migration source must be unassigned at the migration destination. If the same vfcIDs are already assigned at the migration destination, LPAR migration fails.

USB/KVM



Note:

- In CB 520X B1/B2/B3, a KVM device or a remote console are assigned to a LPAR by Exclusive Shared Mode, however, a USB device is assigned to a LPAR by Dedicated Mode.

Assignment of USB/KVM devices

USB/ KVM device in Exclusive Shared Mode are assigned to multiple LPARs. However, the devices can be used by only a single LPAR and the devices cannot be used by other LPARs simultaneously.

For using SVGA, keyboard, mouse, CD/DVD drive, and FD drive in a remote console, assign USB/KVM device to a LPAR.

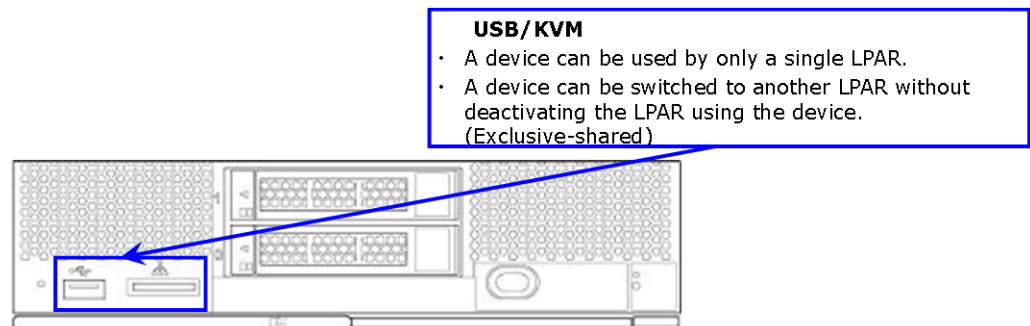


Figure 1-38 Ports of Compute Blade

Status Transition of USB/KVM

operation in the PCI Device Assignment screen. On the other hand, a USB, a KVM, and a remote console are uninstalled from an LPAR by Detaching operation in the PCI Device Assignment screen.

However, a USB, a KVM, and a remote console are disconnected forcibly by Detaching operation. So, execute "Safely Remove Hardware" operation on the guest OS before Detaching operation to disconnect a USB device properly.

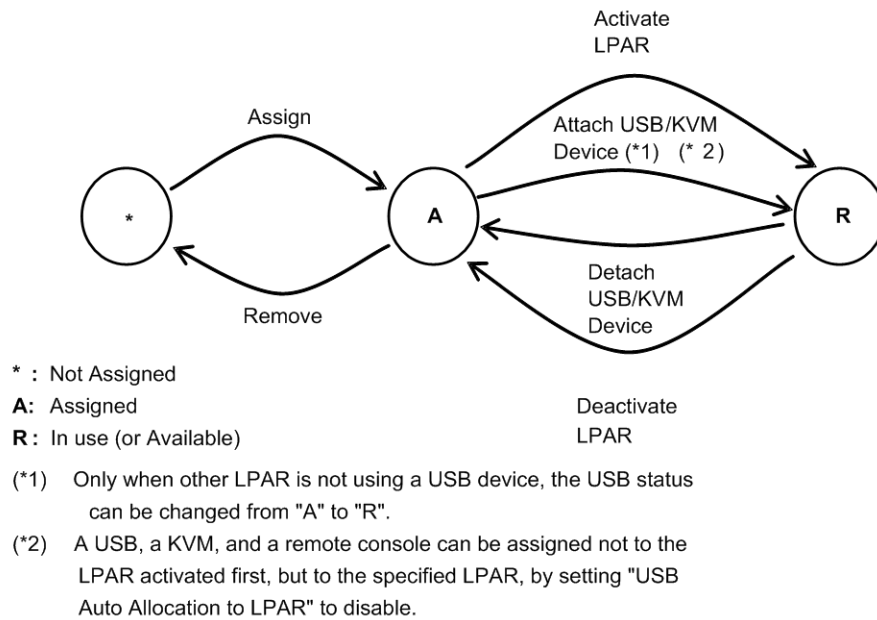


Figure 1-39 Status Transition of USB Device

System Operation

This chapter describes the system operation.

- ☐ [Web Console](#)
- ☐ [HCSM](#)
- ☐ [Server Management](#)
- ☐ [HVM Navigator](#)
- ☐ [Virtual COM Console](#)
- ☐ [Logical VGA Snapshot](#)
- ☐ [Time Adjustment](#)
- ☐ [Power Saving](#)
- ☐ [Transfer](#)
- ☐ [IPv6 Setting for LP IP Addresses](#)
- ☐ [LP communication settings](#)
- ☐ [DNS](#)
- ☐ [Performance tuning options](#)

Web Console

Web console is a management module function for using each function from browser of system console.

For details, see the *Hitachi Compute Blade 500 Series Web Console User's Guide*

HCSM

Hitachi Compute Systems Manager (hereinafter called HCSM) is software, which provides operation function for server chassis in a large scale system. System administrator can use HCSM for the system management for managing hardware resources, monitoring operation, performing N+M cold standby, controlling power consumption, and operating hardware.

For details, see the *Hitachi Command Suite Compute Systems Manager User Guide*.

Server Management

Using Server Conductor, you can manage the virtualized logical server by LPAR manager as a physical server. Outline of Server Conductor is below.

Table 2-1 Server Management Tools

Management Tools	Outline
Server Conductor/ Blade Server Manager (SC/BSM)	- Total Management of Hardware - Detection and Notification of Hardware Failure - N+M Cold Standby - Power Management of Server Blades - etc.
Snapshot image storing Web Server/ Server Conductor/ Deployment Manager (SC/DPM)	- Backup of Guest OS - etc.

SC/BSM

SC/BSM supports that managing logical servers on the LPAR manager like as the physical servers. See [Server Conductor/Blade Server Manager on page 10-21](#) for notes.

SC/DPM

SC/DPM supports that remote backups / restores the system disk of Guest OS. This function supports rapid recovery of the system disk when failure has occurred. Deploying management of guest OS (duplicate installation, network

installation of patches, and backups/restores) on the virtual server can be managed same as the physical server. And physical/logical servers can be managed with the same interface/procedure.

See [Server Conductor/Deployment Manager on page 10-22](#) for notes.



Tip:

- PXE boot function (network boot function) has to set "Enable" when using SC/DPM.

For details about Operation of PXE boot function, see the *Hitachi Compute Blade 500 Series EFI User's Guide*.

HVM Navigator



Note:

- To use HVM Navigator, disable user authentication of the LP CLI or log in as a user with the LPAR manager security permission. For the details, see [Role-Based Access Control on page 3-11](#).
 - When HVM Navigator is used, there are restrictions on guest OSs. For the restrictions, see [Differences in supported items depending on the guest OSs on page A-24](#)
-

LPAR Configuration

LPAR Configuration provides functions which make the setting and changing of LPAR manager / LPAR configuration easy. For the details, see the *Hitachi Compute Blade HVM Navigator User's Guide - LPAR Configuration*.

Monitoring

Monitoring provides functions to monitor operation status in the LPAR manager environment, which is used for diagnosing the resource shortage per LPAR. It allows you to total the operation status to multiple LPAR managers on the network, and to view the monitored history picked up from various viewpoints.

For the details, see the *Hitachi Compute Blade HVM Navigator User's Guide - Monitoring*.

Viewer

Viewer provides functions to display LPAR manager system configuration list and LPAR manager system block diagram. For the details, see the *Hitachi Compute Blade HVM Navigator User's Guide - Viewer*.

Migration

Migration provides functions that an LPAR migrates from a server blade currently running to another server blade.

For details about system requirements and notes, see the *Hitachi Compute Blade LPAR Migration Guide*.

For details about how to perform LPAR migration, see the *Hitachi Command Suite Compute Systems Manager User Guide* or the *Hitachi Compute Blade HVM Navigator User's Guide - Migration*.

Virtual COM Console

Overview of Virtual COM Console

The conventional system console can select and operate one of the LPAR manager screen and guest screens, but the virtual COM console can use a higher-speed console than normal serial console for each LPAR with the serial over LAN function of the LPAR manager. Concurrent operation of multiple LPARs is enabled operating guest screens by using the virtual COM console instead of the system console. Up to 16 LPARs can be simultaneously connected to the virtual COM console.

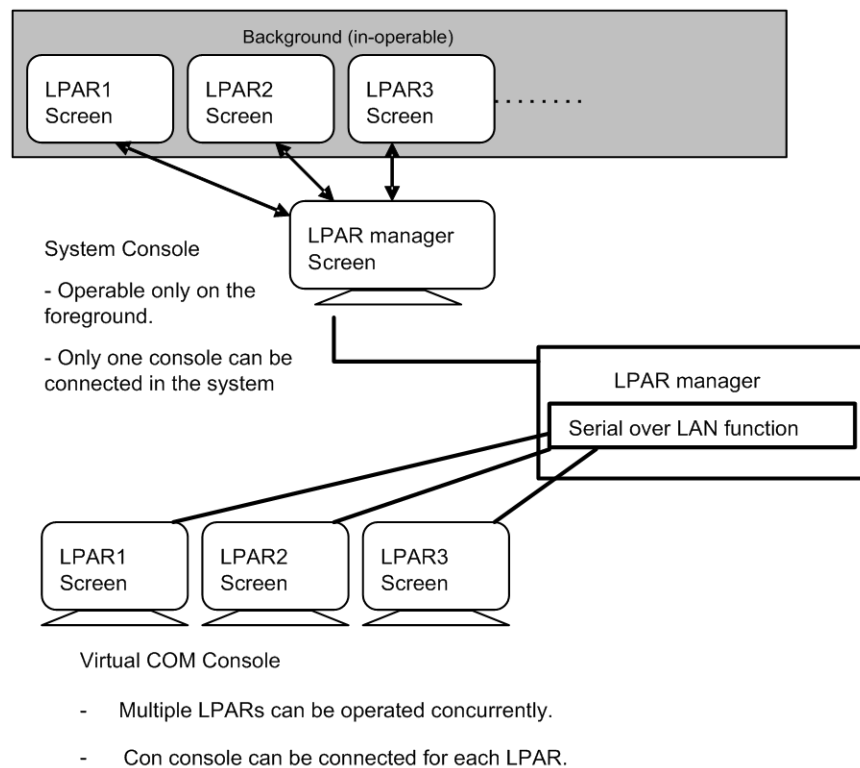


Figure 2-1 Connection of Virtual COM Console

Usage of Virtual COM Console

- Enabling Virtual COM Console Functions from the LPAR manager Screen
Enable the virtual COM console function of LPARs on the Logical Partition Configuration screen in the LPAR manager screen. Position the cursor at the VC column in the LPAR line where the virtual COM console function is to be enabled, and then press the **Enter** key to open the sub-screen.

Move the cursor with the ↑ and ↓ key, select Yes and then press the **Enter** key. This procedure allows Telnet connection to the LPAR guest screen. A comment when the cursor is positioned at the VC column in the LPAR line or a TCP port to be used when making Telnet connection to the sub-screen displayed when the **Enter** key is pressed with the cursor positioned at the VC column in the LPAR line is displayed. This TCP port is used in "(2) Connection to LPARs." This operation is always available regardless of whether LPARs are active or inactive.

+----- Logical Partition (LPAR) Configuration -----+														
#	Name	Sta	Pro	Shr	Ded	Srv	Mem	VN	ID	AA	AC	PC	VC	PB
1	LPAR1	Act	2	0	2	100	2048	0	Y	1	N	*	N	BIOS
2	LPAR2	Dea	1	0	1	100	1024	0	Y	2	N	*	N	BIOS
3	LPAR3	Dea	1	0	1	100	1024	0	Y	*	N	*	N	BIOS
4	LPAR4	Dea	1	0	1	100	1024	0	Y	*	N	*	N	BIOS
5														
6														
7							LPAR1 Virtual Console							
8							(TCP Port=20801)							
9														
10							Yes							
							No							
												p / [PageDown]:Page Down		
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+														
Logical Information				Virtual Console Disable				Physical Information						
			Pro	Shr							Free Memory			4608 MB
Assign Total			5	0	5			5120	0		Processors			8(8)
Act Total			2	0	2			2048	0		Shared			0
Remain									2560		Dedicate			2
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+														
Virtual Console(TCP Port=20801)														
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+														
F2:Mem Alloc Dsp F3:Act F4:Deact F5:React F6:Add F7:Remove													Esc:Menu	

Figure 2-2 Enabling of Virtual COM Console

You can enable the virtual COM console for LPARs on Logical Partition configuration screen of LPAR manager screens. Place the cursor on the VC column of an LPAR line which you need to enable the virtual COM console, and press **F1** to display a sub-screen. Select a VC number to connect by moving the cursor with the ↑ and ↓ keys, and press **Enter**. This allows you to connect to the LPAR guest screen via telnet. A TCP port is displayed, which is used to connect to Comment when you place the cursor on the VC column of the LPAR line via telnet.

This TCP port is used in "(2) Connecting to LPARs". This operation can be done regardless of the status of an LPAR, activate or deactivate, at any time.

+-----			

Figure 2-3 Enabling of Virtual COM Console

- Connecting to LPARs

To connect to LPARs, specify TCP ports allocated to each LPAR and make a Telnet connection to the IP address of the LPAR manager. TCP ports with a serial number starting from 20801 are allocated sequentially to LPAR1 to LPAR16 in the initial setting are provided for those to be specified at the time of connection to LPARs, but they can be changed in "(4) Changing TCP Ports." Currently allocated TCP ports can be monitored with the procedure in "(1) Enabling Virtual COM Console Function on the LPAR manager Screen. Use Tera Term when using one or more virtual COM consoles. Furthermore, for stable operation of Tera Term, it is recommended that the Scroll Buffer value be set to 2000 lines on the screen displayed by clicking Settings(S) > Window(W).

 - On the New Connection screen at the boot of Tera Term, enter the LP IP Address and TCP port. Then click OK.
 - OS prompt will appear when the connection is successful. Here you can operate the guest OS.
 - If the connection fails, a popup message informing "Error" will be displayed. Connection failures are as follows:
 - TCP/IP communication to the LP IP Address is unavailable. Check the path to the LP IP Address.
 - If changing a TCP port, the TCP port may not be connected depending on the terminal OS setting or account privilege. Confirm that the TCP port is available for connection on the terminal before changing a TCP port. It is recommended to use a TCP port with the default value that is verified enough.
 - When trying to connect two or more terminals to one LPAR, the second terminal or later cannot be connected.

- Switching the Virtual COM Console and System Console

The LPAR guest screens can be operated from either virtual COM console or conventional system console. These two types of console are exclusively available and operation by the conventional system console takes precedence. The virtual COM console can operate LPAR guest screens while the system console is displaying the LPAR manager screen. Consoles to operate LPAR guest screens can be selected by switching an LPAR guest screen and the LPAR manager screen on the system console.

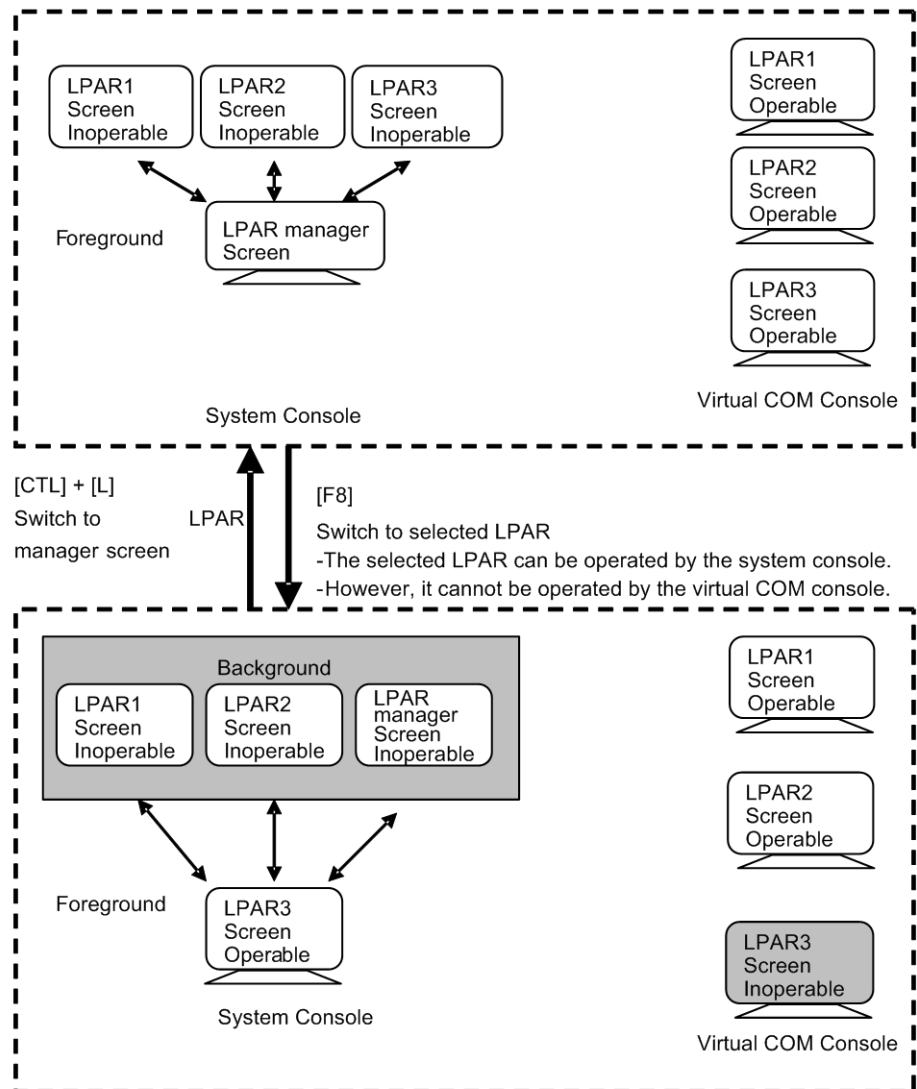


Figure 2-4 Switching of Virtual COM / System Console

- Setting a Connection Method

Connect to the virtual COM console via either Telnet or SSH. Note that Telnet and SSH cannot be used together.

When connecting to the virtual COM console, user authentication can be performed. For Telnet connections, you can select whether to perform user authentication. For SSH connections, user authentication is mandatory. By default, user authentication is disabled and Telnet connections are selected.

For details about how to set user authentication, see [User Authentication on page 3-18](#).

In SSH connections, an SSH host key is used. An SSH host key is automatically generated when an instance of LPAR manager with a firmware version of 02-05 or later starts for the first time. In addition, you can re-create the key through operation. 2,048-bit fixed RSA keys can be created as SSH host keys. The length of SSH host keys that can be created is fixed at 2,048 bits and the key type is RSA.

Table 2-2 Web console

Item	Operation
Setting the virtual COM console (connection mode, Telnet user)	Resources > Modules > All Modules > Server Blades > Server Blades x > LPAR > Edit > Edit virtual COM console settings
Re-creating an SSH host key	Resources > Modules > All Modules > Server Blades > Server Blades x > LPAR > Edit > Recreate SSH host key

Table 2-3 LPAR manager screen

Item	Operation
Connection method	System Configuration screen > VC Connect ¹
Setting user authentication	System Configuration screen > Authentication ¹
Setting a host key	System Configuration screen > Generate Host Key ¹
Notes: 1. You can switch pages by pressing the F11 and F12 keys on the System Configuration screen.	

Table 2-4 HVM management command (HvmSh)

Item	Command name
Setting the virtual COM connection mode for LPAR manager	opr VCConnectType
Setting the user authentication configuration for each device that communicates with LPAR manager	opr HvmIfAuthentication
Creating a host key to be used for SSH connection to the virtual COM of LPAR manager	opr HvmSshHostKey

- Changing TCP Ports
A TCP port to be specified when making a Telnet or SSH connection to an LPAR guest screen is set to the initial value determined by the LPAR

manager during its startup procedure. This TCP port can be changed on the System Configuration screen, but we recommend that the initial value determined by the LPAR manager be used.

Notes for Virtual COM Console

Notes on Telnet or SSH Connection

- You can change a port number to specify when connecting to a guest screen through Telnet or SSH, which needs to be different from a port number for LPAR manager. See [LPAR manager use Port numbers on page D-2](#) for details. Some port numbers may not be available depending on the OS settings, account privilege, installation software, or network environment. Check which port is available on the terminal and in the network environment before changing the port number. When there is no problem for use, it is recommended that you use a default port number among serial numbers starting from 20801, which have been thoroughly verified.
- Only one terminal per LPAR is permitted to operate guest screens from the virtual COM console. If a connection to two or more terminals is attempted, the connection to the second or more terminals is disabled.
- If the guest screen cannot be displayed while connecting to the virtual COM console, check the serial console configuration.
- If a LP IP address for IPv4 is not specified, you cannot disable Telnet authentication. Select Enable for Telnet authentication or select SSH for connection mode.
- If Telnet user authentication is disabled, Telnet connections cannot be established to LP IP addresses for IPv6.
- If a communication failure occurs during a connection to a virtual COM console, reconnection to that virtual COM console might become impossible.

In such a case, specify "N" for the port setting of the affected virtual COM console, and then return the setting to its previous value.

After doing so, reconnection will become possible after a certain amount of time elapses (after a maximum of 17 minutes).

Notes on Guest Screen Operation

- Although the virtual COM console can operate multiple LPARs concurrently, the performance of consoles of other LPARs may decrease with an increase in output data.
- If a large amount of characters are pasted to a guest screen, a part of characters may not be pasted. 256 or more characters per line for the Windows command prompt, and 1024 or more characters per line for Linux prompt cannot be pasted. In addition, if 1024 or more characters are pasted for the Linux prompt, Linux may hang up or unexpected screen operation may occur. The number of characters that can be pasted stably without being lost is less than 256 per line for the Windows command prompt, less than 1024 per line for the Linux prompt, and less than 10000 per line for editing programs including the Vi editor. When

pasting characters, it is recommended that a large amount of characters be divided into several blocks (up to the upper limit of characters per block), and then be pasted.

When you connect the system to the virtual COM console and boot the guest OS, Windows may halt its boot with the EFI screen; Linux may halt its boot in the grub console; even though rarely. If it happens, press the **Enter** key to resume the boot.

Notes on Operation

- Connect to the virtual COM console when needed in usual operation. Virtual COM console response might stop when it stays connected to LPAR manager. Reconnect the virtual COM console then. We recommend that VC (virtual COM console) on the Logical Partition Configuration screen should be assigned to an LPAR when needed and the assignment should be released when not needed.
- If you repeatedly change settings for VC (virtual COM console) on the Logical Partition Configuration screen with the virtual COM console connected, the console screen may be disturbed. If so, perform Edit (E) > Screen clear (S) in Tera Term to clear the screen, which can correct the screen disturbance.

Logical VGA Snapshot

LP Web systems may display different contents depending on different LPAR manager firmware versions.

Overview of Logical VGA Snapshot

LPAR manager supports the logical VGA snapshot with which users can view and acquire images that the guest OS running on each LPAR outputs to the display unit. With this function, images each LPAR outputs to the display unit can be acquired at any time as snapshot images (still images). To do this, access is made to the web server for acquiring snapshot images provided by the LPAR manager, using the Web browser from an external console. The following figure shows the logical VGA function configuration.

For details, see the *Hitachi Compute Blade 500 Series Logical VGA snapshot*.

Note that you can use the HVM management command (HvmSh) to disable HTTP communications. To disable HTTP communications, you need to restart LPAR manager. For details about the command, see the *HVM Management Command (HvmSh) Operation Guide*.

LPAR manager uses a built-in certificate signed with SHA-1 in http communications.

We do not recommend that you use the certificate owing to insecurity. We recommend that you use the server certificate for LPAR manager, instead.

For details about the server certificates for LPAR manager, see [Certificates in LPAR manager on page 3-32](#). For details about the command, see the *HVM Management Command (HvmSh) Operation Guide*.

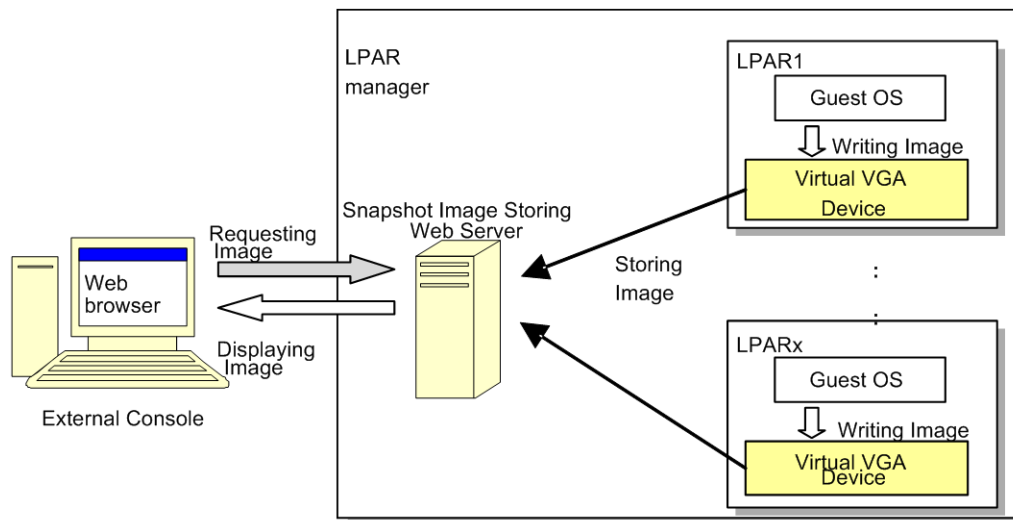


Figure 2-5 Outline of Logical VGA Snapshot

Logical VGA snapshot is constructed by three components below.

Table 2-5 Components of Logical VGA Snapshot

Components	Description
Virtual VGA Device	Virtual VGA device in which the guest OS writes image data.
Snapshot image storing Web Server	Web server incorporated inside the LPAR manager. This server obtains images from the virtual VGA device.
External Console	Console that operates the Web browser for displaying snapshot images.

Time Adjustment

Logical Partitioning of Timers

LPAR manager manages five kinds of time shown in the following table. LPAR manager creates each time using differentials between different times. Based on the LPAR manager system time, LPAR manager creates the logical timer for each LPAR. A guest OS on the LPAR manages "OS system time" using this logical timer.

LPAR manager manages the following time shown in the table below.

Table 2-6 LPAR manager Managing Times

Time	Description
System equipment time (Physical RTC time)	A clock in the server blade running by the battery: shows a local time. LPAR manager system time is based on this time.
LPAR manager system time	Used for the LPAR manager screen display as the LPAR manager time. Added elapsed time calculated with the timer counter (TSC) to the physical RTC time at the LPAR manager boot.
Logical RTC time	Is the basis for the OS system time. Calculated using the differentials from the LPAR manager system time.
OS system time	Used as a guest OS time. Added the elapsed time calculated using the logical timer counter, timer interrupt, and the time zone to the logical RTC time at the OS boot.
SEL time	Used as the timestamp of the logical SEL. Calculated using the differentials from the LPAR manager system time.

The following table shows precision on timers and how to adjust time.

Table 2-7 Timer Precision and Adjustment Method

Item	Time/Timer counter	Precision [sec./day]	Time synchronization	
			Before Save Time Config is supported	After Save Time Config is supported
System equipment	System equipment time (physical RTC time)	±4	- EFI setup menu - Enable LPAR manager system time synchronization - LPAR manager boot with system time synchronization enabled	- EFI setup menu - Enable LPAR manager system time synchronization - LPAR manager boot with system time synchronization enabled - Periodic time synchronization once every 24 hours - Date and Time screen ¹ - Saving LPAR manager configuration - LPAR manager shutdown
LPAR manager	LPAR manager system time	TSC: ±4	- Enable LPAR manager system	- Enable LPAR manager system

Item	Time/Timer counter	Precision [sec./day]	Time synchronization	
			Before Save Time Config is supported	After Save Time Config is supported
	(TimerCounter) 4	Cpu Frequency: ± 1	time synchronization - LPAR manager boot with system time synchronization enabled	time synchronization - LPAR manager boot with system time synchronization enabled - Periodic time synchronization once every 15 minutes - Date and Time screen ¹
LPAR	Logical RTC time	± 1	Guest firmware command. Guest OS command. Date and Time screen ^{1, 2}	Guest firmware command. Guest OS command. Date and Time screen ¹ Periodic time synchronization once every 15 minutes
	SEL time	± 1	Date and Time screen ^{1, 2} SC/Agent	Date and Time screen ¹ SC/Agent Periodic time synchronization once every 15 minutes
	TimerCounter	± 1	-	-
	Interrupt timer	± 1	-	-
Guest OS	Time zone	-	Guest OS command.	Guest OS command.
	Guest OS system time ^{3, 4, 5}	± 2	Guest OS command.	Guest OS command.
Notes: 1. When the LPAR is deactivated, you can adjust the physical RTC time. If you adjusted the system equipment time, it is strongly recommended that you should adjust the physical RTC time by the Adjust LPAR Time before booting the guest OS. 2. The differentials between the logical RTC time and logical SEL time will be saved by pressing F9 : Save Configuration on the LPAR manager Menu screen. LPAR manager				

Item	Time/Timer counter	Precision [sec./day]	Time synchronization	
			Before Save Time Config is supported	After Save Time Config is supported
			does not save the differential information automatically. When you adjust the logical RTC, press F9: Save Configuration on the LPAR manager Menu screen. If you shut down or reboot LPAR manager before saving it or the N+M cold standby function changes server blades, the adjusted differentials are lost. 3. When you use the kernel parameter which LPAR manager does not recommend, the following phenomenon may occur; such that boot fails or "OS system time" differs from actual time greatly. 4. You can select LP TimerCounter Base on LP Options screen. LP TimerCounter Base is displayed when the timer precision of "TSC" is lower during operation, you can select "TSC" or "Cpu Frequency". Select the smaller one for time-lag. LP TimerCounter Base is not displayed when the timer precision of "TSC" is higher, "TSC" is operated. For details of setting, see LP Options on page 7-105. 5. To keep the OS system time accurate, it's recommended that you have the OS system time be synchronized with the NTP.	



Note:

- "Save Time Config", a function to automatically save and update physical and logical RTC time, eliminates guest OS time differentials at the guest OS reboot or LPAR manager reboot. Thus, enabling "Save Time Config" is highly recommended.
See [LP Options on page 7-105](#) for how to enable the function and restrictions.

The following figure shows logical partitioning of time.

- [Time synchronization of LPAR manager system time by NTP server (Recommendation)]

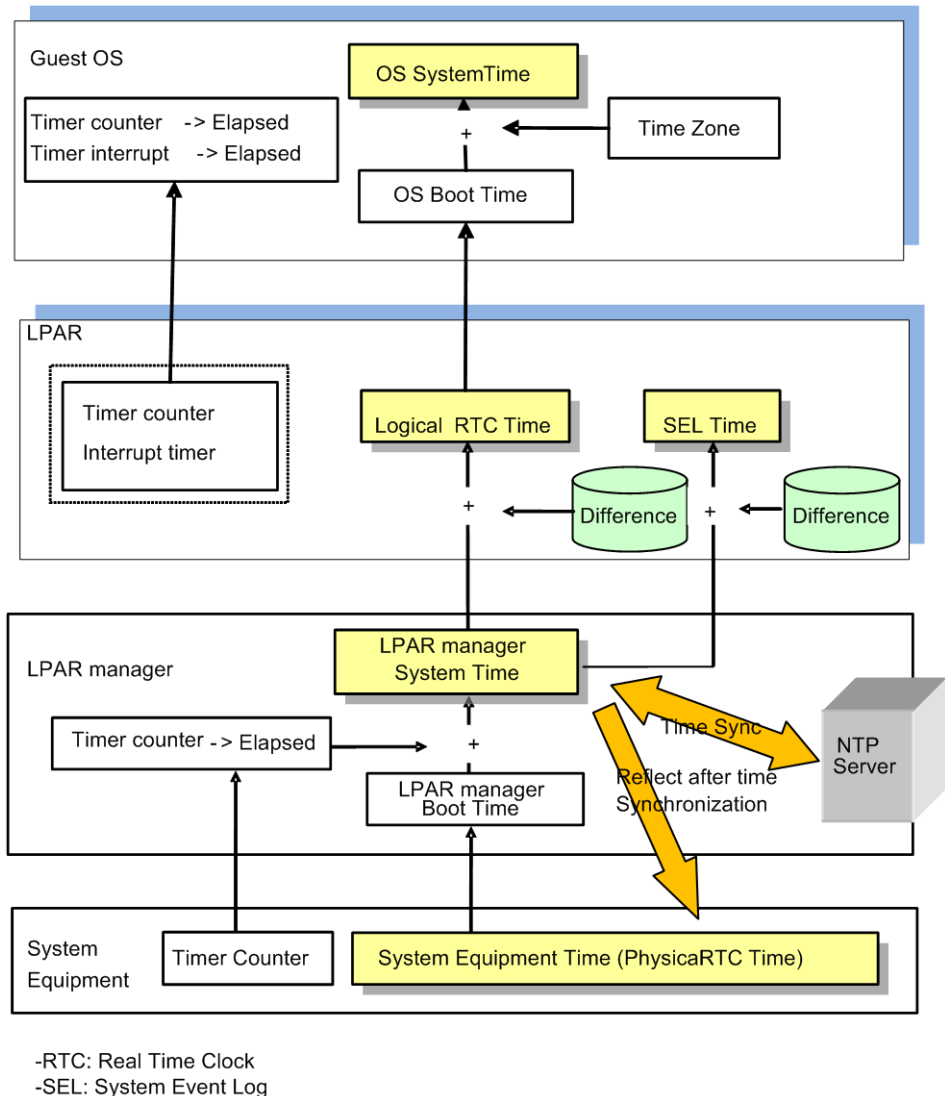


Figure 2-6 Relations of Timers



Note:

- If a time difference is to be corrected by NTP time synchronization that is supported by LPAR manager firmware version 01-60 or later and takes place at a regular interval of 15 minutes, and if a time difference of more than 60 seconds occurs, any subsequent attempts to perform the NTP time synchronization will be canceled. If this phenomenon occurs, review the LP system log message that includes "An abnormal time difference was detected", and then take action as described in the message.
- [No time synchronization of LPAR manager system time by NTP server]

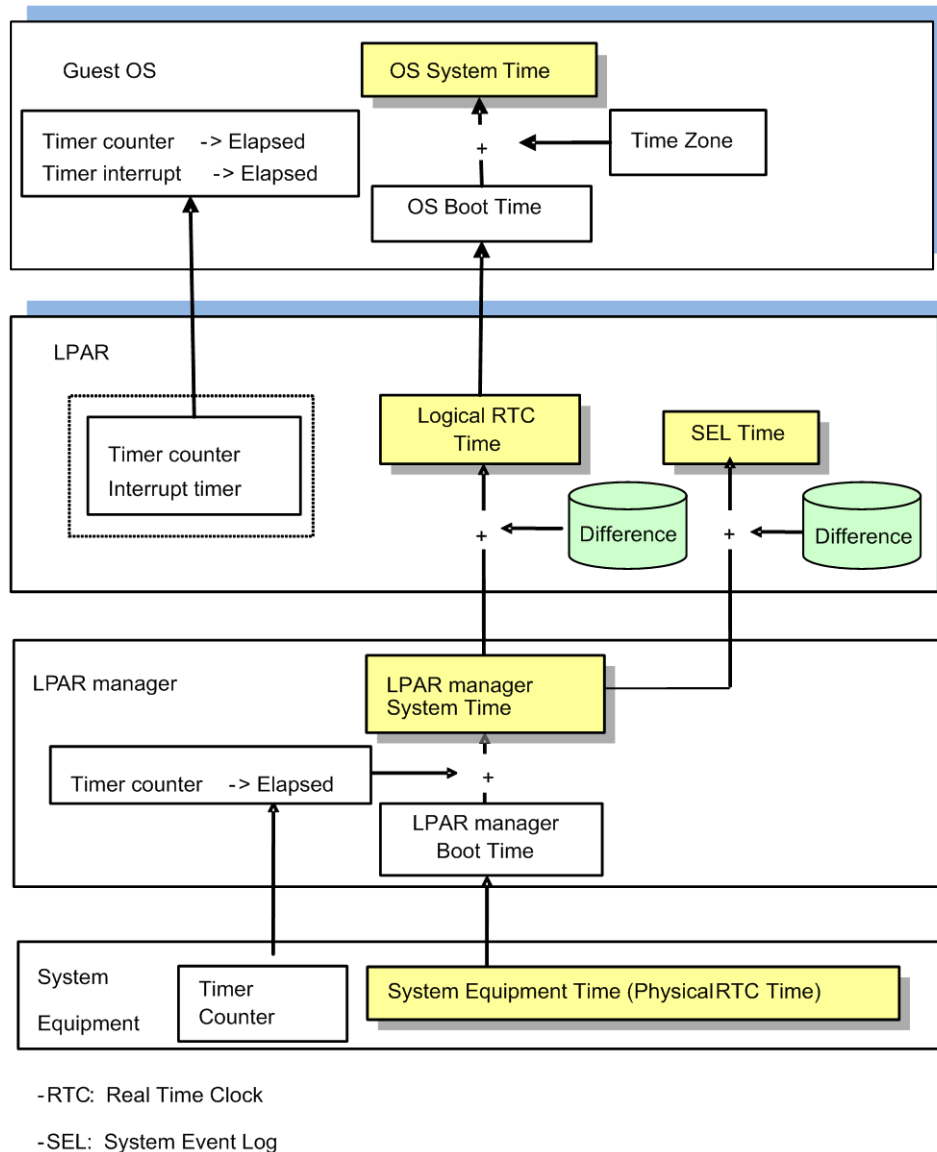


Figure 2-7 Relations of Timers

Power Saving

System Idle Loop

LPAR manager waits dispatch target process when the target processes does not exist on the LPARs (Host idle loop mode). This mode lowers power state of physical processor for reducing power consumption.

Power Capping Function

Power Capping Function set maximum power consumption (Power Capping Level) per chassis. This function aims to decrease power consumption of

blades by lowering power state of processors. And this function automatically set processors state to power saving mode when workload of the processors are low level. Power Capping Function is enabled by Management Module. (This procedure is same as Basic Mode) See [Power Capping on page 10-22](#) for notes.

Transfer

Transfer to LPAR manager environment from Basic environment



Note:

- In Windows, if you transfer between Basic environment and LPAR manager environment while setting a static IP address in NIC, IP address is set in the old MAC address. And duplication errors occur due to IP address resetting. Therefore, you need to delete IP address before transfer to avoid the duplication error.
- Types of NIC and MAC addresses are different between LPAR manager environment and Basic environment. Therefore, you need to install the driver when migrating for first time.
- WWPN/WWNN of HBA are different between LPAR manager environment and Basic environment. Therefore, you need to change the setting of SANS security in the storage.

The following table shows the setting and checking items when Basic environment is transferred to LPAR manager environment.

Table 2-8 Setting/checking item

Item	Setting/checking item	
	Before transfer	After transfer
Guest OS	IP address deletion (only for windows)	IP address setting (only for windows)
	-	Driver installation
	-	Teaming/Bonding configuration
Server blade	EFI setting ¹	-
	Basic mode setting ¹	-
	-	LPAR manager setting
Storage	-	WWPN/WWNN setting
Notes:		
1. For details, see the <i>Hitachi Compute Blade 500 series Server Blade Setup Guide</i> .		

Transfer to Basic environment from LPAR manager environment

The following table shows the setting and checking items when LPAR manager environment is transferred to Basic environment.

Table 2-9 Setting/checking item

Item	Setting/checking item	
	Before transfer	After transfer
Guest OS	IP address deletion (only for windows)	IP address setting (only for windows)
	-	Driver installation
	-	Teaming/Bonding configuration
Server blade	EFI setting ¹	-
	Basic mode setting ¹	-
Storage	-	WWPN/WWNN setting
Notes:		
1. For details, see the <i>Hitachi Compute Blade 500 series Server Blade Setup Guide</i> .		

IPv6 Setting for LP IP Addresses

You must set at least either an IPv4 address or an IPv6 address for LPAR managers. Note that you can set both an IPv4 address and an IPv6 address for LPAR managers.

- When you desire to allow an LPAR manager to communicate with the management module in IPv6, you must set an IPv6 address for the LPAR manager and the management module in advance.
- Set an LP IP address in an internet protocol in which you desire to allow management server to communicate with LPAR managers. You can also set two LP IP addresses in both IPv4 and IPv6 for an LPAR manager.

Firmware combinations

Server blade	Server blade firmware	Management Module firmware	LPAR manager firmware
CB 520H B3	08-35 or later	A0260 or later	02-25 or later
CB 520H B4	10-03 or later	A0305 or later	02-50 or later
CB 520X B1	07-34 or later	A0260 or later	02-25 or later
CB 520X B2	09-17 or later	A0270 or later	02-27 or later
CB 520X B3	11-07 or later	A0320 or later	02-56 or later

Supporting LP IP addresses in IPv6

Table 2-10 Supporting IP addresses of the consoles in IPv6

Console	Supporting LP IP addresses in IPv6
Web console	Y
HCSM Console	N
SC/BSM Console	N
HVM Navigator Console	N
Virtual COM console	Y
LP web system Console	N
Legend: Y: Supported N: Not supported	

How to set IPv6

You can set IPv6 for LP IP addresses by the operation below from the Web console. Before starting the setting, make sure that the server blades are powered off.

Item	Operation
IPv6 setting	Resources tab > Modules > All Modules > Server Blades > Server Blades x > LPAR Manager tab > Edit > System Settings

Downgrading the firmware

To restore the version of LPAR manager firmware, management module firmware or server blade firmware to a previous version, disable the IPv6 setting in advance.

N+M cold standby

The versions of LPAR manager firmware, management module firmware, and server blade firmware on the standby server blade must be equal to or later than those on the active server blade. If one or more firmware versions are earlier than those indicated in the "Firmware combinations" table, LPAR manager fails to start or starts in an unexpected state.

Cloning

The cloning function of SC/BSM does not inherit the IPv6 setting. At the cloning target, manually specify the IPv6 setting before starting LPAR manager.

LP communication settings

Specify the port number to be used for communication between LPAR manager and management module.

All LPAR managers in the server chassis use the same port number. You cannot use a different port number for an individual LPAR manager.

Before you change the setting, make sure that all server blades for which Logical partitioning is set to Enable.

Firmware combinations

Server blade	Server blade firmware	Management Module firmware	LPAR manager firmware
CB 520H B3	08-35 or later	A0260 or later	02-25 or later
CB 520H B4	10-03 or later	A0305 or later	02-50 or later
CB 520X B1	07-34 or later	A0260 or later	02-25 or later
CB 520X B2	09-17 or later	A0270 or later	02-27 or later
CB 520X B3	11-07 or later	A0320 or later	02-56 or later



Note:

- To set port numbers, the firmware combination of all the server blades whose Logical Partitioning is set to Enabled must be a combination that supports this function. If the firmware combination does not support this function, port numbers cannot be set.

Specifying LP communication settings

To specify LP communication settings, perform the operations described below from the Web console.

Item	Operation
LP communication settings	Resources tab > Systems > LP communication settings

DNS

LPAR manager supports name resolution by using a DNS. You can specify some servers that link to LPAR manager by using host names.

Supported version

Item	Version
Management Module firmware	A0280 or later

Item	Version
LPAR manager firmware	02-40 or later
HvmSh	9.00 or later

Specifying DNS settings

You can use the operations below to specify DNS settings.

Table 2-11 Web console

Item	Operation
DNS settings	Resources > Modules > All Modules > Server Blades > Server Blades x > LPAR > Edit > DNS settings

Table 2-12 HVM management command (HvmSh)

Item	Command name
Settings for system configuration information (DNS server)	opr SystemConfigDNS



Tip:

- DNS suffixes are not supported. Specify host names by using fully qualified domain names (FQDN).

Performance tuning options



Note:

- Make sure to keep the parameter "Performance tuning options" disabled on your environment. The feature "Performance tuning options" allows LPARs to perform more efficiently on only environments that meet certain hardware and setting conditions, such as the UCP solution environment of Hitachi Data Systems Corporation and others.

By enabling the parameter "performance tuning options", you can use the options listed in the table below.

Option	Description
Guest Idle Mode	Indicates a mode to process instructions when logical processors are idle.
Low Latency	Indicates a method in which logical processors work in I/O access.
EPT 1GB	Indicates the size of a memory unit for memory control and operation.

Performance tuning options have the following characteristics:

- Only Enterprise models are supported.
- The options are applied to individual LP systems.
- The minimum unit for memory allocation is 1 GB.

How the supported specifications change due to application of Performance tuning options

The following table describes how the supported specifications change if Performance tuning options are applied.

Function		Supported specification	
		Performance tuning options	
		Disabled	Enabled
Resource allocation	Processor allocation	Dedicated/Shared	Dedicated
	NIC allocation	Dedicated/Shared/ VF	Dedicated [02-2x or earlier] Dedicated/VF [02-40 or later]
	Dedicated port functionality	Supported	Not supported
	FC allocation	Dedicated/Shared	Dedicated [02-2x or earlier] Dedicated/Shared [02-40 or later]
	FCoE allocation	Dedicated	Not supported
	L3 cache allocation	Not supported	Supported
Logical processor settings	Idle Detection ¹	Y/N	N
	Guest Idle Mode ³	HALT	MWAIT ²
	Low Latency ³	N	Y
	EPT 1GB ³	N	Y
LPAR migration	Shutdown	Supported	Not supported
	Concurrent maintenance	Supported	Not supported
N+M cold standby		Supported	Not supported
Notes: 1. If Y is set for Idle Detection, the Guest Idle Mode is fixed to HALT. 2. To set Guest Idle Mode to MWAIT, the processor allocation setting must be dedicated, and the Idle Detection setting must be N. If MWAIT is set for Guest Idle Mode, changes to processor allocation and Idle Detection settings are limited. 3. The setting can be referenced by using the HvmSh command only.			

Combinations of LPAR settings that can be activated if Performance tuning options are enabled

The following table describes combinations of the LPAR settings that can be activated if Performance tuning options are enabled:

Processor allocation	Idle Detection	Guest Idle Mode	Low Latency
Dedicated	Y	HALT	N
	N	HALT	N
		MWAIT	Y
		MWAIT	N
Shared	Y	HALT	N
	N	HALT	N

How default values change due to application of Performance tuning options

The following table describes how the default values change if Performance tuning options are applied.

Parameter	Default	
	Performance tuning options	
	Disabled	Enabled
Idle Detection	Y	N
Guest Idle Mode	HALT	MWAIT
Low Latency	N	Y
EPT 1GB	N	Y

Firmware combinations

The following table describes firmware combinations:

Firmware	Version		
	CB 520H B4	CB 520X B2	CB 520X B3
Management module firmware	A0305 or later	A0270 or later	A0320 or later
LPAR manager firmware	02-50 or later	02-27 or later	02-56 or later

Specifying settings

To specify settings of Performance tuning options, perform the operations described below from the Web console. Make sure that the server blade is powered off when you specify settings.

Item	Operation
Performance tuning options	Resources tab > Modules > All Modules > Server Blades > Server Blades x > LPAR Manager tab > Edit > System Settings

Downgrading firmware versions

When downgrading the version of either the LPAR manager firmware or management module firmware to the previous version, disable Performance tuning options in advance.

High Reliability Functions

This chapter explains High Reliability Functions.

- ☐ [Redundancy](#)
- ☐ [N+M Cold Standby](#)
- ☐ [Microsoft Cluster Service/Microsoft Failover Cluster](#)
- ☐ [UPS](#)
- ☐ [Role-Based Access Control](#)
- ☐ [User Authentication](#)
- ☐ [Audit log](#)
- ☐ [LPAR manager Security](#)

Redundancy

Redundancy of Power Supply

CB 500 Server Chassis can equip maximum 4 power supply modules in the module slot. Those modules have to be equipped with numbers for required capacity of power supply.

CB 500 supports redundant configuration of power supply modules. That configuration is strongly recommended for protecting failure of power supply when using the LPAR manager environment.

Redundancy of Management Module



Note:

- The attention items when a management module is wrong in a non-redundant configuration are as follows. In addition, it is strongly recommended that the configuration information of management module is backed up in a non-redundant configuration.

Table 3-1 Attention Items in a non-Redundant Configuration

Attention Items		Prevention
LPAR manager Firmware	LPAR managers installed on the management module are lost.	Configuring redundant management modules
	To use a previously installed LPAR manager firmware after a failure or an error occurs on the management module, it is necessary to install the LPAR manager firmware So, the operation of server blades cannot restart when the LPAR manager firmware is not installed after the maintenance agent installs a new management module.	Configuring redundant management modules
	To install an LPAR manager firmware version which has been used before a failure or an error occurs on the management module, it is necessary that the LPAR manager firmware version is recorded in management module. The backup file for the configuration information of management module can be used as a record. However, the backup file for the configuration information of management module must be retrieved by a user.	Backing up the configuration information of management module
LPAR manager configuration information	The LPAR manager configuration information saved in the management module is lost. Then, the LPAR manager configuration information can be restored when the configuration information of management module is backed up.	Backing up the configuration information of management module

Attention Items		Prevention
	However, the backup file for the configuration information of management module must be retrieved by a user.	

The Management modules integrally manage the Server Chassis, for example, management of configuration, power supply control, failure detection, or the handling emergency etc. The LPAR manager configuration is also saved in the Management Module.

The Management module can be redundant configuration when two modules are equipped in the Server Chassis. LPAR manager and Guest OS will not be affected by the failure or replacement of one module in redundant configuration.

Redundant configuration of the Management modules is strongly recommended when using the LPAR manager environment.

Redundancy of LAN switch / FC switch

Single routing network/FC system has potential of failures depending on the failing point even if the Server has redundancy (Teaming of NICs / Duplex of HBAs). It's strongly recommend that Routings and Switches for network/FC are redundantly configured.

RAID configuration and duplex controllers

Storage system improves performance of transactions and prevents data-lost due to disk failures. Strongly recommend that the storage system is configured with RAID configuration except RAID level 0 and controllers of the storage system are duplex.

Performance of transactions and required disk sizes are differed depending on configured RAID level. See the User's guide which attached to the storage system for details of them.

N+M Cold Standby

N+M cold standby feature is to start the standby server blade automatically when an active server blade fails. Management server, such as ServerConductor/Blade Server Manager Plus, hereinafter referred to as BSM plus, or HCSM, receives the failure notification, analyzes the failure, and switches the active server blade to the standby one.

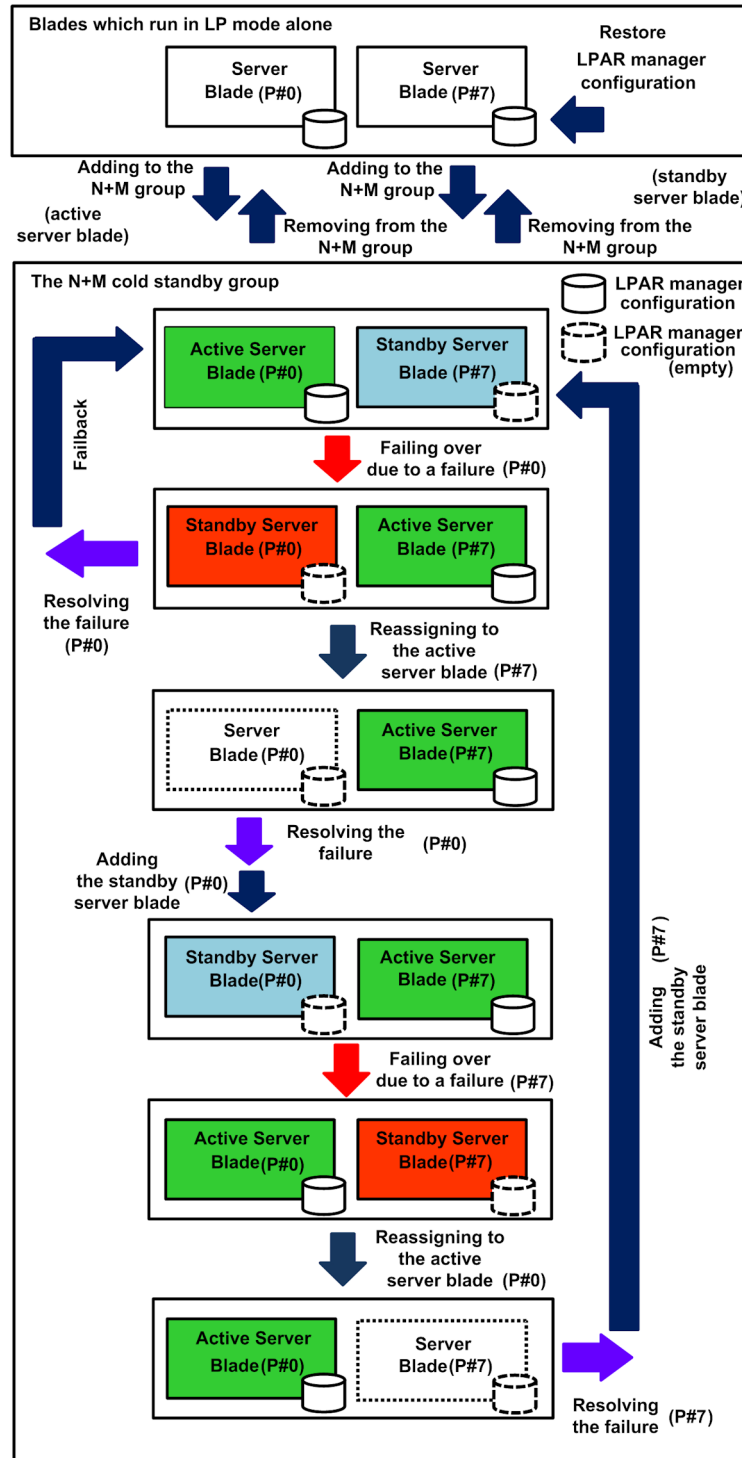
For details, see the *Hitachi Compute Blade 500 Series Management Module Setup Guide*.

How to use the N+M cold standby from the viewpoint of the LPAR manager configuration.

1. Make sure that all server blades that are targeted for N+M cold standby group assignment can start in LP mode alone. Then, select Yes for Pre-State Auto Activation on the LP Options screen and save the LPAR manager configuration. After that, backup the LPAR manager configuration.
If you have any plan to use the server blades in LP mode alone in the step 7, perform them (this step) to all of the server blades.
2. After completing the adding active and standby server blades to the N+M cold standby group, start LPAR manager on the active server blade and boot the guest OS. After that, you can use the functionality of LPAR manager.
3. If a failover occurs due to a failure on the active server blade or the N+M failover test, LPAR manager automatically starts on the active server blade (standby server blade before the failover) and the guest OS that was operating until just before the failover also automatically starts. After that, you can use the functionality of LPAR manager. The LPAR manager configuration of the standby server blade (active server blade before the failover) is cleared (undefined) in the process of the failover.
4. The failed standby server blade is repaired (or replaced) by maintenance personnel. You are not required to perform the maintenance work. Do not restore the LPAR manager configuration of the repaired (or replaced) standby sever blade to keep it cleared.
5. For the N+M fallback, you are not required to perform operations related to the LPAR manager configuration. Do not restore the LPAR manager configuration of the standby sever blade after the N+M fallback to keep it cleared.
6. You reassign the blade as active, the blade is automatically removed from the N+M cold standby group. After the removed server blade is repaired (or replaced), add the server blade to the N+M standby group again. Do not restore the LPAR manager configuration to keep it cleared.
7. If you want to start a server blade in LP mode alone and the server blade has failed over at least once, you need to restore the LPAR manager configuration because the LPAR manager configuration of the server blade is cleared. Perform the following procedure to restore the LPAR manager configuration. If you perform the procedure in a wrong way, the WWN or MAC address of the LPAR will be duplicated in another LPAR.
 - a. On the Web console, check that the LP IP Address and VNIC System No. of the server blade that was removed from the N+M cold standby group are blank. A server blade whose LP IP Address and VNIC System No. are not blank was a standby server blade to which the failover had never been performed, or an active server blade.
 - b. On the Web console, specify the LP IP Address and VNIC System No. that were used to make the server blade sure to start in LP mode alone in the step 1, for the blank LP IP Address and VNIC System No., and then start LPAR manager without restoring the LPAR manager

configuration. Do not restore the LPAR manager configuration in this step.

- c. Check that LPAR manager is started, and then shut down LPAR manager. Do not go to the next step until you check that LPAR manager is normally started.
- d. Restore the LPAR manager configuration that was backed up for the server blade in the step 1.



This figure explains the situation that there are two server blades, partition no. 0 (P#0) and partition no. 7 (P#7).

Figure 3-1 Transition of LPAR manager configuration in N+M cold standby configuration

Microsoft Cluster Service/Microsoft Failover Cluster

Microsoft Cluster Service (MSCS)/Microsoft Failover Cluster (MSFC) can build Windows Cluster System by using physical servers.

Note for HBA EFI Driver configuration

Basic configuration items of HBA EFI Driver (Select Boot Device, Boot Device List) have to be configured on the MSCS/MSFC environment. If the Basic configuration items of Standby Windows servers are not configured, data access conflict will occur between Active servers and Standby servers.

Table 3-2 Configuration HBA EFI Driver

HBA EFI Driver Configuration	System Path	Data Path
Select Boot Device	Enable	Disable
Boot Device List	Registered	Not Registered

Basic configuration has to be configured for Active servers and Standby servers.

Boot Firmware and Windows Loader starts for starting Windows when boot-up an LPAR.

The LPAR correctly accesses a target Logical Unit (LU) by using configured path when the Basic configuration items are configured. However the LPAR would access all accessible LUs when the Basic configuration items are not configured.

When a bandwidth of the path to an LU by a standby server is busy, an OS installed on the LU does not boot or the OS runs slowly.

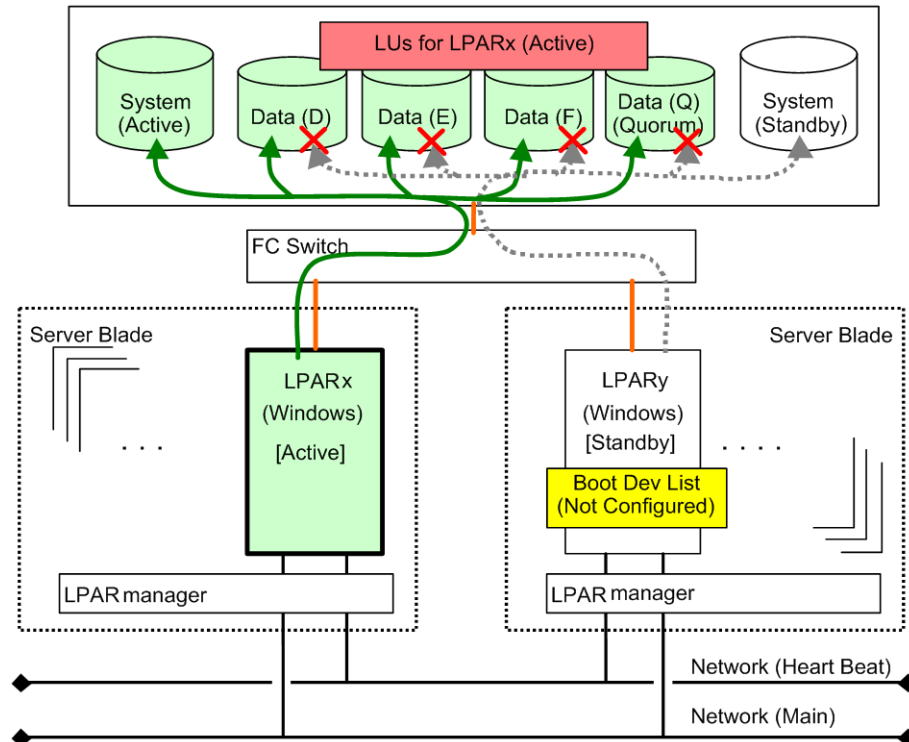


Figure 3-2 LU Access Conflict

Fail-Over

Failure of shared NIC service might not be detected (depends on the timing failure occurring when using MSCS/MSFC). Switching from Active server to Standby server would not be executed if the failure is not detected.

Table 3-3 Failure Detected Location

Location of Failure		Switching Server
Guest OS		Switchable
LPAR manager	Hyper Visor	Switchable
	FC Sharing Service	Switchable
	NIC Sharing Service	Un-switchable case exists ¹
Notes: 1. All applied NICs for the Guest OS become unusable if a failure occurs in the shared NIC service. In this case, the Guest OS cannot access network at all, though the other functions work normally. So the Guest OS not releases Quorum disk. Therefore the Active State of server cannot be switched to the Standby server which cannot obtain the Quorum disk. Guest OS has to be shut-down from management PC by using remote console function when a failure occurred in the shared NIC service.		

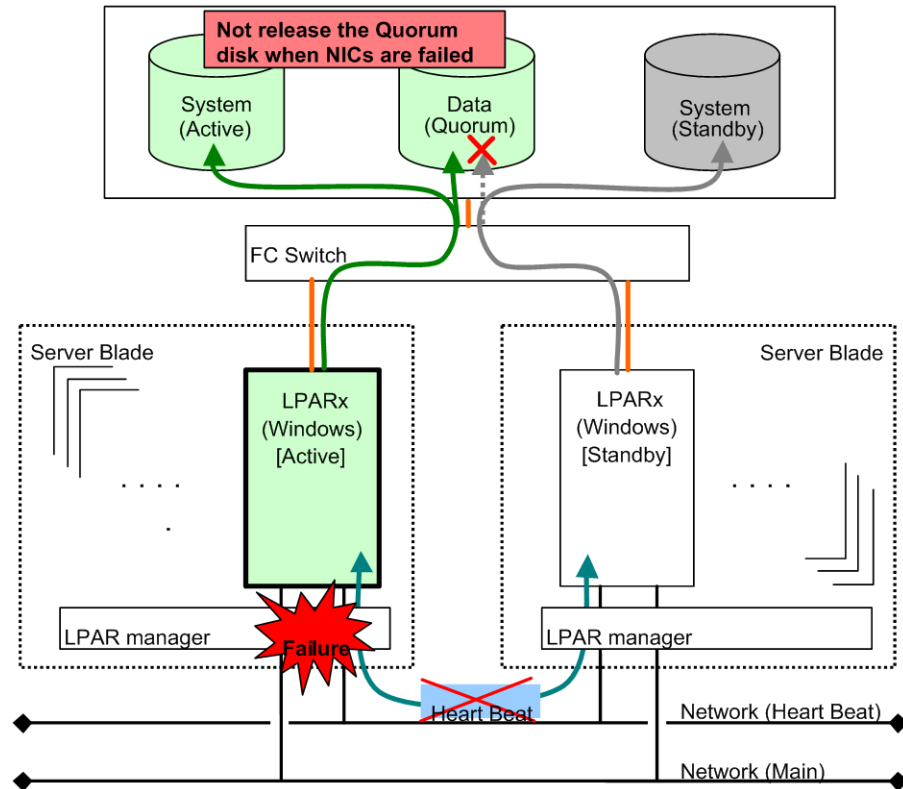


Figure 3-3 Failure of LU Switching

UPS

LPAR manager supports UPS by using Power management software which running on the Guest OS. The Guest OS begins shut-down process when receiving a request from UPS.

The LPAR manager begins shut-down operation after all of the Guest OSs completed shut-down. And power status of Server Blade becomes off when the LPAR manager has completed shut-down.

The Power management software has to be installed to the Guest OS for controlling power of the Server Blade for LPAR manager. Control signal might be delayed by network traffic when multiple Server Blades share one UPS. Number of Guest OS managing from the UPS should be decided by considering network traffic.

Table 3-4 UPS Supporting Functions

UPS Function	Power control supporting matrix on LP mode	
	LPAR (Guest OS)	Physical Server (LPAR manager)
Cool down after power down	Y ¹	Y ²
Scheduled power cut	Y ¹	Y ²

UPS Function	Power control supporting matrix on LP mode	
	LPAR (Guest OS)	Physical Server (LPAR manager)
Scheduled power re-supply	N ³	Y
Legend: Y: Supported N: Not supported Notes: 1. Power management software shuts down the Guest OS by the signal which comes from UPS. (LPAR status becomes "Deactivate") 2. The LPAR manager does not shut-down itself by the signal from UPS. The LPAR manager shuts down itself only when all the LPARs status became "Deactivate". ("Auto Shutdown" function has to be set to "Enable") 3. LPARs can be automatically activated when power supply from UPS has recovered. ("Auto Activate" function has to be set to "Enable")		

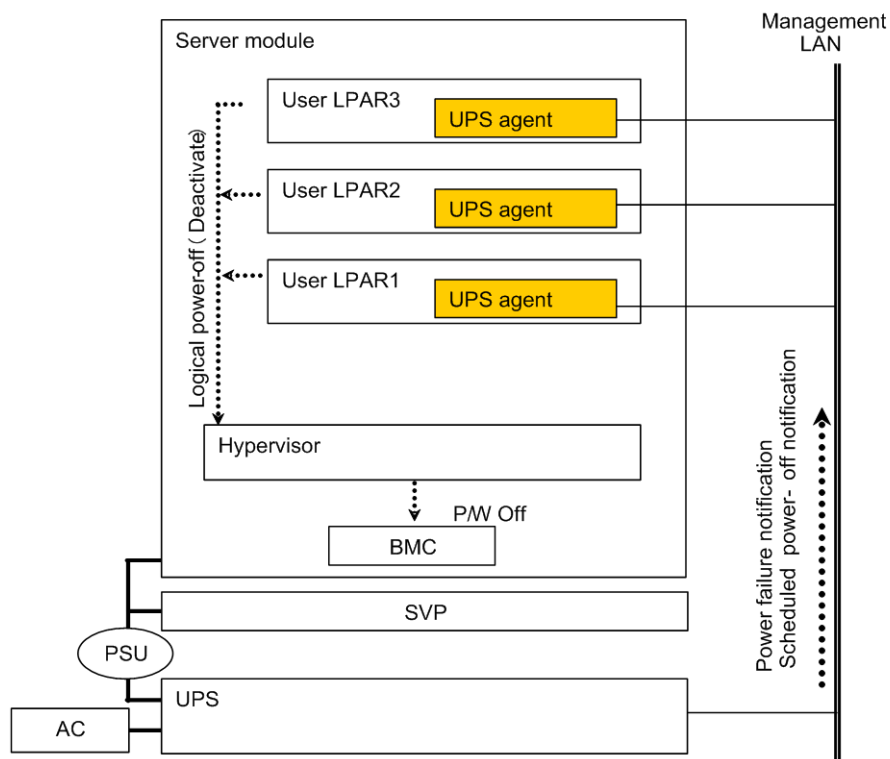


Figure 3-4 Outline of UPS Function



Note:

- When UPS is used in the LPAR manager environment, it takes about 30 seconds longer for the server blade to stop working after a power failure than in the Basic environment. More time may be required depending on the number of activated LPARs.

Role-Based Access Control



Note:

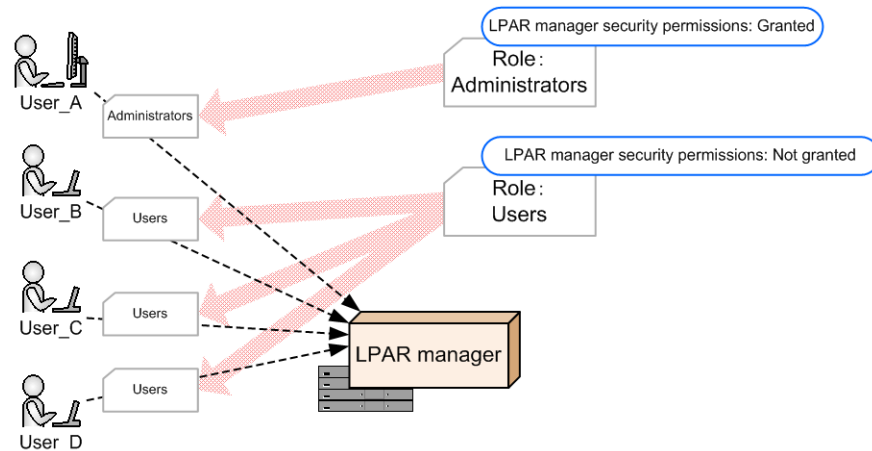
- If you use HVM Navigator, you must disable user authentication of the LP CLI or log in as a user with the LPAR manager security permission. The role-based access control (RBAC) function limits the operations that can be performed by each user based on the user's role.

Role-based access control applies to operations performed by using the Web console, HVM Navigator, the LPAR manager screen, or HvmSh.

If you disable user authentication of the LP CLI, role-based access control will also be disabled, allowing users to perform all operations.

A role is a group of one or more permissions assigned to a user.

By using roles to assign access permissions to users, you will be able to change access permissions easily in LPAR manager.



User types

The table below lists and describes user types.

For details on user authentication, see [User Authentication on page 3-18](#).

Types of users	Description
Local user	A locally authenticated user
LDAP-authenticated user	An LDAP-authenticated user
RADIUS-authenticated user	A RADIUS-authenticated user
LPAR manager user	A user who is logged in to LPAR manager
Management module user	A user who is logged in to a management module (the Web console or CLI console), but who is not logged in to LPAR manager

Role types

LPAR manager supports two types of roles.

You cannot change the access permissions of a built-in role, but you can change the access permissions of a user-defined role.

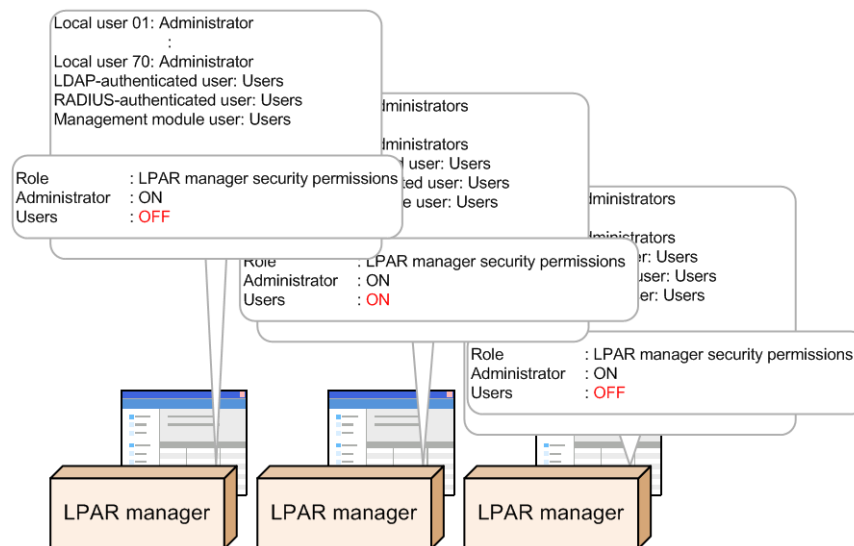
Types of roles	Description
Built-in role	Administrators role (This role has all the access permissions.)
User-defined role	Users role (By default, this role has all the access permissions.)

Assigning roles

When a role is assigned to a user, the role settings to be applied vary depending on the type of user.

The default is the Administrators role.

Types of users	Role setting to be applied
Local user	You can set a role to each of the local users.
LDAP-authenticated user	You can set the same role to users authenticated by LDAP.
RADIUS-authenticated user	You can set the same role to users authenticated by RADIUS.
Management Module user	You can set the same role to management module users.



You can set roles by performing the following operations:

When you change the role of a local user, the change is automatically saved.

Table 3-5 Web console

Item		Operation
Assigning a role	Local user	Resources tab > Modules > All Modules > Server Blades > Server Blades x > LPAR manager tab > Edit button > Manage user account > Create / Edit button
	LDAP-authenticated user	Resources tab > Modules > All Modules > Server Blades > Server Blades x > LPAR manager tab > Edit button > Edit LDAP settings
	RADIUS-authenticated user	Resources tab > Modules > All Modules > Server Blades > Server Blades x > LPAR manager tab > Edit button > Edit RADIUS settings
	Management Module user	Resources tab > Modules > All Modules > Server Blades > Server Blades x > LPAR manager tab > Edit button > Manage user account > Edit management module user button

Table 3-6 HVM management command (HvmSh)

Item		Command name
Assigning a role	Local user	opr HvmUserAdd opr HvmUserConfig
	LDAP-authenticated user	opr LdapConfig
	RADIUS-authenticated user	opr RadiusConfig
	Manegement Module user	opr ManagementModuleUserRole

Access permissions

This section explains access permissions supported by LPAR manager.

LPAR manager security permission

LPAR manager supports the LPAR manager security permission, which is an access permission.

The LPAR manager security permission is required for to configure settings and perform operations related to user account management, user authentication, role-based access control, audit logs, encrypted communication, and certificate management. These LPAR manager security operations can only be performed by users with the LPAR manager security permission.

Users without the LPAR manager security permission are subject to restrictions when performing the following LPAR manager security operations by using the Web console, the LPAR manager screen, or HvmSh:

LPAR manager security operation		Restriction
User account management	Viewing user information.	Functional restrictions apply. ¹
	Adding or deleting users	This function cannot be executed.
	Changing user passwords	Functional restrictions apply. ²
	Setting the validity period for user passwords	This function cannot be executed.
User authentication	Enabling or disabling user authentication	This function cannot be executed.
	Configuring the user authentication method	This function cannot be executed.
	Configuring LDAP or RADIUS	This function cannot be executed.
	Changing the period during which a login to HvmSh is valid	This function cannot be executed.
	Obtaining the user authentication log (displaying authentication logs)	This function cannot be executed.
Role-based access control	Setting roles	This function cannot be executed.
Audit log	Setting the audit log configuration (specifying syslog transfer settings)	This function cannot be executed.
Encrypted communications	Changing the security strength (changing the communication protocols that can be used)	This function cannot be executed.
	Setting the connection mode for the virtual COM console	This function cannot be executed.
	Creating a host key for SSH connections for the virtual COM console	This function cannot be executed.
Certificate management	Creating or obtaining a CSR	This function cannot be executed.
	Enabling or disabling certificate validation	This function cannot be executed.
	Creating, registering, obtaining, or deleting certificates	This function cannot be executed.

LPAR manager security operation		Restriction
Acquisition of information including security settings	Obtaining all the configuration information at once (displaying the LPAR manager settings)	Functional restrictions apply. ³
	Obtaining security configuration information	This function cannot be executed.
1 The logged-in user can obtain only the information about himself or herself. 2 The logged-in user can only change his or her own password. 3 Information about user authentication, role-based access control, audit logs, encrypted communication, and certificate management cannot be obtained, but other information can be obtained.		

Changing access permissions

You can change access permissions by performing the following operations:

Table 3-7 Web console

Item	Operation
Changing access permissions	Resources tab > Modules > All Modules > Server Blades > Server Blades x > LPAR manager tab > Edit button > Manager user account > Show and edit role settings button

Table 3-8 HVM management command (HvmSh)

Item	Command name
Changing access permissions	opr RoleConfig

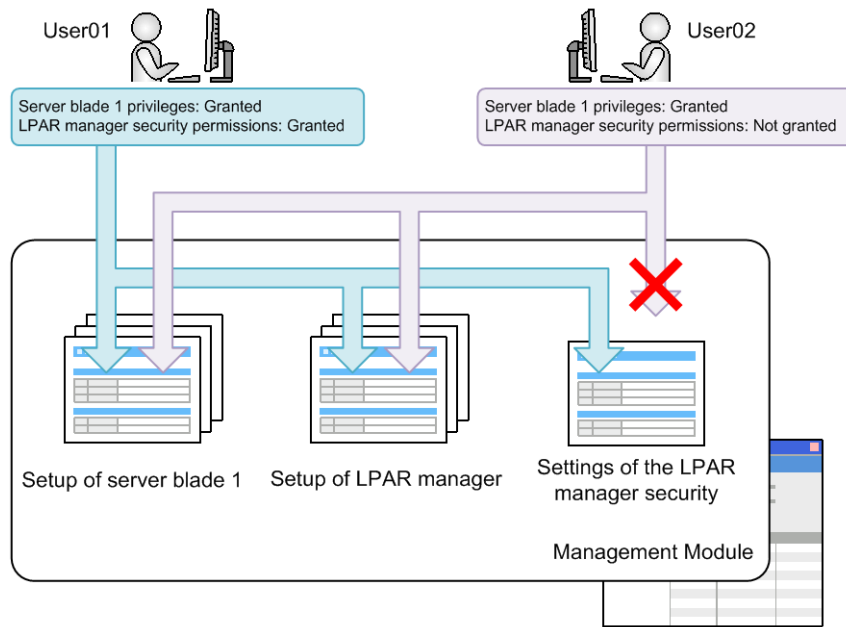
LPAR manager operations from the management module

You can perform LPAR manager operations from the management module by using the Web console and LPAR manager screen.

LPAR manager operations from the Web console

You can perform LPAR manager operations if you have the server blade privilege for the management module.

In addition to this privilege, you must also have the LPAR manager LPAR manager security permission if you want to perform LPAR manager security operations.

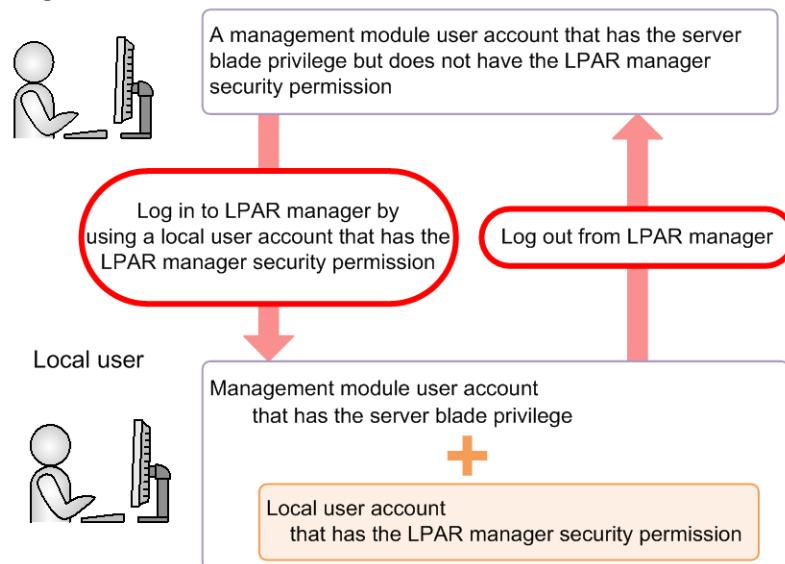


If user authentication of the LP CLI is enabled, role-based access control by roles takes effect.

If a user is logged in to the Web console but not to LPAR manager, the role assigned to the management module user takes effect. If the role assigned to the management module user does not have the LPAR manager security permission, the user is prohibited from performing LPAR manager security operations.

In this case, if you log in to LPAR manager as a user with the LPAR manager security permission, you can perform all the LPAR manager operations.

Management module user



LPAR manager operations from the LPAR manager screen

You can use LPAR manager from the LPAR manager screen by logging in to the CLI console of the management module.

If user authentication of the LP CLI is enabled, the LPAR manager screen is also subject to role-based access control. The role that is assigned to the management module user always applies, because the LPAR manager screen does not support login to LPAR manager. If the role has not been assigned the LPAR manager security permission, LPAR manager security operations will be prohibited.

Configuration example

If roles and access permissions are configured as shown below, only the user who logs in as "Local user A" can perform LPAR manager security operations.

Item	Value
User authentication of the LP CLI	Enabled

Types of roles	LPAR manager security permission
Administrators role	Have privilege
Users role	Do not have privilege

User category		Operation
User authenticated by LPAR manager	Local user A (security administrator)	Administrators role
	Local user B (general administrator)	Users role
	User authenticated by LDAP	Users role
	User authenticated by RADIUS	Users role
Management module user		Users role

Notes on access permissions

The following are notes on access permissions:

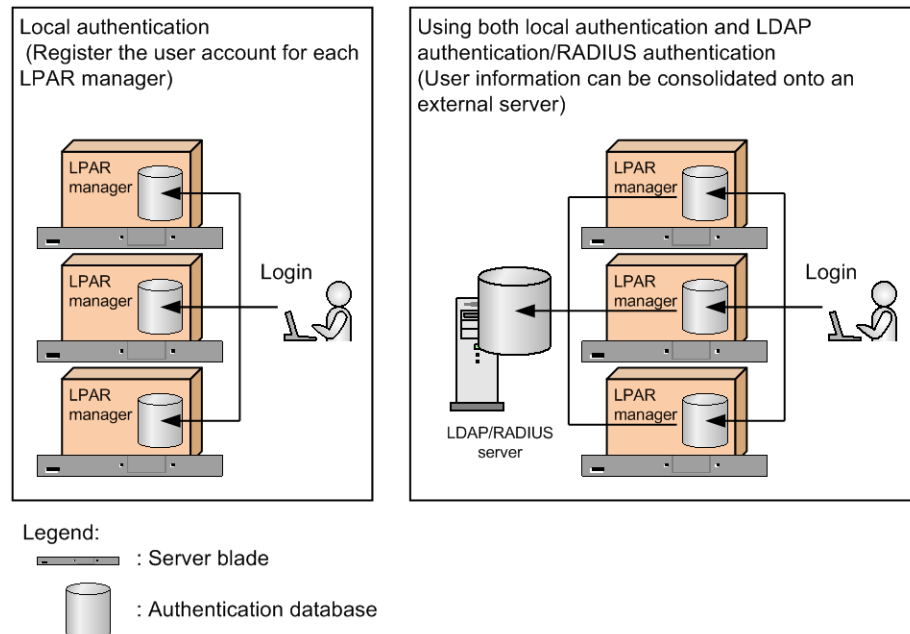
- At least one local user of LPAR manager must be assigned the Administrators role.
You cannot delete a local user with the Administrators role if that user is the only user with this role.
- If user authentication of the LP CLI is disabled, you cannot disable the LPAR manager security permission of the management module user.
If the management module user does not have the LPAR manager security permission, user authentication of the LP CLI cannot be disabled.

User Authentication

User authentication can prevent unauthorized access by users who are not permitted to access LPAR manager. By using multiple accounts, you can assign users to different accounts depending on how they will use the software.

LPAR manager supports the following authentication methods:

- **Local authentication**
This method authenticates users in LPAR manager only. A user account must be registered for each instance of LPAR manager.
- **Combined use of Local authentication and LDAP authentication**
With this method, usually LPAR manager authenticates the user. If the user is not registered in LPAR manager, an access to the LDAP server is made to authenticate the user. User information can be collectively managed by the LDAP server, not by LPAR manager.
- **Combined use of Local authentication and RADIUS authentication**
In addition to local authentication, this method also employs user authentication in collaboration with the external RADIUS server. With this method, user information can be collected on the external server. An access to the RADIUS server is made only when an unregistered user name is entered in LPAR manager.



Note:

- A maximum of 70 LPAR manager users can log in to LPAR manager from the Web console, HVM Navigator, or HvmSh at the same time. If the number of logged-in users exceeds the upper limit, any other user who attempts to log in will be forcibly logged out.

Scope of support

The following scope of user authentication support.

Table 3-9 Communication destinations supported by local authentication and LDAP authentication

Tools	User authentication
Web console ¹	N
HVM Navigator	Y
LPAR manager screen ¹	N
Virtual COM console ²	Y
LP web system	Y
HVM management command (HvmSh) ²	Y
Legend: Y: Supported N: Not supported Notes: 1. User authentication is required in the management module. 2. The initial setting of the user authentication is disabled.	

User authentication settings

To set user authentication, perform the following operations:

Table 3-10 Web console

Item	Operation
Setting the virtual COM console ¹	Resources > Modules > All Modules > Server Blades > Server Blades x > LPAR > Edit > Edit virtual COM console settings
Setting the LP CLI	Resources > Modules > All Modules > Server Blades > Server Blades x > LPAR > Edit > Edit LP CLI

Table 3-11 LPAR manager screen

Item	Operation
Setting the virtual COM console ¹	System Configuration screen > VC ²
Setting the LP CLI	System Configuration screen > LP CLI ²

Table 3-12 HVM management command (HvmSh)

Item	Command name
Enabling and disabling user authentication ¹	opr HvmIfAuthentication
Notes: 1. To enable user authentication on the virtual COM console, change the settings to "Connection mode: Telnet" and "Telnet authentication: Enable". Alternatively, change the settings to "Connection mode: SSH". 2. You can switch pages by pressing the F11 and F12 keys on the System Configuration screen.	

**Note:**

- HCSM is connected to LPAR manager via a management module. For this reason, you do not need to change HCSM settings even if you enable user authentication on LPAR manager.

Specify the method of user authentication

To specify the method of user authentication, perform the following operations:

The default value is the local authentication.

Table 3-13 Web console

Item	Operation
Method of user authentication	Resources > Modules > All Modules > Server Blades > Server Blades x > LPAR > Edit > Edit authentication settings

Table 3-14 HVM management command (HvmSh)

Item	Command name
LDAP configuration setting	opr ExternalAuthentication

Local authentication

This section explains local authentication, which is supported by LPAR manager.

Scope of support

The following is the scope of support for local authentication:

Item	Operation
Number of user accounts	Up to 70 accounts
User name and password to be registered in LPAR manager	The following restrictions apply to user names and passwords to be used for local authentication: - The user name must be 1 to 31 characters, and can contain alphanumeric characters, periods (.), hyphens (-), and underscores (_). The user name must begin with a letter. - The password must be 1 to 31 characters, and can contain alphanumeric characters and symbols other than spaces.

Initial registration user account

Item	Operation	
Initial registration user account ¹	User name	admin
	Password	password
Notes: If LPAR manager is upgraded from a version that does not support the user authentication functionality, the initial registration user account inherits the user name and password of the LP Web system.		



Note:

- For security reasons, we strongly recommend that you create a new account and delete the initial registration user account, or change the password of the initial registration user account when specifying the initial settings for LPAR manager.

Managing user accounts

You can register up to 70 user accounts. You can use the operations below to manage user accounts.

Table 3-15 Web console

Item	Operation
Adding, deleting, and editing a user account	Resources > Modules > All Modules > Server Blades > Server Blades x > LPAR > Edit > Manage user account > Create/Delete/Edit

Table 3-16 LPAR manager screen

Item	Operation
Adding, deleting, and editing a user account	System Configuration screen > F1/F2/F3 ¹

Table 3-17 HVM management command (HvmSh)

Item	Command name
Adding a user	opr HvmUserAdd
Deleting a user	opr HvmUserRemove
Changing the password of a user	opr HvmPasswd
Notes: 1. You can switch pages by pressing the F11 and F12 keys on the System Configuration screen.	

Validity period of the password

You can improve the security of user authentication by setting an expiration date for the password. You can set the expiration date to indefinite or to a value in the range from 1 to 365 days. The initial value is indefinite.

You can use the operations below to change the password expiration date.

Table 3-18 Web console

Item	Operation
Validity period of the password	Resources > Modules > All Modules > Server Blades > Server Blades x > LPAR > Edit > Edit user settings

Table 3-19 LPAR manager screen

Item	Operation
Validity period of the password	System Configuration screen > Expiry ¹

Table 3-20 HVM management command (HvmSh)

Item	Command name
Setting for the validity period of the password	opr HvmPasswdExpiry
Notes: 1. You can switch pages by pressing the F11 and F12 keys on the System Configuration screen.	

Changing the password

LPAR manager supports three methods for changing passwords. Use the method that is appropriate for your purpose.

Method for changing passwords	Conditions for changing passwords
Changing the password of a user other than yourself	You must have the LPAR manager security permission.
Changing your own password	You must be logged in to LPAR manager as a locally-authenticated user.
Changing your own password after it expires	You must have the LPAR manager security permission.

- Changing the password of a user other than yourself
The LPAR manager security permission is required for this operation.

Table 3-21 Web console

Item	Operation
Changing the password of a user other than yourself	Resources > Modules > All Modules > Server Blades > Server Blades x > LPAR > Edit > Manager user account > Edit

Table 3-22 LPAR manager screen

Item	Operation
Changing the password of a user other than yourself	System Configuration screen > F3 ¹

Table 3-23 HVM management command (HvmSh)

Item	Command name
Changing the password of a user other than yourself	opr HvmPasswd (format 3, format 4)
Notes: 1. You can switch pages by pressing the F11 and F12 keys on the System Configuration screen.	

- Changing your own password
You must log in to LPAR manager before performing this operation.

Table 3-24 Web console

Item	Operation
Changing your own password	Resources > Modules > All Modules > Server Blades > Server Blades x > LPAR > Edit > LP Login Account Settings

Table 3-25 HVM management command (HvmSh)

Item	Command name
Changing your own password	opr HvmPasswd (format 1, format 2)

- Changing your own password after it expires
If you are a user with the LPAR manager security permission and you cannot log in because your password has expired, change your password by using the method for changing expired passwords.

Table 3-26 Web console

Item	Operation
Changing an expired password	Resources > Modules > All Modules > Server Blades > Server Blades x > LPAR > Edit > Change expired password

Table 3-27 HVM management command (HvmSh)

Item	Command name
Changing an expired password	opr HvmPasswdRecovery

**Note:**

- If you are a user with the LPAR manager security permission and you forget your user name or password, you will no longer be able to perform operations such as adding accounts. Take measures to prevent this type of problem, for example, by assigning the LPAR manager security permission to multiple users.

LDAP authentication

This section explains LDAP authentication, which is supported by LPAR manager.

Scope of support

The scope of support for LDAP authentication is shown below.

Item	Scope of support
LDAP server type	Active Directory as provided in the OSs below is supported. 1 - Windows Server 2008 - Windows Server 2008 R2 - Windows Server 2012 - Windows Server 2012 R2 - Windows Server 2016

Item	Scope of support
Number of LDAP servers	Maximum of three LDAP servers (LDAP servers will be accessed in the order of LDAP server 1, LDAP server 2, and LDAP server 3. Authentication will be performed by using the server that responds earlier than the other servers.)
User name and password to be registered on the LDAP server	The following are the requirements for user names and passwords to be used for LPAR manager authentication: - The user name must be 1 to 31 characters, and can contain alphanumeric characters, periods (.), hyphens (-), and underscores (_). The user name must begin with a letter. - The password must be 1 to 31 characters, and can contain alphanumeric characters and symbols other than spaces. If there are any conditions on user names and passwords that are specific to the LDAP server, and confirm to specific those.
LDAP protocol	LDAPv3
TLS communication method	StartTLS
Binding to an LDAP server	Anonymous binding or simple authentication via TLS
Notes: To use LDAP authentication in LPAR manager, uidNumber must be set for each Active Directory user. However, in LPAR manager firmware version 02-45 or later, uidNumber does not need to be set.	

For information on how to set up Active Directory, see the *Hitachi Compute Blade 500 Series Management Module Setup Guide*.

When referring to this document, note the following:

- Substitute any instances of "management module" in the text with the phrase "LPAR manager" when reading this document.
- To be in accordance with the user name and password specification of the LPAR manager and the LDAP server.
- Note that LPAR manager does not use any groups that can log in to management modules.

LDAP authentication settings

To set LDAP authentication, perform the following operations:

Table 3-28 Web console

Item	Operation
Edit LDAP settings	Resources > Modules > All Modules > Server Blades > Server Blades x > LPAR > Edit > Edit LDAP settings

Table 3-29 HVM management command (HvmSh)

Item	Command name
LDAP configuration settings	opr LdapConfig
	opr LdapPasswd
Security settings on the destination for encrypted communication	opr HvmIfSecureLevel
Settings on whether to validate the certificate when encrypted communication is performed	opr HvmIfSecureVerify
Registration of the certificate of the communication destination or the certificate of the certificate authority	opr HvmClientCertificateRegist

RADIUS authentication

LPAR manager supports RADIUS authentication and local authentication.

This section explains the RADIUS authentication as supported by LPAR manager.

Scope of support

The scope of support for RADIUS authentication is shown below.

Item	Scope of support
RADIUS server type	FreeRADIUS and the following Network Policy Servers are supported: - Windows Server 2008 - Windows Server 2008 R2 - Windows Server 2012 - Windows Server 2012 R2 - Windows Server 2016
Number of RADIUS servers	Maximum of three LDAP servers (LDAP servers will be accessed in the order of LDAP server 1, LDAP server 2, and LDAP server 3. Authentication will be performed by using the server that responds earlier than the other servers.)
User name and password to be registered on the RADIUS server	The following are the requirements for user names and passwords to be used for LPAR manager authentication: - The user name must be 1 to 31 characters, and can contain alphanumeric characters, periods (.), hyphens (-), and underscores (_). The user name must begin with a letter. - The password must be 1 to 31 characters, and can contain alphanumeric characters and symbols other than spaces.

Item	Scope of support
	If there are any conditions on user names and passwords that are specific to the RADIUS server, and confirm to specific those.
Shared secret	The encryption key to be used to connect to the RADIUS server is as follows: The encryption key must consist of between 1 to 64 characters (inclusive), and can contain alphanumeric characters and symbols other than spaces.
Authentication methods	The following authentication methods are supported: - PAP - CHAP - MS-CHAPv2

If you want to use RADIUS authentication, you must register LPAR manager as a RADIUS client.

For details on how to register a RADIUS client, refer to the documentation for the RADIUS server.

RADIUS authentication settings

To set RADIUS authentication, perform the following operations:

Table 3-30 Web console

Item	Operation
Edit RADIUS settings	Resources > Modules > All Modules > Server Blades > Server Blades x > LPAR > Edit > Edit RADIUS settings
RADIUS connectivity verification	Resources > Modules > All Modules > Server Blades > Server Blades x > LPAR > Edit > RADIUS connectivity verification

Table 3-31 HVM management command (HvmSh)

Item	Operation
RADIUS configuration settings	opr RadiusConfig
RADIUS connectivity verification	opr RadiusConnectivityVerify



Note:

- After finishing the RADIUS configuration, you must use "RADIUS connectivity verification" to verify the connection to the RADIUS server.

User authentication logs

LPAR manager records logs of connections made by users. A maximum of 9,000 logs are kept.



Note:

- User authentication log is cleared when LPAR manager restarts or shuts down. Collect the necessary authentication log data before shutting down LPAR manager.

To collect a user authentication log, perform the following operations:

Table 3-32 Web console

Item	Operation
Show authentication log	Resources tab > Modules > All Modules > Server Blades > Server Blades x > LPAR manager tab > Edit button > Show authentication log

Table 3-33 HVM management command (HvmSh)

Item	Command name
Collecting user authentication log	get HvmAuthenticationLogs

Audit log

The audit log is a history of operations, which is collected to detect and investigate illegal activities and can be used to prove that no illegal activities have been performed. The audit log is transferred to an external Syslog server.

Scope of support

The scope of support for the auditing log is as follows.

Table 3-34 Scope of support

Item	Scope of support
Syslog server type	Syslog servers that support the RFC5424 format
Number of syslog servers	Maximum of two syslog servers (The same auditing log will be sent to all registered syslog servers.)
Communication protocol	• UDP • TLS v1.0-v1.2
Collection target	Select Authentication or Authentication and modification .

Item	Scope of support
	- Authentication (LPAR manager firmware version 02-40 or later) Logs for user authentication will be collected. - Authentication and modification (LPAR manager firmware version 02-55 or later) In addition to the logs for user authentication, the logs for user operations to change the settings or status of LPAR manager or of an LPAR will be collected.

Audit log settings

To set the audit log, perform the following operations:

Table 3-35 Web console

Item	Operation
Audit log settings	Resources tab > Modules > All Modules > Server Blades > Server Blades x > LPAR manager tab > Edit button > Edit syslog transfer settings

Table 3-36 HVM management command (HvmSh)

Item	Command name
Audit log configuration settings	opr AuditLogConfig
Registering a certificate for an LPAR manager client or a certificate authority	opr HvmClientCertificateRegist

Audit log format

The format of the audit log is explained below.

Table 3-37 Audit log format

Item	Description
Priority	Depending on the severity of the audited event, this is displayed in the following format: <value> <13>: Displays facility=user, severity=notice. <14>: Displays facility=user, severity=info. When an operation fails, <13> is output. In all other cases, <14> is output.
Syslog version	"1" is output.

Item	Description
Date and time	This indicates the date and time when the processing request is received. The date and time are output in the following format: YYYY-MM-DDThh:mm:ss.STZD.
Host information	The IP address of the LPAR manager is output. ¹
Application information	"LP" is output.
Process ID	"-" is output.
Message ID	The audited event ID defined by LPAR manager is output. ²
Structure data part	"-" is output.
Message	See the table below.

The items are delimited by spaces.

Table 3-38 Message format

Item	Description
Unified identifier	"CELFSS" is output.
Unified specification revision number	"2.0" is output.
Serial number of the message	A value between 1 and 9999999999 is output. If LPAR manager was shut down or restarted, the value becomes to 1.
Message ID	The auditing log ID defined by LPAR manager is output. ²
Date and time	This indicates the date and time when the processing request is received. The date and time are output in the following format: YYYY-MM-DDThh:mm:ss.STZD
Component name or process name	"LP" is output.
Host name	The IP address of the LPAR manager is output. ¹
Type of the audited event	The event category such as information-browsing or setting modification is output. • <code>Authentication</code>: User authentication • <code>StartStop</code>: Starting, restarting, and stopping LPAR manager or LPARs • <code>ConfigurationAccess</code>: Configuration changes to LPAR manager or LPARs (including configuration changes made along with status changes) • <code>Maintenance</code>: Operations other than the above
Result of the audited event	One of the following values is output.

Item	Description
	• Success: The operation finished successfully. • Failed: The operation failed.
Result subject identification information of the audited event	The LPAR manager account name is output in the format of <code>uid=xxx</code>.³ Nothing is output when an attempt to login fails or when operations are performed on LPAR manager by using BSM or HVM Navigator or HvmSh while the user authentication status is invalid. When performing operations on LPAR manager by using the Web console, HCSM, or LPAR manager screen, <code>uid=ManagementModuleUser</code> is output.
Model name or product number of the hardware	The serial number of the primary blade is output.
Identification information for the hardware component	The chassis type is output.
Location identification information	The installation location of the primary blade is output.
Fully qualified domain name	This is not output.
Redundancy identification information	This is not output.
Agent information	This is not output.
Host that sends the request	• If the collection target is Authentication, no information is output. • If the collection target is Authentication and modification, the IP address of the management module or management server from which operations were performed will be output in the format <code>from=xxx</code>.
Port number from which the request is sent	This is not output.
Name of the host to which the request is sent	This is not output.
Port number to which the request is sent	This is not output.
Batch operation identifier	This is not output.
Log type information	This is not output.
Application identification information	• If the collection target is Authentication, no information is output. • If the collection target is Authentication and modification, the session number of the session to which the user is logged in will be output in the format <code>session=xxx</code>. (This information is output for users who successfully logged in.)

Item	Description
Message text	Detailed information about the audited event is output. ²⁴

- 1
Outputs the IPv4 address. If LPAR manager has not been assigned an IPv4 address, a static IPv6 address will be output.
- 2
This varies depending on events. For details, see [Audit log messages on page 9-56](#).
- 3
If the LPAR manager account name consists of 32 characters or more, a maximum of 31 characters are displayed. If any prohibited character is used for the LPAR manager account name, the character is replaced by an asterisk (*).
- 4
The message text is enclosed by double quotation marks (").
If the message text exceeds 255 characters, the text after the 250th letter will be omitted and replaced with the following characters in the given order: a space, three periods (.), and a double quotation mark (").

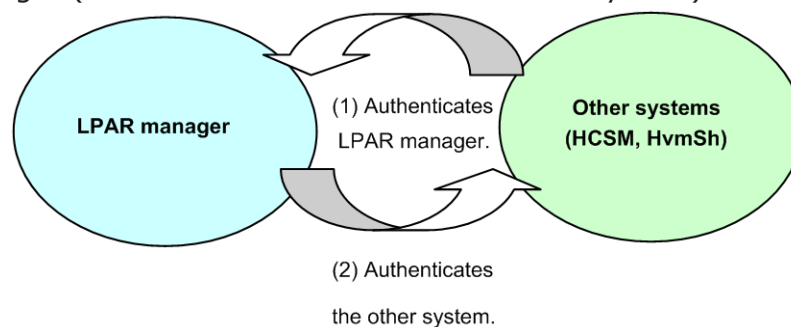
LPAR manager Security

You can improve LPAR manager security using TLS (Transport Layer Security) and certificates. Certificates play the following two roles.

- Authenticating certificate ownership
- Encrypting communication

Certificates in LPAR manager

LPAR manager can create and use a server certificate to certify its identity and authenticate other systems using the certificate of a system connected to LPAR manager (hereinafter referred to as the other system).



LPAR manager certificates

When the other system tries to connect to LPAR manager over TLS, the LPAR manager certificate is sent to the other system. The other system can authenticate the LPAR manager by verifying the server certificate.

- LPAR manager server certificates
LPAR manager can use self signed certificates or certificates signed by a certificate authority (CA) as the LPAR manager server certificate. When the other system authenticates LPAR manager by verifying the LPAR manager server certificate, register the server certificate to the other system. For registration, see the other system's user's guide. It may take about 30 seconds before a registered certificate is enabled, while connection to LPAR manager may be unavailable for that period.
- Systems for LPAR manager server certificates
The following systems can use LPAR manager server certificates.
 - HCSM (Hitachi Compute Systems Manager)
 - HvmSh
- Server certificate parameters The following table describes parameters of LPAR manager server certificates.

Table 3-39 Parameters of LPAR manager server certificates

Item	Description
Public key algorithm, bit- length	RSA (2048 bits)
Signature algorithm	SHA-2, etc. ⁷
Importable certificate format	PEM/DER
Certificate format in downloading	DER
Executable CSR format	PEM/DER
Subject information usable in a certificate and CSR	Common name (CN): Up to 60 characters ^{1, 2}
	Country (C): Up to 2 characters ³
	State or province (ST): Up to 60 characters ⁴
	Locality (L): Up to 60 characters ⁴
	Organization name: Up to 60 characters ⁴
	Organization unit (OU): Up to 60 characters ⁴
	Mail address: Up to 60 characters ⁵
	DN qualifier: Up to 60 characters ⁴
	Surname: Up to 60 characters ⁴
	Given name: Up to 60 characters ⁴

Item	Description
	Initials: Up to 30 characters ⁴
	Unstructured name: Up to 60 characters ^{4, 6}
	Challenge password: Up to 30 characters ^{4, 6}
Notes: 1. Required item 2. Alphanumeric characters, hyphens (-), and periods (.) can be used for this item. 3. Uppercase alphabetic characters can be used. 4. Alphanumeric characters, hyphens (-), periods (.), pluses (+), single quotations ('), commas (,), left parentheses ((), right parentheses ()), slashes (/), colons (:), equals (=), question marks (?), and spaces can be used for this item. 5. Printable ASCII characters can be used. 6. This can be filled in when CSR is created. 7. You can check the signature algorithm by using the <code>get HvmServerCertificate</code> command of the HvmSh command.	

- Creating LPAR manager server certificate

To create self signed certificate:

A self-signed certificate is automatically created when LPAR manager starts for the first time. You can re-create it by performing the following operations:

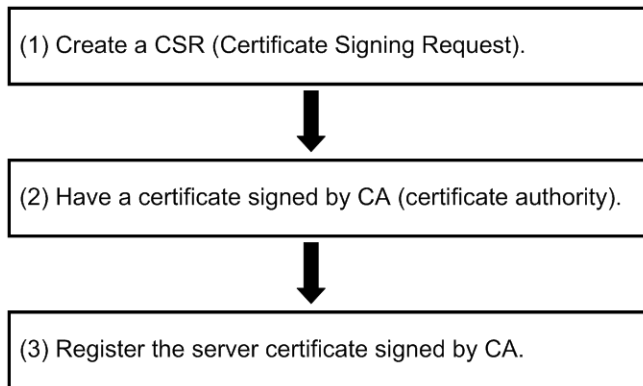
Table 3-40 HVM management command (HvmSh)

Item	Command name
Creating a self-signed certificate ¹	<code>opr HvmServerCertificate</code>
Obtaining a self-signed certificate	<code>get HvmServerCertificate</code>
Notes: 1. After creating a self-signed certificate, save the LPAR manager configuration information by executing the <code>opr HvmSecureCmmConfigSave</code> command or the <code>opr SaveConfig</code> command.	

The common name (CN) field in the CSR must uniquely identify the instance of LPAR manager.

To create certificate signed by CA:

The following flow-chart shows the process of registering through using a certificate signed by CA.



(1) Create a CSR (Certificate Signing Request).

You can create a CSR by performing the following operations:

Table 3-41 Web console

Item	Operation
Creating a CSR	Resources > Modules > All Modules > Server Blades > Server Blades x > LPAR Manager tab > Edit button > Certificate settings > Create CSR

Table 3-42 HVM management command (HvmSh)

Item	Command name
Creating a CSR ¹	opr HvmCSR
Notes: 1. After creating the CSR, save the LPAR manager configuration information by executing the <code>opr HvmSecureCmmConfigSave</code> command or the <code>opr SaveConfig</code> command.	

The common name (CN) field in the CSR must uniquely identify the instance of LPAR manager. When a CSR is created, a private key that corresponds to the CSR is also created in LPAR manager. You cannot create another instance of this private key.

The private key and server certificate that were just created are not used until you register the signed server certificate in (3). Until you register the certificate, the previous private key and server certificate remain in effect.

(2) Have a certificate signed by CA (certificate authority).

Send the created CSR to the CA to obtain the signed certificate.

(3) Register the server certificate signed by CA.

You can register a signed server certificate by performing the following operations:

Table 3-43 Web console

Item	Operation
Importing the LP certificate	Resources > Modules > All Modules > Server Blades > Server Blades x > LPAR Manager tab > Edit button > Certificate settings > Import LP certificate

Table 3-44 HVM management command (HvmSh)

Item	Command name
Importing the LP certificate ¹	opr HvmCACertificateRegist
Notes:	
1. After registering the signed server certificate, save the LPAR manager configuration information by executing the <code>opr HvmSecureCmmConfigSave</code> command or the <code>opr SaveConfig</code> command.	

You can register the signed server certificate only on the LPAR manager where the CSR is created.

Authentication of the other system

When LPAR manager tries to connect to the other system using TLS, it can authenticate the other system by verifying the other system's certificate. For authentication, register a certificate of the other system or a certificate of CA that has signed the certificate of the other system in the LPAR manager, and enable the certificate verification.

The other system can be authenticated by the following operations:

Table 3-45 Web console

Item	Operation
Importing the certificate	Resources > Modules > All Modules > Server Blades > Server Blades x > LPAR Manager tab > Edit button > Certificate settings > Import certificate

Table 3-46 HVM management command (HvmSh)

Item	Command name
Importing the certificate ¹	opr HvmClientCertificateRegist
Configuring certificate verification	opr HvmIfSecureVerify
Configuring syslog server certificate verification	opr AuditLogConfig
Notes:	

Item	Command name
1.	After registering the certificate, save the LPAR manager configuration information by executing the <code>opr HvmSecureCmmConfigSave</code> command or the <code>opr SaveConfig</code> command.

- System available for LPAR manager authentication The following system can be authenticated by LPAR manager.
 - HCSM (alert)
 - LDAP servers (LDAP authentication), see [User Authentication on page 3-18](#).
 - syslog servers (audit logs), see [Audit log on page 3-28](#).

Security for functions and tools that use a management network

This section describes security for functions and tools that use a management network.

The main functions and tools that use a management network are as follows:

- HCSM
- SC/BSM
- HVM Navigator
- Virtual COM Console
- Logical VGA Snapshot
- HvmSh
- LDAP authentication
- RADIUS authentication
- Audit log

Security strength

You can configure and implement user settings to enhance security. The results are:

- Communication in plaintext is not allowed.
- In encrypted communication, only high security algorithm can be used.

Effect of security strength on functions and tools that use a management network

For LPAR manager, you can change the security strength for the functions and tools that use a management network that are shown in the following table. When the security strength is changed, the protocols and encryption methods in the following table are used. For the setting, see Encryption algorithm supported by LPAR manager.

The following table describes the protocols that can be used with LPAR manager.

Table 3-47 Security strength, and functions and tools that use a management network

Target	Specifiable options	Usable protocols	
		plaintext	encryption
HCSM (LPAR migration)	Default	TCP	TLS v1.0-v1.2
	High	-	TLS v1.2
HCSM (Alert transmission)	Default	-	SSL v3.0 ¹ , TLS v1.0-v1.2
	High	-	TLS v1.2
SC/BSM	Default	-	-
	High	TCP	-
HVM Navigator	Default	TCP	-
	High	-	TLS v1.2
Virtual COM Console	Telnet	Telnet	-
	SSH	-	SSH v2
Logical VGA Snapshot	Default	-	-
	High	-	SSL v3.0 ¹ , TLS v1.0-v1.2
HvmSh	Default	UDP, TCP	TLS v1.0-v1.2
	High	-	TLS v1.2
LDAP authentication	TLS1.0 ²	-	TLS v1.0-v1.2
	TLS1.2	-	TLS v1.2
RADIUS authentication	-	UDP	-
Audit logs	UDP	UDP	-
	TLS1.0 ²	-	TLS v1.0-v1.2
	TLS1.2	-	TLS v1.2
Management module communication	-	3	

Legend:

-: Communication is not available.

Notes:

- LPAR manager firmware versions 02-2X or later do not allow using SSL v3.0. For the firmware of those versions, select TLS v1.0 or later in HCSM or web browser optional setting.
- To select item the **TLS v1.0 v1.1 and v1.2** for the Web console.
- If the firmware version of the management module is A0205, encryption uses TLS v1.2 (equivalent to the High setting) or AES-128.

Target	Specifiable options	Usable protocols	
		plaintext	encryption
If you update the firmware version of the management module to A0205 or later while the LPAR manager is running, transmissions will continue to use plain text. Transmissions will be encrypted beginning from the next time that the LPAR manager is started.			



Note:

- To use HVM Navigator via a plain-text connection, set "Default" for the HCSM and HvmSh instances of the functions and tools that use a management network.
- If "High" is set for the HCSM or HvmSh instances of the functions or tools that use a management network, configure HVM Navigator so that it uses TLS.

Changing security strength

You can set the security strength by using HvmSh. For details about the command, see the *HVM Management Command (HvmSh) operation Guide*.

You can also use the Web console to make this setting. For details, see the *Hitachi Compute Blade 500 Series Web Console User's Guide*.

It may take about 30 seconds before the new security value is enabled, while connection to LPAR manager may be unavailable for that period.

Encryption algorithm supported by LPAR manager

The following table shows encryption algorithm supported by LPAR manager.

Table 3-48 SSL/TLS

Cipher suites	Security strength	
	Default	High
TLS_RSA_WITH_AES_128_CBC_SHA	Y	-
TLS_RSA_WITH_AES_128_CBC_SHA256	Y	Y
TLS_RSA_WITH_AES_256_CBC_SHA256	Y	Y
TLS_DHE_DSS_WITH_3DES_EDE_CBC_SHA	Y	-
TLS_RSA_WITH_3DES_EDE_CBC_SHA	Y	-
TLS_DHE_DSS_AES_128_CBC_SHA1	Y ¹	-
TLS_DHE_DSS_AES_256_CBC_SHA1	Y ¹	-
TLS_DHE_DSS_AES_128_CBC_SHA256	Y ¹	-
TLS_DHE_DSS_AES_256_CBC_SHA256	Y ¹	-
TLS_RSA_AES_256_CBC_SHA1	Y ¹	-

Server certificate (Public-key algorithm)	Security strength	
	Default	High
Verify RSA2048	Y	Y
Create RSA2048	Y	Y

Server certificate (Public-key algorithm)	Security strength	
	Default	High
Verify SHA256	Y	Y
Create SHA256	Y	Y
Legend: Y: Supported -: Not supported Notes: 1. This is used for communication with the syslog server only when TLS 1.0 or TLS 1.2 is specified for the protocol of the auditing log.		

Table 3-49 SSH v2

Item	Security strength
Encryption	3des-cbc
	aes128-cbc
	aes192-cbc
	aes256-cbc
	aes128-ctr
	aes192-ctr
	aes256-ctr
Message authentication	hmac-sha1
	hmac-sha1-96
	hmac-sha2-256
	hmac-sha2-512
Key exchange	diffie-hellman-group14-sha1
	diffie-hellman-group-exchange-sha1
	diffie-hellman-group-exchange-sha256
Host key	RSA 2048

Maintenance Functions

This chapter explains Maintenance Functions

- ☐ [Guest Memory Dump Collection Command](#)
- ☐ [LPAR manager Dump Collection Command](#)
- ☐ [Backup Functions](#)
- ☐ [LPAR manager Firmware Upgrade / Update](#)
- ☐ [LPAR Migration](#)
- ☐ [Safe mode](#)

Guest Memory Dump Collection Command

Outline of Guest Memory Dump Collection Command

The guest memory dump function collects memory data (memory dump) allocated to the specified guest (LPAR) on the LPAR manager side by executing the HVM management command (HvmSh) on the LPAR manager management server, and transfers the collected data to the external FTP server to save it as a file.

This function allows memory dump even if a logical server error occurs, such as when OS dump data cannot be collected by the guest OS, and therefore can be used for analyzing logical server errors.

The figure below shows a schematic diagram of the guest memory dump function.

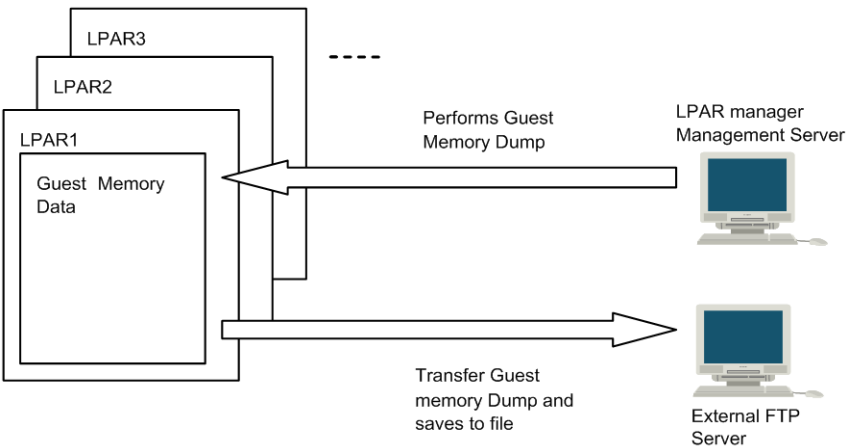


Figure 4-1 Memory Dump of Guest OS

Specifications of Guest Memory Dump

The following table lists support items provided by the guest memory dump function.

Table 4-1 Functions of Guest Memory Dump

Item	Description
Dump target guest	LPAR's memory dump is enabled regardless of the type of guest OS. (Only when the guest OS is Linux)
Dump memory area (collecting memory range)	Collecting memory areas which are used by OS are three areas below. (Memory range in LPAR cannot be specified) DOS region : 00_0000_0000 to 00_0009_FFFF Low Memory : 00_0010_0000 to 00_7FFF_FFFF High Memory : 01_0000_0000 to [MMCFG] - 1 (Note) Memory ranges above are same as Niko2Dump of Basic Mode.

Item		Description
User operation means		The guest memory dump collection command as an HVM management command is executed on the LPAR manager management server.
Dump output server		External FTP server specified by the guest memory dump collection command (The server that executes the guest memory dump collection command is also available.)
Dump data transfer method		Memory dump data are transferred from the LPAR manager machine to the external FTP server through the management LAN. Dump data file is created by the LPAR manager machine, and the file is transferred to the external FTP server using the FTP protocol.
Dump data format		The dump data format conforms to the Niko2Dump format.
Dump output file format		Binary format file of dump data based on the dump data format above
Dump output filename		gmdP#L#-YYMMDD-hhmmss-nnn.dat (Note) P#: Partition number: P0 to P9 L#: LPAR number: L01 to L16 YYMMDD: Collection date (in the order of year (2 digits), month (2 digits), and day (2 digits)) hhmmss: Collection time (24-hour notation in the order of hour (2 digits), minute (2 digits), and second (2 digits)) nnn: Serial number for file division with the unspecified number of digits (When two digits or less, '0' is not attached at the high-order digits.) The LPAR manager's system time is used for collection date and time.
Input information by User		Enter the following information when executing the guest memory dump start command. - LP IP Address - Number of LPAR from which guest memory dump data is collected - IP address of the external FTP server - User ID of the external FTP server - Password of the external FTP server - Dump output file directory path of the external FTP server (specified directory path under FTP) Note: If the user ID or password contains a symbol, the memory dump collection may fail.
Command Functions	Start operation	Starts memory dump. To prevent memory data from being rewritten during memory dump, all logical Processors of the target LPAR stop automatically upon the start of memory dump, and remain inactive even after the memory dump is completed.
	Stop operation	Stops memory dump.

Item		Description
		All the logical Processors that were stopped by the start operation do not restart automatically, and still remain inactive.
	Progress indication	The following contents of memory dump progress are displayed on the screen. - Total volume, transferred data volume, and transfer percentage (transferred data volume / total volume × 100 (%))
Maximum concurrent collection		One LPAR / LPAR manager machine (Another dump data collection request to the same LPAR manager machine cannot be accepted during memory dump even to another LPAR of the same LPAR manager machine)
Condition for data collection		Memory dump data can be collected only when the target LPAR is activated.
Guest software operation		The guest memory dump function works as follows in relation to the guest software program: - Memory dump data can be collected regardless of the operation of the guest software program (even when it can no longer operate due to an error during operation).

How to Use the Guest Memory Dump Function

For the basic usage of HVM management commands that are essential when using the guest memory dump function, see the *HVM Management Command (HvmSh) operation Guide*.

For how to use commands related to the guest memory dump function in HVM management commands, see the *HVM Management Command (HvmSh) operation Guide*.

Notes for using Guest Memory Dump

Follow notes described below when using the guest memory dump function.

- After guest memory dump is started, all logical Processors of the target LPAR stop and logical server processing is not restarted. For this reason, use this function only when logical server processing can no longer be continued (such as when a logical server error has occurred).
- If you start using the LPAR after collecting a guest memory dump, reactivate or deactivate the LPAR, activate the LPAR, and then restart the guest OS.
- Therefore, if guest memory dump is started in the target LPAR during job processing, all the logical Processors of the target LPAR stop and the ongoing job stops accordingly. This is equivalent to a breakdown of the target LPAR that will occur when guest memory dump of the LPAR is started during job processing. For this reason, do not perform guest memory dump to a working LPAR.

- If "Deactivate" operation, "Reactivate" operation or logical server movement operation is performed to the target LPAR during guest memory dump, the operation takes precedence and the guest memory data is not retained. Therefore, guest memory dump can no longer be continued and the guest memory dump is cancelled. When guest memory dump is in progress, do not perform "Deactivate" operation, "Reactivate" operation or logical server movement operation to the target LPAR.
- LPARs other than the target LPAR continue to work after guest memory dump is started, but those that use the LPAR manager management NIC as shared NIC may be affected as its network performance degrades.
- If Force Recovery is performed on the System Service State screen of the LPAR manager screen during guest memory dump, the memory dump operation is cancelled.
- If Update System Config is performed with the **F10** key on the System Configuration screen of the LPAR manager screen during guest memory dump, the memory dump operation is cancelled.
- If the processing to automatically stop all logical Processors of the target LPAR fails at the beginning of guest memory dump, the memory dump operation is cancelled and the target LPAR is deactivated forcibly. If this deactivation fails, the target LPAR is blocked. When this state occurs, contact the maintenance personnel.
- If an unrecoverable error occurs during guest memory dump in the LPAR manager machine that performs guest memory dump, the memory dump operation is cancelled. When this state occurs, contact the maintenance personnel.
- If an LPAR manager Assist error occurs during guest memory dump, the memory dump operation may be cancelled. When this state occurs, contact the maintenance personnel.
- If a communication error occurs in the network between LPAR manager machine and external FTP server during guest memory dump, the memory dump operation is cancelled. When this state occurs, check the network configuration between LPAR manager machine and external FTP server. If the problem is still not solved, check whether the FTP software program of the external FTP server is running correctly. If the problem still remains, contact the reseller from which you purchased this equipment or consult maintenance personnel.
- When guest memory dump processing and guest OS dump processing by the Dump operation on the Front Panel screen are performed simultaneously to one LPAR, all the logical Processors of the LPAR stop due to guest memory dump and the guest OS processing stops accordingly. Therefore, the guest OS dump operation on the Front Panel screen is disabled, but the guest memory dump is enabled. Remove this precaution with the following operational procedure:
 - When you find an abnormal operation of the guest OS and dump the guest memory data, perform guest OS dump first by the Dump operation on the Front Panel screen.
 - If this guest OS dump operation fails, perform the guest memory dump using the guest memory dump function.

- The transfer data to an FTP server is supported only an IP address in IPv4 format.

LPAR manager Dump Collection Command

Outline of LPAR manager Dump Collection Command

LPAR manager dump is collected by executing an LPAR manager dump collection command which is included in HVM management commands (HvmSh). When the LPAR manager dump collection command is executed on the LPAR manager management server, the LPAR manager performs LPAR manager dump and transfers the collected dump data to the external FTP server specified in the LPAR manager dump collection command to save it as a file. The figure below shows a schematic diagram when the LPAR manager dump collection command is executed.

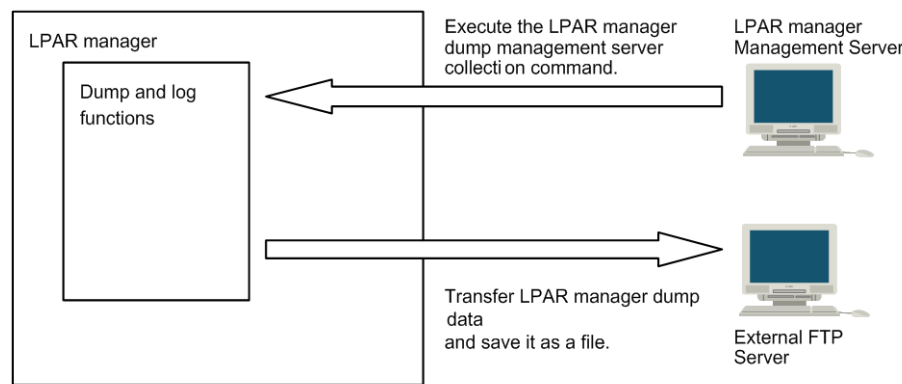


Figure 4-2 Memory Dump of LPAR manager

Table 4-2 Functions of LPAR manager Memory Dump

Item	Function
Dump collection target	LPAR manager
Dump volume	Up to 16 MB (The Gzip-compressed data size of two blocks of dump)
User operation method	Executes LPAR manager dump collection command on the LPAR manager management server.
Dump output server	External FTP server specified by the LPAR manager dump collection command (The server that executes the LPAR manager dump collection command is also available.)
Dump data transfer method	Memory dump data is transferred from the LPAR manager machine to the external FTP server through the management LAN. The LPAR manager dump data are compressed and a GZIP file is created by the LPAR manager machine, and the file is transferred to the external FTP server using the FTP protocol.

Item	Function
Dump data format	Same as the existing LPAR manager dump format
Dump output file format	GZIP format. Two files (two blocks of dump data) with the existing dump header (128 bytes) attached to the head of the GZIP-compressed data are output.
Dump output file name	First-block dump file: hvmdump-yyyymmdd-hhmmss-01 Second-block dump file: hvmdump-yyyymmdd-hhmmss-02 (Note) yyyymmdd: Collection date (in the order of year (4 digits), month (2 digits), and day (2 digits)) hhmmss: Collection time (in the order of hour (2 digits), minute (2 digits), and second (2 digits)) Collection date and time are the same for the first and second blocks.
User input information	Enter the following information when executing the LPAR manager dump collection command. - LP IP Address - IP address of the external FTP server - User ID of the external FTP server - Password of the external FTP server - Dump output file directory path of the external FTP server (specified directory path under FTP) Note: If the user ID or password contains a symbol, the memory dump collection may fail.
Maximum concurrent collection	1 (Another dump data collection request to the same LPAR manager machine cannot be accepted during memory dump operation.)
Condition for data collection	Except for the notes described later, LPAR manager dump is always enabled.

How to Use the LPAR manager Dump Collection Command

For the basic usage of HVM management commands that are essential when using the LPAR manager dump collection command, see the *HVM Management Command (HvmSh) operation Guide*. For how to use the LPAR manager dump collection command, see the *HVM Management Command (HvmSh) operation Guide*.

Notes for using LPAR manager Dump Function

The following describes notes to be considered when using the LPAR manager dump collection command.

- While LPAR manager dump is performed by the LPAR manager dump collection command, any other LP Dump Operation on the LPAR manager screen is disabled.

- While LPAR manager dump is performed by the operation on the LPAR manager screen, LPAR manager dump by the LPAR manager dump collection command is disabled.
- If an unrecoverable error occurs during LPAR manager dump in the LPAR manager machine that performs LPAR manager dump, the LP Dump Operation is cancelled. When this state occurs, contact the reseller from which you purchased this equipment or consult maintenance personnel.
- If a communication error occurs in the network between LPAR manager machine and external FTP server during LPAR manager dump, the LP Dump Operation is cancelled. When this state occurs, check the network configuration between LPAR manager machine and external FTP server. If the problem is still not solved, check whether the FTP software of the external FTP server is running correctly. If the problem still remains, contact the reseller from which you purchased this equipment or consult maintenance personnel.
- The transfer data to an FTP server is supported only an IP address in IPv4 format.

Backup Functions

Rapid recovery of systems (LPAR manager, Guest OS) can be performed by using backup file when the system failure has occurred. Strongly recommend that System Area and Data Area on the Guest OS are regularly taken to the backup file. Also recommend that the latest LPAR manager Configuration Information is taken to backup file whenever the information has been updated.

Available functions of backup are below.

Table 4-3 Backup Method for Guest OS / LPAR manager

Backup Target	Backup Software	
Guest OS	System Area	SC/DPM
	Data Area	VERITAS Netbackup BrightStor ARCserve Backup
LPAR manager	Configuration Information	management module Web Console LPAR manager Menu of SC/BSM

Backup of System Area

Outline

Backup Software for Guest OS is the SC/DPM which supports Windows and Linux.

The SC/DPM takes a backup of the System Area on Guest OS that is exported to image file. Guest OS can be rapidly recovered by restoring image file to the System Area even if the Area was destroyed.

The SC/DPM transfers image file in Storage to the management server.

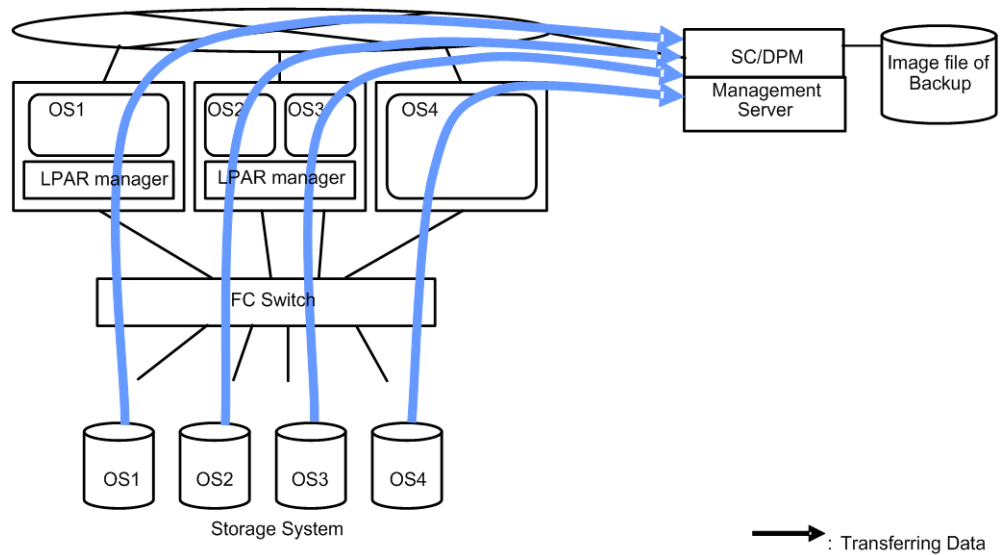


Figure 4-3 Backup of System Area

Network connection between LPAR manager and Management Server

The LPAR manager has to be configured as follows.

- Register Mac Address of NIC which is used for communication to Management Server.
- Register Basic Option Configuration (Select Boot Device and Boot Device List) of HBA EFI Driver.

Those Configurations above can be registered on the Boot Option Configuration of Logical EFI.

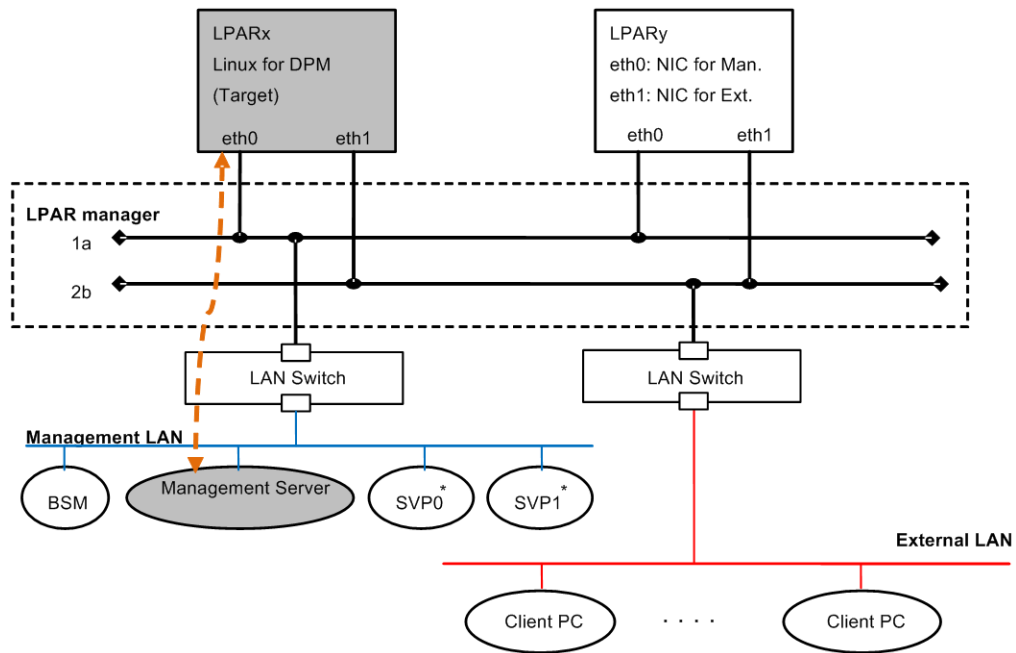
For details about the Basic Configuration, see the *Hitachi Compute Blade 500 Series Server Blade Setup Guide*. Sample of network configuration is shown as follows.

LPARx and LPARy are the same configuration on this sample. Each NIC's configuration is below.

Table 4-4 NIC Ports for Network Connection

Item	Purpose
Shared NIC 1a	Connected to Management LAN
Shared NIC 2b	Connected to External LAN

Backup file in the Management Server loads to Target LPAR by PXE Boot protocol via Management LAN.



*SVP: Management module

Figure 4-4 Network Connection of Management LAN

Backup of Data Area

Backup via Network

Install client software for backup on the Guest OS like as Basic Mode.

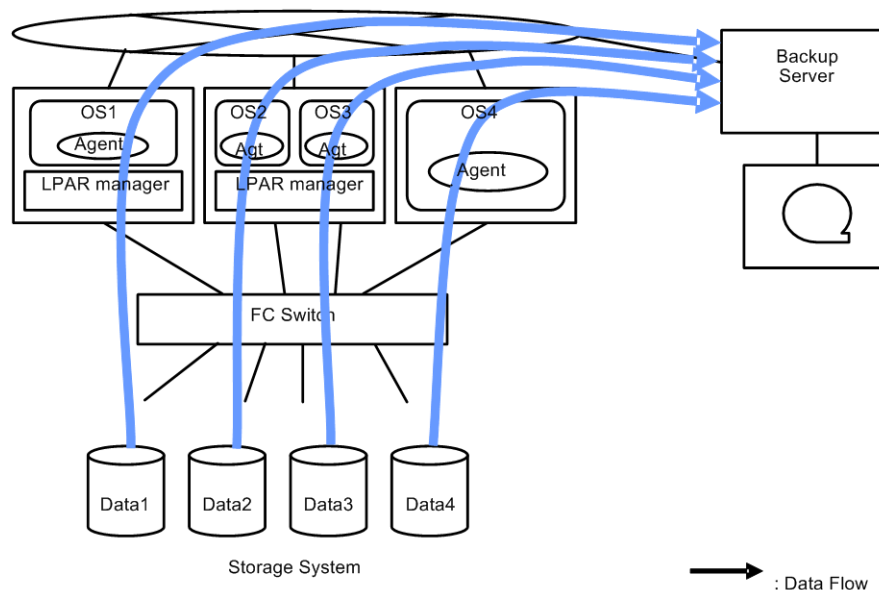


Figure 4-5 Backup of Data

Strongly recommend that Network between LPAR (Server Blades) and Backup Server uses GbE or faster LAN.

Required time for backup might be lengthened when using Virtual NIC function.

Load balancing of physical NICs is required for preventing concentration of network traffic when performing backups of Data Area.

LAN Free Backup

Backup Server which shares Storage System can obtain backup files from the Storage. This configuration like as Basic Mode.

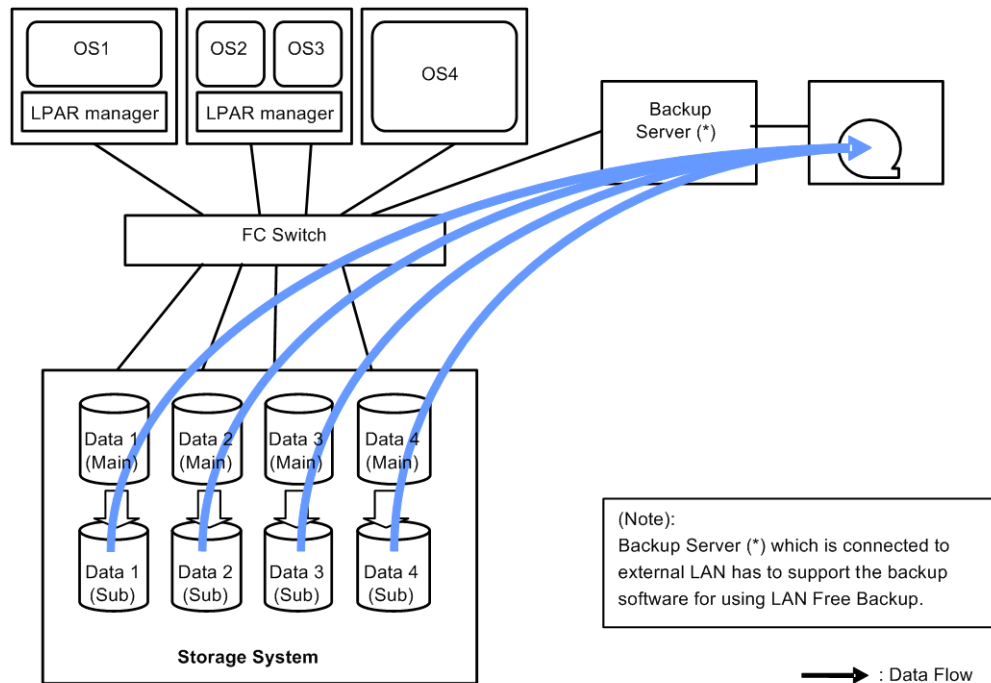


Figure 4-6 LAN Free Backup

Backup of LPAR manager

Configuration information is saved to the Management Module by Save Configuration operation.

To back up LPAR manager configuration regularly is recommend. This enables you to revert back to previous configuration, whenever configuration would be incorrectly changed, saved, or accidentally initialized. There are following two ways to backup the configuration.

Execute "Save/Restore" of Web console supplied by the management module

The configuration information can be backed up and restored for each LPAR manager (or blade).

See the *Hitachi Compute Blade 500 Series Management Module Setup Guide* for operating the Management Module.

Execute "backup/restore" of the SC/BSM's LPAR manager Configuration information.

The configuration information can be backed up and restored for each LPAR manager (or blade).

See the *ServerConductor/BladeServer Manager Series System Administrator's Guide* for operating the SC/BSM.

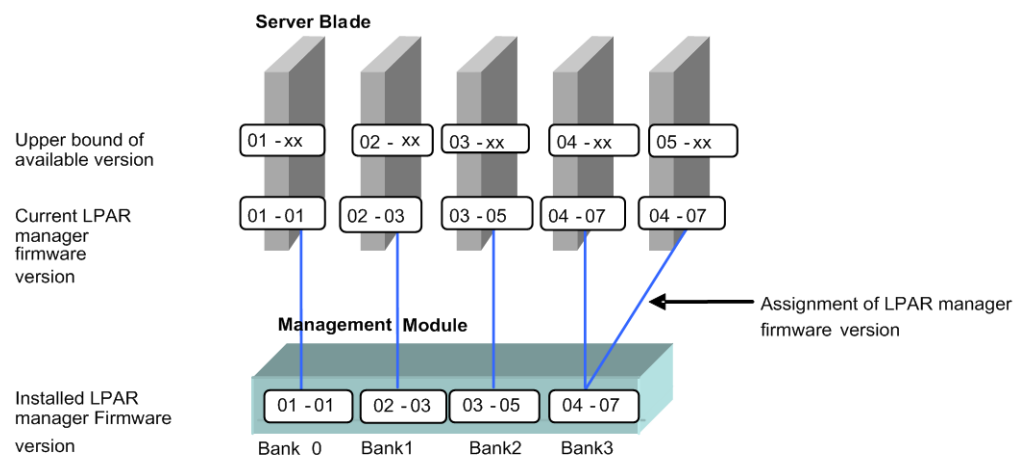
LPAR manager Firmware Upgrade / Update

See the *Hitachi Compute Blade 500 series Management Module Setup Guide* for obtaining LPAR manager firmware and Version Upgrade / Revision Update procedure.

Relation between server blade and LPAR manager firmware

Show the relation between server blade and LPAR manager firmware below.

- LPAR manager firmware can be installed up to 4 banks in the management module.
- It is necessary for each server blade to assign LPAR manager firmware bank in the management module.
- A LPAR manager firmware bank can be assigned to the multiple server blades.
- The LPAR manager firmware of assigned version operates in the server blade.
- Each server blade has the "Upper bound of version" which can be updated.
- LPAR manager firmware within the "Upper bound of version" on the server blade can be assigned.
- LPAR manager firmware version of the server blade which is running cannot change.
- Management module firmware versions lower than A0135: LPAR manager firmware can be installed to the LPAR manager firmware bank which is not assigned to a server blade. Management module firmware versions later than A0145: LPAR manager firmware can be installed to the LPAR manager firmware bank which is not assigned to a server blade, or all LPAR manager firmware banks.

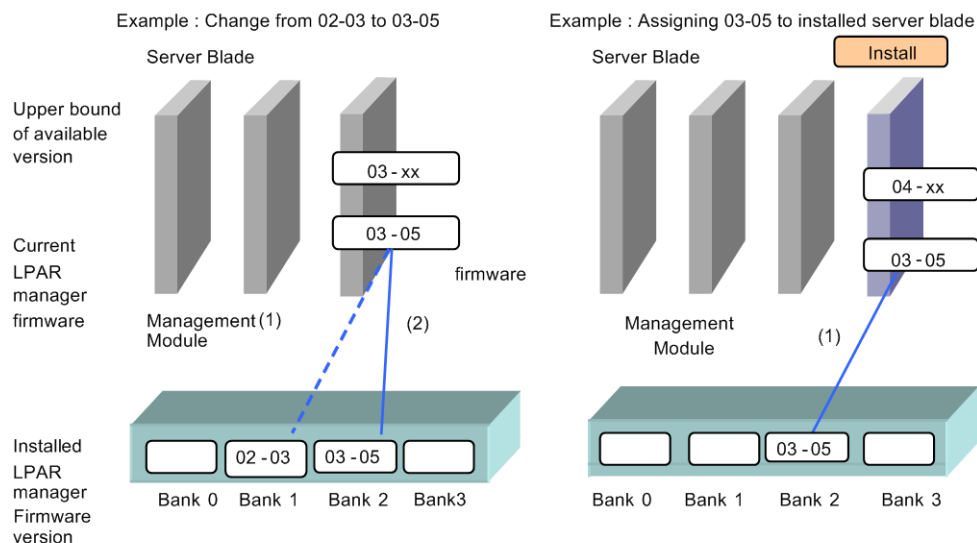


Item	Description	Confirmation method at the Web console	Change method on the Web console
Upper bound of available version	Upper bound of LPAR manager available firmware version on the server blade.	Resources Tab > Systems > LPAR manager license management	It needs to install a version up key. See the <i>Hitachi Compute Blade 500 series Management Module Setup Guide</i> for the LPAR manager firmware Version Upgrade / Revision Update method
Current LPAR manager firmware version	LPAR manager firmware version which is running	Resources Tab > Systems > Firmware management > Server blade Tab	See the <i>Hitachi Compute Blade 500 series Management Module Setup Guide</i> for the LPAR manager firmware assignment method
Assignment of LPAR manager firmware version	The Relation between server blade and LPAR manager firmware bank.	Resources Tab > Systems > Firmware management > Server blade Tab	
Installed LPAR manager Firmware version	LPAR manager firmware version which has been installed to the management module	Resources Tab > Systems > Firmware management > LPAR manager Tab	See the <i>Hitachi Compute Blade 500 series Management Module Setup Guide</i> for the installation method of LPAR manager firmware

Selecting the bank of LPAR manager firmware

It is necessary to assign the LPAR manager firmware when "Changing operational version" or "Installing the new server blade".

Using an existent firmware



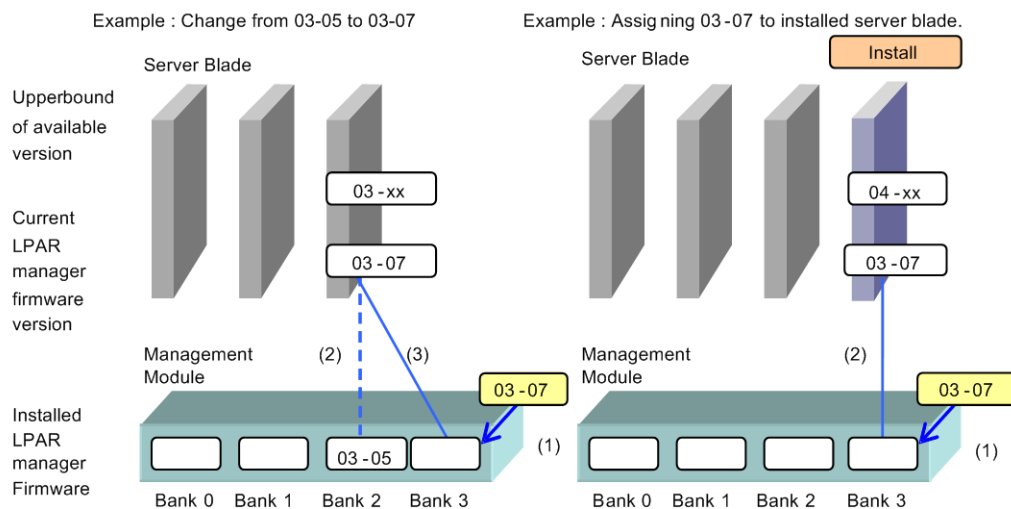
Changing operational version

1. Remove an assignment.
2. Assign an existent firmware (It is unnecessary to install a firmware).

Installing the new server blade

1. Assign a firmware (It is unnecessary to install a firmware).

Installing the new firmware (When an unused bank exists)

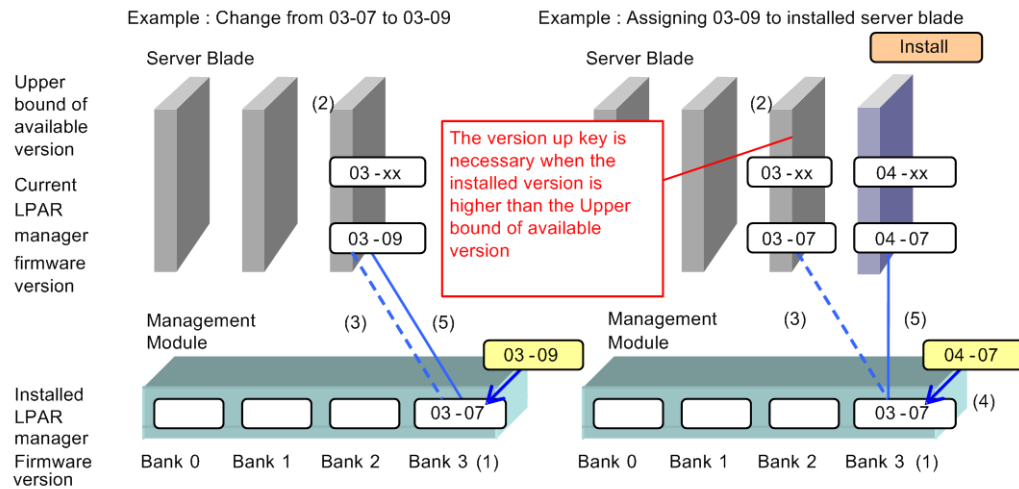


Changing operational version

1. Install the new firmware.
2. Remove an assignment.
3. Assign the new firmware.

1. Install the new firmware.
2. Assign the new firmware.

Installing the new firmware (When an unused bank does not exist)



Changing operational version

1. Select the firmware bank which is rewriting.
2. Shut down LPAR manager.
3. Remove the assignment.
4. Install the new firmware.
5. Assign the new firmware.

Installing the new server blade

1. Select the firmware bank which is rewriting.
2. Shut down LPAR manager.
3. Remove the assignment.
4. Install the new firmware.
5. Assign the new firmware.

LPAR Migration

The LPAR migration functionality migrates an LPAR from the server blade on which it is currently running to another server blade.

For details about system requirements and notes, see the *Hitachi Compute Blade LPAR Migration Guide*.

For details about how to perform LPAR migration, see the *Hitachi Command Suite Compute Systems Manager User Guide* or the *Hitachi Compute Blade HVM Navigator User's Guide - Migration*.

Safe mode

When the LPAR manager fulfills the following conditions, the LPAR manager starts in safe mode that temporarily disables LPAR activation and saving configuration.

When the LPAR manager starts in safe mode, LPAR manager log messages and system logs (SEL) are output. Take measures according to their log messages.

Note that, when the LPAR manager starts in safe mode, the LPAR migration functionality is also disabled.

The conditions under which the LPAR manager starts in safe mode, and the operations that are disabled in safe mode are as follows.

Condition	Operation		Supported version
	LPAR activation	Saving configuration	
The NIC ports in dedicated mode assigned to an LPAR have been changed to shared mode since some of the NIC ports have been specified as LPAR manager management NIC ports.	Disabled	Disabled	02-20 or higher
NIC ports in shared mode assigned to LPARs have been changed to dedicated mode since some NIC ports in dedicated mode not assigned to any LPARs have been specified as LPAR manager management NIC ports and the number of NIC ports in shared mode exceeds the maximum number of NIC ports whose scheduling modes can be set to shared mode.	Disabled	Disabled	02-20 or higher
The KeepConfig option is enabled and the LPAR manager cannot detect the physical processors, memory, or PCI devices that have been recorded in the LPAR manager configuration.	Enabled	Disabled	02-56 or higher

You can display the safe mode status or release the safe mode by the following operations:

Table 4-5 Web Console

Item	Operation
Displaying safe mode status	Resources tab > Modules > All Modules > Server Blades > Server Blades x > LPAR Manager tab
Exing safe mode	Resources tab > Modules > All Modules > Server Blades > Server Blades x > LPAR Manager tab > Exit safe mode

Table 4-6 LPAR manager screen

Item	Operation
Displaying safe mode status	LP Options > System Control > Safe Mode
Exing safe mode	LP Options > System Control > Safe Mode

Table 4-7 HVM management command (HvmSh)

Item	Command name
Displaying safe mode status	get ConfigAll > HVM_CONFIGURATION record in the indication result
Exing safe mode	set HvmOptions

Setup of LPAR manager

This chapter explains setup of LPAR manager by using the LPAR manager screen. Contents on the screens might be changed depend on the version.

- ☐ [Setup Overview](#)
- ☐ [Setup of Terminal Software](#)
- ☐ [Connects LPAR manager Screen](#)
- ☐ [LPAR manager Settings](#)
- ☐ [Creating LPAR](#)
- ☐ [Save Configuration Changed on LPAR manager Screen](#)
- ☐ [Boot the Guest OS](#)
- ☐ [Boot order setting](#)
- ☐ [Display settings for Guest OS](#)
- ☐ [Deactivation of LPAR](#)
- ☐ [Termination of LPAR manager](#)

Setup Overview

You need to configure the following shaded items of list in advance while see the *Hitachi Compute Blade 500 Series Getting Started Guide*, *Hitachi Compute Blade Series Hitachi Compute Rack Series OS Installation Guide for Windows Server*, *Hitachi Compute Blade Series OS Installation Guide for Red Hat Enterprise Linux*, *Hitachi Compute Blade 500 Series Server Blade Setup Guide* and *Hitachi Compute Blade 500 Series Logical partitioning manager User's Guide*.

This section describes setup of LPAR manager after activating LPAR manager.

Table 5-1 Setup items

Item		Target			Console	Reference
		Management module	Switch module	Server blade		
System console configuration	- Network settings - Browser settings - LAN cable connection	Y	-	-	-	<i>Hitachi Compute Blade 500 Series Getting Started Guide</i>
Management module configuration	- Initial setting procedure	Y	-	-	Web console	
Switch module configuration	- Management LAN port configuration - LAN switch module initial configuration	-	Y	-	Web console	
Before installation	- Setting virtual drive - Setting up disk	-	Y	-	Remote console	<i>Hitachi Compute Blade Series Hitachi Compute Rack Series OS Installation Guide for Windows Server</i> <i>Hitachi Compute Blade Series OS Installation Guide for Red Hat Enterprise Linux</i>
Server blade configuration	- IP address settings	-	-	Y	Web console	<i>Hitachi Compute Blade 500 Series Server Blade Setup Guide</i>
Powering on a server blade in LP mode	- Cable connection to the System unit	Y	Y	-	-	

Item		Target			Console	Reference
		Management module	Switch module	Server blade		
	- Connecting the Web console	-	-	Y	Web console	
	- Setting the EFI	-	-	Y	Web console	
	- Selecting the LPAR manager firmware	-	-	Y	Web console	
	- LPAR manager initial settings	-	-	Y	Web console	
	- LPAR manager boot ¹	-	-	Y	Web console	
Setup of LPAR manager	Setup of Terminal Software	-	-	-	-	Hitachi Compute Blade 500 Series Logical partitioning manager User's Guide
	Connects LPAR manager Screen	-	-	-	CLI console	
	LPAR manager Settings	Y	-	-	LPAR manager screen	
Creating LPAR	Creating LPAR	Y	-	-	LPAR manager screen	
	Save Configuration Changed on LPAR manager Screen	Y	-	-	LPAR manager screen	
Boot the Guest OS	Boot the Guest OS	Y	-	-	LPAR manager screen	
	Boot order setting	Y	-	-	LPAR manager screen	
Notes:						
1. For an FCoE boot, specify the following settings before starting the LPAR manager. - Set Personality of the Emulex adapter to FCoE.						

Item	Target			Console	Reference
	Management module	Switch module	Server blade		
- Specify FCoE for the Emulex adapter. For details on how to specify these, see the <i>Hitachi Compute Blade Emulex Adapter User's Guide for Hardware</i> .					



Note:

- When using CB 520X B1 in a 4-blade SMP configuration, disable SAS controller on the EFI setup menu.
- When using the server blades in the following table, change the EFI settings as shown below.
If you do not change the settings, you might not be able to start the LPAR manager.

Table 5-2 Server Blade and EFI settings

Server Blade	IOEU	PCI 64-bit Resource Allocation	MM Config Base
CB 520X B1	No	Enable (default)	2GB (default)
	Yes	Disable	2GB (default)
CB 520X B2	No	Enable (default)	3GB (default) ¹
	Yes	Disable	3GB (default) ¹
CB 520X B3	No	Enable (default)	3GB (default)
CB 520H B3	No	Enable (default)	2GB (default)
	Yes	Disable	2GB (default)
CB 520H B4	No	Enable (default)	2GB (default)
Notes: 1. In a 1-blade or 2-blade SMP configuration, the LPAR manager can be started even when MM Config Base is set to 2 GB. In a 4-blade SMP configuration, make sure to change to 3 GB.			

Setup of Terminal Software

We recommend using the latest version of Tera Term as terminal software for the LPAR manager. (Other software might not be able to use **F1** to **F12** key, **PageUp** and **PageDown** key)

Initial setup configurations of Tera Term are below.

1. Select **Setup - Terminal** to change the setting to those in the following table.

Table 5-3 Configuration Value of Tera Term

Item	Value
Terminal Size	80x50
Terminal ID	VT100
Line feed Code	CR
Chinese Character	UTF-8

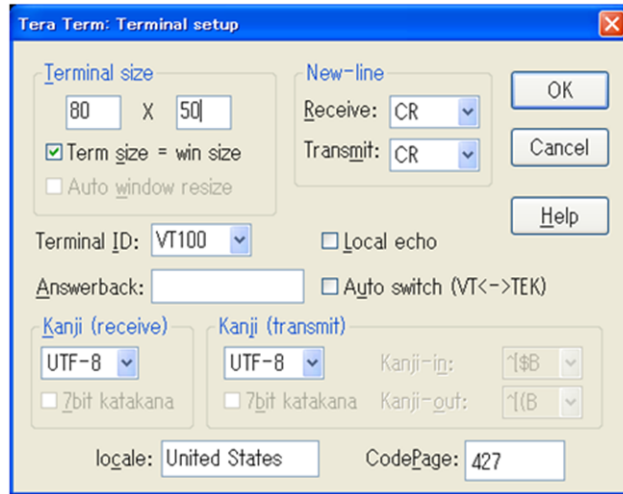


Figure 5-1 Terminal Setup Window of Tera Term

2. Select **Setup - Keyboard** to change the setting below.

Table 5-4 Keyboard Setup Option of Tera Term

Item	Value
Meta key	Marked

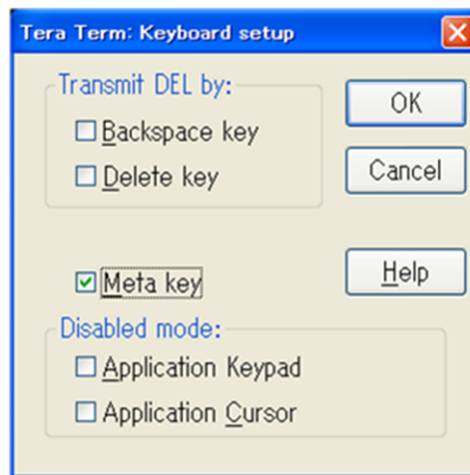


Figure 5-2 Keyboard Setup Window of Tera Term

**Tip:**

- With the Meta key checked, you can use the **Alt** key as a Meta key. When a function key is not available on the OS console (guest screen), the Meta key may be used as a function key. **Alt + 8** Keys, for example, may be used as **F8**.

Connects LPAR manager Screen

1. Start Tera Term. Set the IP address of the management module at Host and select **Telnet** or **SSH** at Service in the following pop-up window. Then, Click **OK**. CLI console is displayed after login is completed.

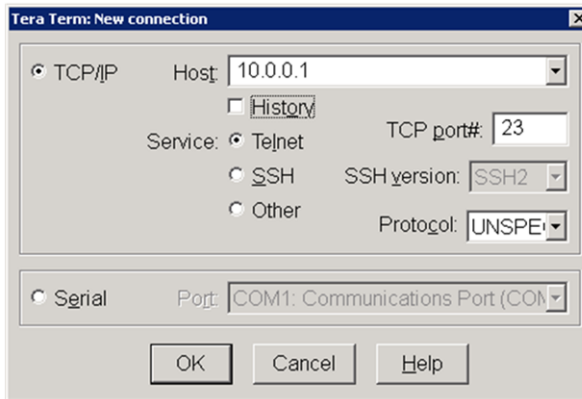


Figure 5-3 Tera Term: New connection window

2. Enter **change console -b<server blade number>** onto appeared sub-screen then press **Enter** key.
And Select **Y** then press **Enter** key.

```
ComputeBlade CB500 Management Module
ALL RIGHTS RESERVED, COPYRIGHT (C), 2011, 2012, HITACHI, LTD.
Chassis ID      : 20
Firmware Revision : A0100-3946
20(0)$ change console -b <Server blade number > [Enter]
Confirm? (Y,[N]) : Y [Enter]
```

Figure 5-4 Connecting Management Module screen

3. **LPAR manager** screen is shown.

```

+-----+
|+-- Menu [LP_192168020] -----+ yyyymm/dd hh:mm:ss +|
||
|| Logical Partition Configuration      System Configuration
|| Logical Processor Configuration     System Service State
|| Physical Processor Configuration    Date and Time
|| PCI Device Information              LP Options
|| PCI Device Assignment               LPAR Usage
|| VNIC Assignment                    Front Panel
|| Shared FC Assignment                LP System Logs
|| Allocated FC Information            Firmware Version Information
||
+-----+
|+-- Tips -----+
|| F3 : Activate      F8 : LPAR Screen
|| F4 : Deactivate    F9 : Save Configuration
|| F5 : Reactivate
|| F6 : Add Definition Alt + t : Screen Refresh
|| F7 : Remove        Alt + r : LP System Shutdown
||
+-----+
| Configure logical partitioning of processors and memory
+-----+
| :Move Cursor  Enter:Select                      LP Ver. : VV-RR(TT-KK)
+-----+

```

Figure 5-5 LPAR manager Screen



Tip:

- Press **Ctrl + b** when returning to the console screen of the management module from LPAR manager screen. Input "exit" and press **Enter** when the CLI console is shut down.

LPAR manager Settings

1. Set the LPAR manager System time zone and set the time adjustment of the LPAR manager System time by NTP.



Note:

- To adjust the LPAR manager system time by the NTP server is recommended. If the LPAR manager is rebooted (including an unexpected LPAR manager system failure and switching N+M) after running for a long time without adjusting the LPAR manager system time, the time of guest OS appear without adjustment.
 - Be sure to save the configuration after NTP setting is enabled. RTC time of LPAR might not synchronize as correction time of NTP, if you rebooted without saving the configuration.
 - When adjusting LPAR manager system time by the NTP server, make sure to use the same time zone between the management module, BMC, and LPAR manager. If not, each clocks show the different time and you cannot know the correct time when a failure occurs.
 - The setting of the adjustment by the management module for both BMC and LPAR manager is recommended.
- Move to the **Date and Time** screen.

- ```

|+- System Date and Time -----
|+
|| Date and Time yyyy/mm/dd hh:mm:ss Time Zone + 9:00 Adjust LPAR Time
||
|+-Setting-----
|+
|| Import Config None
||
|| TimeSync Disable
+

```

– Place the cursor on **TimeSync** on the **Date and Time** screen and press **Enter** to display a sub-screen. Select **SVP** and press **Enter**.

```

|| 7 |-----+-----+-----+
	8	Select NTP Server
	9	
	10	Disable
+---+-----+-----+-----+		
NTP	e Up / [PageDown]:Page Down	
SVP		
+-----+-----+-----+		
+ SystemDate and Time -----+-----+		
Date and Time yyyy/mm/dd hh:mm:ss Time Zone + 9:00 Adjust LPAR Time		
+Setting-----+-----+		
Import Config None		
TimeSync Disable		
+-----+-----+-----+		

```

- Check that **NTP** is set to **SYNC** on the **System Service State** screen.

| System Service |   |                | Virtual LAN Segment State |   |   |   |   |   |   |   |   |   |
|----------------|---|----------------|---------------------------|---|---|---|---|---|---|---|---|---|
|                |   |                | PORT#/NIC#                | V | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| SVP Access     | : | RUN            | a                         | : |   |   |   |   |   |   |   |   |
| BSM Access     | : | RUN            | b                         | : |   |   |   |   |   |   |   |   |
| HA Monitor     | : | RUN            | c                         | : |   |   |   |   |   |   |   |   |
| NTP            | : | SYNC           | d                         | : |   |   |   |   |   |   |   |   |
|                |   |                | e                         | : |   |   |   |   |   |   |   |   |
|                |   |                | f                         | : |   |   |   |   |   |   |   |   |
|                |   |                | g                         | : |   |   |   |   |   |   |   |   |
|                |   | Force Recovery | h                         | : |   |   |   |   |   |   |   |   |

### Figure 5-8 System Service State screen

2. Configure settings for automatically saving time information.  
[LPAR manager firmware version 01-6X or later]



- With LPAR manager firmware version 01-6X or later, enabling **Save Time Config** is recommended. If you reboot LPAR manager after operating it for a long time with **Save Time Config** disabled, or if a system failure in LPAR manager or failover with N+M cold standby unexpectedly occurs, a time lag occurs in the guest OS.
- You can change settings for "Save Time Config" while LPAR manager is running.

- If changing LPAR manager configuration or LPAR configuration with **Save Time Config** enabled, make sure to save LPAR manager configuration at the end of the setting change. Although LPAR manager configuration is saved at time adjustment with **Save Time Config** enabled, the timing cannot be specified.
- When LPAR manager configuration is saved at time adjustment, **LPAR manager** screen appears; system event logs are collected; the alert is notified. Those operations can be prevented by disabling **Save Time Config**.

[LPAR manager screen]

```

	+-----+	
+-----+	Saving LP configuration ...	-----+
+-----+		

```

[System event log]

```

|+- LP System Logs ----- All level --+|
|| Level Date Time Event ||
|| Info. yyyy/mm/dd hh:mm:ss LP saved configuration. ||

```

[Alert]

ID: 0x1531

Message: LP configuration was saved. (RC=6)

- 
- Go to the **LP Options** screen.
  - On the **LP Options** screen, place the cursor on **Save Time Config** and press **Enter** to display the sub-screen. Select **Enable** and press **Enter**.

```

	USB Auto Allocation+-----+-----+-----+				
	Save Changed Config	Save Time Configuration Setting	ng Character -----+		
	LP TimerCounter Ba		[CtI]+		
	Save Time Config	Enable	-----+		
		Disable	-----+		
			n -----+		
			LPAR1		
			LPAR1 To LPAR1		
			-----+		

```

**Figure 5-9 Options screen**

3. Save the setting on the **LPAR manager** screen.
  - Move to the **LPAR manager Menu** Screen.
  - Press **F9** (Save Configuration) key on the **LPAR manager Menu** screen.

```

+-----+
|+-- Menu [LP_192168020] -----+ yyyy/mm/dd hh:mm:ss +|
||
|| Logical Partition Configuration System Configuration
|| Logical Processor Configuration System Service State
|| Physical Processor Configuration Date and Time
|| PCI Device Information LP Options
|| PCI Device Assignment LPAR Usage
|| VNIC Assignment Front Panel
|| Shared FC Assignment LP system logs
|| Allocated FC Information Firmware Version Information
||
+-----+
|+-----+ LP configuration is saved successfully +-----+
+-----+
+-----+
|| Tips -----+
|| F3 : Activate F8 : LPAR Screen
|| F4 : Deactivate F9 : Save Configuration
|| F5 : Reactivate
|| F6 : Add Definition Alt + t : Screen Refresh
|| F7 : Remove Alt + r : LP System Shutdown
||
+-----+
| Configure logical partitioning of processors and memory
+-----+
| :Move Cursor Enter:Select LP Ver. : VV-RR (TT-KK)
+-----+

```

**Figure 5-10 LPAR manager Menu screen**

## Creating LPAR

### Adding LPAR

Add LPAR on Logical Partition Configuration screen.

1. Sub-screen appears on the **Logical Partition Configuration** screen by pressing **F6** (Add) key. Then select LPAR number onto appeared sub-screen and press **Enter** key.



| Logical Partition(LPAR)    |      |     |     |     |                           |                           |                     |    |    |    |    |  |  |  |  |  |  |  |
|----------------------------|------|-----|-----|-----|---------------------------|---------------------------|---------------------|----|----|----|----|--|--|--|--|--|--|--|
| #                          | Name | Sta | Scd | Pro | Add LPAR                  | ID                        | AA                  | AC | PC | VC | PB |  |  |  |  |  |  |  |
| 1                          |      |     |     |     |                           |                           |                     |    |    |    |    |  |  |  |  |  |  |  |
| 2                          |      |     |     |     | 1 NO_NAME                 |                           |                     |    |    |    |    |  |  |  |  |  |  |  |
| 3                          |      |     |     |     | 2 NO_NAME                 |                           |                     |    |    |    |    |  |  |  |  |  |  |  |
| 4                          |      |     |     |     | 3 NO_NAME                 |                           |                     |    |    |    |    |  |  |  |  |  |  |  |
| 5                          |      |     |     |     | 4 NO_NAME                 |                           |                     |    |    |    |    |  |  |  |  |  |  |  |
| 6                          |      |     |     |     | 5 NO_NAME                 |                           |                     |    |    |    |    |  |  |  |  |  |  |  |
| 7                          |      |     |     |     | 6 NO_NAME                 |                           |                     |    |    |    |    |  |  |  |  |  |  |  |
| 8                          |      |     |     |     | 7 NO_NAME                 |                           |                     |    |    |    |    |  |  |  |  |  |  |  |
| 9                          |      |     |     |     | 8 NO_NAME                 |                           |                     |    |    |    |    |  |  |  |  |  |  |  |
| 10                         |      |     |     |     | 9 NO_NAME                 |                           |                     |    |    |    |    |  |  |  |  |  |  |  |
|                            |      |     |     |     | 10 NO_NAME                |                           |                     |    |    |    |    |  |  |  |  |  |  |  |
|                            |      |     |     |     | 11 NO_NAME                | Up / [PageDown]:Page Down |                     |    |    |    |    |  |  |  |  |  |  |  |
| Logical Information        |      |     |     |     | Physical Information      |                           |                     |    |    |    |    |  |  |  |  |  |  |  |
|                            |      |     |     | Pro | Shr                       | 12 NO_NAME                | User Memory : 11008 |    |    |    |    |  |  |  |  |  |  |  |
| Assign Total               |      |     |     | 0   | 0                         | 14 NO_NAME                | Processors : 16(16) |    |    |    |    |  |  |  |  |  |  |  |
| Act Total                  |      |     |     | 0   | 0                         | 15 NO_NAME                | Shared : 0          |    |    |    |    |  |  |  |  |  |  |  |
| Remain                     |      |     |     |     |                           | 16 NO_NAME                | Dedicate : 0        |    |    |    |    |  |  |  |  |  |  |  |
|                            |      |     |     |     |                           | 17 NO_NAME                |                     |    |    |    |    |  |  |  |  |  |  |  |
| Logical partition name     |      |     |     |     |                           |                           |                     |    |    |    |    |  |  |  |  |  |  |  |
|                            |      |     |     |     | [<-]:Prev/Next:[->]       |                           |                     |    |    |    |    |  |  |  |  |  |  |  |
| F1:VCAssign F2:MemAllocDsp |      |     |     |     | F6:Add F7:Remove Esc:Menu |                           |                     |    |    |    |    |  |  |  |  |  |  |  |

**Figure 5-11 LPAR Addition Screen**

- Move cursor on **Name** column of the target LPAR then press **Enter** key.  
Enter LPAR name onto the appeared sub-screen then press **Enter** key.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                           |     |     |     |     |     |      |    |    |    |    |    |    |      |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-----|-----|-----|-----|-----|------|----|----|----|----|----|----|------|--|--|
| +----- Logical Partition (LPAR) Configuration -----+-----                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                           |     |     |     |     |     |      |    |    |    |    |    |    |      |  |  |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | # Name                                    | Sta | Scd | Pro | Grp | Srv | Mem  | VN | ID | AA | AC | PC | VC | PB   |  |  |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1 NO_NAME                                 | Dea | D   | 1   | 0   | 100 | 1024 | 0  | Y  | *  | N  | *  | N  | BIOS |  |  |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                           |     |     |     |     |     |      |    |    |    |    |    |    |      |  |  |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                           |     |     |     |     |     |      |    |    |    |    |    |    |      |  |  |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                           |     |     |     |     |     |      |    |    |    |    |    |    |      |  |  |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                           |     |     |     |     |     |      |    |    |    |    |    |    |      |  |  |
| 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                           |     |     |     |     |     |      |    |    |    |    |    |    |      |  |  |
| 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                           |     |     |     |     |     |      |    |    |    |    |    |    |      |  |  |
| 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | +----- Logical Partition Name -----+----- |     |     |     |     |     |      |    |    |    |    |    |    |      |  |  |
| 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | LPAR1                                     |     |     |     |     |     |      |    |    |    |    |    |    |      |  |  |
| +-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+ |                                           |     |     |     |     |     |      |    |    |    |    |    |    |      |  |  |

**Figure 5-12 LPAR Naming Screen**

- LPAR name is set to the target LPAR.

| Logical Partition (LPAR) Configuration                                        |       |     |     |     |     |     |                      |    |    |    |             |           |
|-------------------------------------------------------------------------------|-------|-----|-----|-----|-----|-----|----------------------|----|----|----|-------------|-----------|
| #                                                                             | Name  | Sta | Scd | Pro | Grp | Srv | Mem                  | VN | ID | AA | AC          | PC VC PB  |
| 1                                                                             | LPAR1 | Dea | D   | 1   | 0   | 100 | 1024                 | 0  | Y  | *  | N           | * N BIOS  |
| 2                                                                             |       |     |     |     |     |     |                      |    |    |    |             |           |
| 3                                                                             |       |     |     |     |     |     |                      |    |    |    |             |           |
| 4                                                                             |       |     |     |     |     |     |                      |    |    |    |             |           |
| 5                                                                             |       |     |     |     |     |     |                      |    |    |    |             |           |
| 6                                                                             |       |     |     |     |     |     |                      |    |    |    |             |           |
| 7                                                                             |       |     |     |     |     |     |                      |    |    |    |             |           |
| 8                                                                             |       |     |     |     |     |     |                      |    |    |    |             |           |
| 9                                                                             |       |     |     |     |     |     |                      |    |    |    |             |           |
| 10                                                                            |       |     |     |     |     |     |                      |    |    |    |             |           |
| [PageUp]: Page Up / [PageDown]: Page Down                                     |       |     |     |     |     |     |                      |    |    |    |             |           |
| Logical Information                                                           |       |     |     |     |     |     | Physical Information |    |    |    |             |           |
|                                                                               |       |     | Pro | Shr | Ded |     | Mem                  | VN |    |    | User Memory | : 11008   |
| Assign Total                                                                  |       |     | 1   | 0   | 1   |     | 1024                 | 0  |    |    | Processors  | : 16 (16) |
| Act Total                                                                     |       |     | 0   | 0   | 0   |     | 0                    | 0  |    |    | Shared      | : 0       |
| Remain                                                                        |       |     |     |     |     |     | 11008                |    |    |    | Dedicate    | : 0       |
| Logical partition name                                                        |       |     |     |     |     |     |                      |    |    |    |             |           |
| F1:VCAssign F2:MemAllocDsp F3:Act F4:Deact F5:React F6:Add F7:Remove Esc:Menu |       |     |     |     |     |     |                      |    |    |    |             |           |

**Figure 5-13 LPAR Making Confirmation Screen**



**Tip:**

- Maximum character length of LPAR name is 31. And identical LPAR name cannot set to 2 or more files.
- The 8th character is changed to tilde '~' and the higher characters are omitted when the length of LPAR name is 9 or more.
- '0' ~ '9', 'A' ~ 'Z', 'a' ~ 'z', '-' and '\_' can be used for LPAR name. However only 'A' ~ 'Z' and 'a' ~ 'z' can be used for the initial character.
- LPAR name using for discernment of LPARs. Set a unique name in the LPAR manager system.

## Configuration of Processor

Configure Scheduling Mode and details of Processors on Logical Partition Configuration screen. (Contents on the screens depend on the version of LPAR manager firmware)

### Setting Scheduling Mode to Shared Mode

1. Move cursor onto **ScD** column of the target LPAR then press **Enter** key. Select **S** (Sharing) of scheduling mode onto appeared sub-screen then press **Enter** key.

|                                                                               |                                                                  |     |     |     |     |     |       |    |    |    |             |              |
|-------------------------------------------------------------------------------|------------------------------------------------------------------|-----|-----|-----|-----|-----|-------|----|----|----|-------------|--------------|
| +----- Logical Partition (LPAR) Configuration -----+-----                     |                                                                  |     |     |     |     |     |       |    |    |    |             |              |
| #                                                                             | Name                                                             | Sta | Scd | Pro | Grp | Srv | Mem   | VN | ID | AA | AC          | PC VC PB     |
| 1                                                                             | LPAR1                                                            | Dea | D   | 1   | 0   | 100 | 1024  | 0  | Y  | *  | N           | * N BIOS     |
| 2                                                                             |                                                                  |     |     |     |     |     |       |    |    |    |             |              |
| 3                                                                             |                                                                  |     |     |     |     |     |       |    |    |    |             |              |
| 4                                                                             |                                                                  |     |     |     |     |     |       |    |    |    |             |              |
| 5                                                                             |                                                                  |     |     |     |     |     |       |    |    |    |             |              |
| 6                                                                             |                                                                  |     |     |     |     |     |       |    |    |    |             |              |
| 7                                                                             | +----- Logical Processors Scheduling mode Assignment -----+----- |     |     |     |     |     |       |    |    |    |             |              |
| 8                                                                             |                                                                  |     |     |     |     |     |       |    |    |    |             |              |
| 9                                                                             |                                                                  |     |     |     |     | S   |       |    |    |    |             |              |
| 10                                                                            |                                                                  |     |     |     |     | D   |       |    |    |    |             |              |
|                                                                               |                                                                  |     |     |     |     |     |       |    |    |    |             |              |
|                                                                               |                                                                  |     |     |     |     |     |       |    |    |    |             | +-----+----- |
| +----- Shared Scheduling Mode -----+-----                                     |                                                                  |     |     |     |     |     |       |    |    |    |             | +-----+----- |
| +----- Logical Information -----+-----                                        |                                                                  |     |     |     |     |     |       |    |    |    |             | +-----+----- |
|                                                                               |                                                                  |     | Pro | Shr | Ded |     | Mem   | VN |    |    | User Memory | : 11008      |
|                                                                               | Assign Total                                                     |     | 1   | 0   | 1   |     | 1024  | 0  |    |    | Processors  | : 16 (16)    |
|                                                                               | Act Total                                                        |     | 0   | 0   | 0   |     | 0     | 0  |    |    | Shared      | : 0          |
|                                                                               | Remain                                                           |     |     |     |     |     | 11008 |    |    |    | Dedicate    | : 0          |
|                                                                               |                                                                  |     |     |     |     |     |       |    |    |    |             | +-----+----- |
| +----- Logical processors scheduling mode -----+-----                         |                                                                  |     |     |     |     |     |       |    |    |    |             |              |
| +-----+-----                                                                  |                                                                  |     |     |     |     |     |       |    |    |    |             |              |
| F1:VCAssign F2:MemAllocDsp F3:Act F4:Deact F5:React F6:Add F7:Remove Esc:Menu |                                                                  |     |     |     |     |     |       |    |    |    |             |              |

**Figure 5-14 Scheduling Mode Change Screen**

- Scheduling mode is set to the target LPAR.

| Logical Partition (LPAR) Configuration                                                        |       |     |     |     |     |                      |      |    |    |             |    |          |
|-----------------------------------------------------------------------------------------------|-------|-----|-----|-----|-----|----------------------|------|----|----|-------------|----|----------|
| #                                                                                             | Name  | Sta | Scd | Pro | Grp | Srv                  | Mem  | VN | ID | AA          | AC | PC VC PB |
| 1                                                                                             | LPAR1 | Dea | S   | 1   | 0   | 100                  | 1024 | 0  | Y  | *           | N  | N N BIOS |
| 2                                                                                             |       |     |     |     |     |                      |      |    |    |             |    |          |
| 3                                                                                             |       |     |     |     |     |                      |      |    |    |             |    |          |
| 4                                                                                             |       |     |     |     |     |                      |      |    |    |             |    |          |
| 5                                                                                             |       |     |     |     |     |                      |      |    |    |             |    |          |
| 6                                                                                             |       |     |     |     |     |                      |      |    |    |             |    |          |
| 7                                                                                             |       |     |     |     |     |                      |      |    |    |             |    |          |
| 8                                                                                             |       |     |     |     |     |                      |      |    |    |             |    |          |
| 9                                                                                             |       |     |     |     |     |                      |      |    |    |             |    |          |
| 10                                                                                            |       |     |     |     |     |                      |      |    |    |             |    |          |
| [PageUp]: Page Up / [PageDown]: Page Down                                                     |       |     |     |     |     |                      |      |    |    |             |    |          |
| Logical Information                                                                           |       |     |     |     |     | Physical Information |      |    |    |             |    |          |
|                                                                                               |       |     | Pro | Shr | Ded | Mem                  | VN   |    |    | User Memory | :  | 11008    |
| Assign Total                                                                                  |       |     | 1   | 1   | 0   | 1024                 | 0    |    |    | Processors  | :  | 16 (16)  |
| Act Total                                                                                     |       |     | 0   | 0   | 0   | 0                    | 0    |    |    | Shared      | :  | 0        |
| Remain                                                                                        |       |     |     |     |     | 11008                |      |    |    | Dedicate    | :  | 0        |
| Logical processors scheduling mode                                                            |       |     |     |     |     |                      |      |    |    |             |    |          |
| [F1]:VCAssign [F2]:MemAllocDsp [F3]:Act [F4]:Deact [F5]:React [F6]:Add [F7]:Remove [Esc]:Menu |       |     |     |     |     |                      |      |    |    |             |    |          |

**Figure 5-15 Scheduling Mode Confirmation Screen**

- Move cursor onto **Pro** column of target LPAR then press **Enter** key. Enter processor number onto appeared sub-screen then press **Enter** key.

| + Logical Partition (LPAR) Configuration +                                    |                                  |     |     |     |     |     |                            |    |    |    |             |                    |
|-------------------------------------------------------------------------------|----------------------------------|-----|-----|-----|-----|-----|----------------------------|----|----|----|-------------|--------------------|
| #                                                                             | Name                             | Sta | Scd | Pro | Grp | Srv | Mem                        | VN | ID | AA | AC          | PC VC PB           |
| 1                                                                             | LPAR1                            | Dea | S   | 1   | 0   | 100 | 1024                       | 0  | Y  | *  | N           | N N BIOS           |
| 2                                                                             |                                  |     |     |     |     |     |                            |    |    |    |             |                    |
| 3                                                                             |                                  |     |     |     |     |     |                            |    |    |    |             |                    |
| 4                                                                             |                                  |     |     |     |     |     |                            |    |    |    |             |                    |
| 5                                                                             |                                  |     |     |     |     |     |                            |    |    |    |             |                    |
| 6                                                                             |                                  |     |     |     |     |     |                            |    |    |    |             |                    |
| 7                                                                             |                                  |     |     |     |     |     |                            |    |    |    |             |                    |
| 8                                                                             |                                  |     |     |     |     |     |                            |    |    |    |             |                    |
| 9                                                                             | The number of Logical Processors |     |     |     |     |     |                            |    |    |    |             |                    |
| 10                                                                            | 2                                |     |     |     |     |     |                            |    |    |    |             | [eDown]: Page Down |
| + Logical Information +                                                       |                                  |     |     |     |     |     | ++ Physical Information ++ |    |    |    |             |                    |
|                                                                               |                                  |     | Pro | Shr | Ded |     | Mem                        | VN |    |    | User Memory | : 11008            |
| Assign Total                                                                  |                                  |     | 1   | 1   | 0   |     | 1024                       | 0  |    |    | Processors  | : 16 (16)          |
| Act Total                                                                     |                                  |     | 0   | 0   | 0   |     | 0                          | 0  |    |    | Shared      | : 0                |
| Remain                                                                        |                                  |     |     |     |     |     | 11008                      |    |    |    | Dedicate    | : 0                |
| The number of logical processors                                              |                                  |     |     |     |     |     |                            |    |    |    |             |                    |
| F1:VCAssign F2:MemAllocDsp F3:Act F4:Deact F5:React F6:Add F7:Remove Esc:Menu |                                  |     |     |     |     |     |                            |    |    |    |             |                    |

**Figure 5-16 Processors Number Change Screen**

- Processor number is set to the target LPAR.

| + Logical Partition (LPAR) Configuration +                                    |       |     |     |     |     |     |                            |    |    |    |             |                                           |
|-------------------------------------------------------------------------------|-------|-----|-----|-----|-----|-----|----------------------------|----|----|----|-------------|-------------------------------------------|
| #                                                                             | Name  | Sta | Scd | Pro | Grp | Srv | Mem                        | VN | ID | AA | AC          | PC VC PB                                  |
| 1                                                                             | LPAR1 | Dea | S   | 2   | 0   | 100 | 1024                       | 0  | Y  | *  | N           | N N BIOS                                  |
| 2                                                                             |       |     |     |     |     |     |                            |    |    |    |             |                                           |
| 3                                                                             |       |     |     |     |     |     |                            |    |    |    |             |                                           |
| 4                                                                             |       |     |     |     |     |     |                            |    |    |    |             |                                           |
| 5                                                                             |       |     |     |     |     |     |                            |    |    |    |             |                                           |
| 6                                                                             |       |     |     |     |     |     |                            |    |    |    |             |                                           |
| 7                                                                             |       |     |     |     |     |     |                            |    |    |    |             |                                           |
| 8                                                                             |       |     |     |     |     |     |                            |    |    |    |             |                                           |
| 9                                                                             |       |     |     |     |     |     |                            |    |    |    |             |                                           |
| 10                                                                            |       |     |     |     |     |     |                            |    |    |    |             |                                           |
|                                                                               |       |     |     |     |     |     |                            |    |    |    |             | [PageUp]: Page Up / [PageDown]: Page Down |
| + Logical Information +                                                       |       |     |     |     |     |     | ++ Physical Information ++ |    |    |    |             |                                           |
|                                                                               |       |     | Pro | Shr | Ded |     | Mem                        | VN |    |    | User Memory | : 11008                                   |
| Assign Total                                                                  |       |     | 2   | 2   | 0   |     | 1024                       | 0  |    |    | Processors  | : 16 (16)                                 |
| Act Total                                                                     |       |     | 0   | 0   | 0   |     | 0                          | 0  |    |    | Shared      | : 0                                       |
| Remain                                                                        |       |     |     |     |     |     | 11008                      |    |    |    | Dedicate    | : 0                                       |
| The number of logical processors                                              |       |     |     |     |     |     |                            |    |    |    |             |                                           |
| F1:VCAssign F2:MemAllocDsp F3:Act F4:Deact F5:React F6:Add F7:Remove Esc:Menu |       |     |     |     |     |     |                            |    |    |    |             |                                           |

**Figure 5-17 Processors Number Confirmation Screen**

## Setting Scheduling Mode to Dedicated Mode

- Move cursor onto **Scd** column of the target LPAR then press **Enter** key. Select **D** (Dedicated) of scheduling mode onto appeared sub-screen then press **Enter** key.

|                                                                               |                                                                  |     |     |     |     |     |       |    |    |    |             |                                |
|-------------------------------------------------------------------------------|------------------------------------------------------------------|-----|-----|-----|-----|-----|-------|----|----|----|-------------|--------------------------------|
| +----- Logical Partition (LPAR) Configuration -----+-----                     |                                                                  |     |     |     |     |     |       |    |    |    |             |                                |
| #                                                                             | Name                                                             | Sta | Scd | Pro | Grp | Srv | Mem   | VN | ID | AA | AC          | PC VC PB                       |
| 1                                                                             | LPAR1                                                            | Dea | S   | 1   | 0   | 100 | 1024  | 0  | Y  | *  | N           | N BIOS                         |
| 2                                                                             |                                                                  |     |     |     |     |     |       |    |    |    |             |                                |
| 3                                                                             |                                                                  |     |     |     |     |     |       |    |    |    |             |                                |
| 4                                                                             |                                                                  |     |     |     |     |     |       |    |    |    |             |                                |
| 5                                                                             |                                                                  |     |     |     |     |     |       |    |    |    |             |                                |
| 6                                                                             |                                                                  |     |     |     |     |     |       |    |    |    |             |                                |
| 7                                                                             | +----- Logical Processors Scheduling mode Assignment -----+----- |     |     |     |     |     |       |    |    |    |             |                                |
| 8                                                                             |                                                                  |     |     |     |     |     |       |    |    |    |             |                                |
| 9                                                                             |                                                                  |     |     |     |     | S   |       |    |    |    |             |                                |
| 10                                                                            |                                                                  |     |     |     |     | D   |       |    |    |    |             |                                |
|                                                                               |                                                                  |     |     |     |     |     |       |    |    |    |             |                                |
|                                                                               |                                                                  |     |     |     |     |     |       |    |    |    |             | +-----n]: Page Down-----+----- |
| +----- Dedicated Scheduling Mode -----+-----                                  |                                                                  |     |     |     |     |     |       |    |    |    |             |                                |
| +----- Logical Information -----+-----                                        |                                                                  |     |     |     |     |     |       |    |    |    |             |                                |
|                                                                               |                                                                  |     | Pro | Shr | Ded |     | Mem   | VN |    |    | User Memory | : 11008                        |
|                                                                               | Assign Total                                                     |     | 1   | 1   | 0   |     | 1024  | 0  |    |    | Processors  | : 16 (16)                      |
|                                                                               | Act Total                                                        |     | 0   | 0   | 0   |     | 0     | 0  |    |    | Shared      | : 0                            |
|                                                                               | Remain                                                           |     |     |     |     |     | 11008 |    |    |    | Dedicate    | : 0                            |
| +-----++-----                                                                 |                                                                  |     |     |     |     |     |       |    |    |    |             |                                |
| Logical processors scheduling mode                                            |                                                                  |     |     |     |     |     |       |    |    |    |             |                                |
| +-----                                                                        |                                                                  |     |     |     |     |     |       |    |    |    |             |                                |
| F1:VCAssign F2:MemAllocDsp F3:Act F4:Deact F5:React F6:Add F7:Remove Esc:Menu |                                                                  |     |     |     |     |     |       |    |    |    |             |                                |

**Figure 5-18 Scheduling Mode Assigning Screen**

- Scheduling mode is set to the target LPAR.

| Logical Partition (LPAR) Configuration                                                        |       |     |     |     |     |                      |      |    |    |             |    |          |
|-----------------------------------------------------------------------------------------------|-------|-----|-----|-----|-----|----------------------|------|----|----|-------------|----|----------|
| #                                                                                             | Name  | Sta | Scd | Pro | Grp | Srv                  | Mem  | VN | ID | AA          | AC | PC VC PB |
| 1                                                                                             | LPAR1 | Dea | D   | 1   | 0   | 100                  | 1024 | 0  | Y  | *           | N  | * N BIOS |
| 2                                                                                             |       |     |     |     |     |                      |      |    |    |             |    |          |
| 3                                                                                             |       |     |     |     |     |                      |      |    |    |             |    |          |
| 4                                                                                             |       |     |     |     |     |                      |      |    |    |             |    |          |
| 5                                                                                             |       |     |     |     |     |                      |      |    |    |             |    |          |
| 6                                                                                             |       |     |     |     |     |                      |      |    |    |             |    |          |
| 7                                                                                             |       |     |     |     |     |                      |      |    |    |             |    |          |
| 8                                                                                             |       |     |     |     |     |                      |      |    |    |             |    |          |
| 9                                                                                             |       |     |     |     |     |                      |      |    |    |             |    |          |
| 10                                                                                            |       |     |     |     |     |                      |      |    |    |             |    |          |
| [PageUp]: Page Up / [PageDown]: Page Down                                                     |       |     |     |     |     |                      |      |    |    |             |    |          |
| Logical Information                                                                           |       |     |     |     |     | Physical Information |      |    |    |             |    |          |
|                                                                                               |       |     | Pro | Shr | Ded | Mem                  | VN   |    |    | User Memory | :  | 11008    |
| Assign Total                                                                                  |       |     | 1   | 0   | 1   | 1024                 | 0    |    |    | Processors  | :  | 16 (16)  |
| Act Total                                                                                     |       |     | 0   | 0   | 0   | 0                    | 0    |    |    | Shared      | :  | 0        |
| Remain                                                                                        |       |     |     |     |     | 11008                |      |    |    | Dedicate    | :  | 0        |
| Logical processors scheduling mode                                                            |       |     |     |     |     |                      |      |    |    |             |    |          |
| [F1]:VCAssign [F2]:MemAllocDsp [F3]:Act [F4]:Deact [F5]:React [F6]:Add [F7]:Remove [Esc]:Menu |       |     |     |     |     |                      |      |    |    |             |    |          |

**Figure 5-19 Scheduling Mode Confirmation Screen**

- Move cursor onto **Pro** column of target LPAR then press **Enter** key. Enter processor number onto appeared sub-screen then press **Enter** key.

|                                                                               |                                  |     |     |     |     |     |                            |    |    |    |             |          |
|-------------------------------------------------------------------------------|----------------------------------|-----|-----|-----|-----|-----|----------------------------|----|----|----|-------------|----------|
| + Logical Partition(LPAR) Configuration +                                     |                                  |     |     |     |     |     |                            |    |    |    |             |          |
| #                                                                             | Name                             | Sta | Scd | Pro | Grp | Srv | Mem                        | VN | ID | AA | AC          | PC VC PB |
| 1                                                                             | LPAR1                            | Dea | D   | 1   | 0   | 100 | 1024                       | 0  | Y  | *  | N           | * N BIOS |
| 2                                                                             |                                  |     |     |     |     |     |                            |    |    |    |             |          |
| 3                                                                             |                                  |     |     |     |     |     |                            |    |    |    |             |          |
| 4                                                                             |                                  |     |     |     |     |     |                            |    |    |    |             |          |
| 5                                                                             |                                  |     |     |     |     |     |                            |    |    |    |             |          |
| 6                                                                             |                                  |     |     |     |     |     |                            |    |    |    |             |          |
| 7                                                                             |                                  |     |     |     |     |     |                            |    |    |    |             |          |
| 8                                                                             |                                  |     |     |     |     |     |                            |    |    |    |             |          |
| 9                                                                             | The number of Logical Processors |     |     |     |     |     |                            |    |    |    |             |          |
| 10                                                                            | 2                                |     |     |     |     |     |                            |    |    |    |             |          |
|                                                                               |                                  |     |     |     |     |     |                            |    |    |    |             |          |
| [eDown]: Page Down                                                            |                                  |     |     |     |     |     |                            |    |    |    |             |          |
| +-----+-----+                                                                 |                                  |     |     |     |     |     |                            |    |    |    |             |          |
| + Logical Information                                                         |                                  |     |     |     |     |     | ++ Physical Information ++ |    |    |    |             |          |
|                                                                               |                                  |     | Pro | Shr | Ded |     | Mem                        | VN |    |    | User Memory | : 11008  |
| Assign Total                                                                  |                                  |     | 1   | 0   | 1   |     | 1024                       | 0  |    |    | Processors  | : 16(16) |
| Act Total                                                                     |                                  |     | 0   | 0   | 0   |     | 0                          | 0  |    |    | Shared      | : 0      |
| Remain                                                                        |                                  |     |     |     |     |     | 11008                      |    |    |    | Dedicate    | : 0      |
| +-----+-----+                                                                 |                                  |     |     |     |     |     |                            |    |    |    |             |          |
| The number of logical processors                                              |                                  |     |     |     |     |     |                            |    |    |    |             |          |
| +-----+-----+                                                                 |                                  |     |     |     |     |     |                            |    |    |    |             |          |
| F1:VCAssign F2:MemAllocDsp F3:Act F4:Deact F5:React F6:Add F7:Remove Esc:Menu |                                  |     |     |     |     |     |                            |    |    |    |             |          |

**Figure 5-20 Processors Number Changing Screen**

- Processor number is set to the target LPAR.

| + Logical Partition(LPAR) Configuration +                                     |       |     |     |     |     |     |       |                            |    |             |    |          |
|-------------------------------------------------------------------------------|-------|-----|-----|-----|-----|-----|-------|----------------------------|----|-------------|----|----------|
| #                                                                             | Name  | Sta | Scd | Pro | Grp | Srv | Mem   | VN                         | ID | AA          | AC | PC VC PB |
| 1                                                                             | LPAR1 | Dea | D   | 2   | 0   | 100 | 1024  | 0                          | Y  | *           | N  | * N BIOS |
| 2                                                                             |       |     |     |     |     |     |       |                            |    |             |    |          |
| 3                                                                             |       |     |     |     |     |     |       |                            |    |             |    |          |
| 4                                                                             |       |     |     |     |     |     |       |                            |    |             |    |          |
| 5                                                                             |       |     |     |     |     |     |       |                            |    |             |    |          |
| 6                                                                             |       |     |     |     |     |     |       |                            |    |             |    |          |
| 7                                                                             |       |     |     |     |     |     |       |                            |    |             |    |          |
| 8                                                                             |       |     |     |     |     |     |       |                            |    |             |    |          |
| 9                                                                             |       |     |     |     |     |     |       |                            |    |             |    |          |
| 10                                                                            |       |     |     |     |     |     |       |                            |    |             |    |          |
| [PageUp]: Page Up / [PageDown]: Page Down                                     |       |     |     |     |     |     |       |                            |    |             |    |          |
| + Logical Information +                                                       |       |     |     |     |     |     |       | ++ Physical Information ++ |    |             |    |          |
|                                                                               |       |     | Pro | Shr | Ded |     | Mem   | VN                         |    | User Memory | :  | 11008    |
| Assign Total                                                                  |       |     | 2   | 0   | 2   |     | 1024  | 0                          |    | Processors  | :  | 16(16)   |
| Act Total                                                                     |       |     | 0   | 0   | 0   |     | 0     | 0                          |    | Shared      | :  | 0        |
| Remain                                                                        |       |     |     |     |     |     | 11008 |                            |    | Dedicate    | :  | 0        |
| The number of logical processors                                              |       |     |     |     |     |     |       |                            |    |             |    |          |
| F1:VCAssign F2:MemAllocDsp F3:Act F4:Deact F5:React F6:Add F7:Remove Esc:Menu |       |     |     |     |     |     |       |                            |    |             |    |          |

**Figure 5-21 Processors Number Confirmation Screen**

## Configuration of Memory

Configure Memory Size on Logical Partition Configuration screen.

1. Move cursor onto **Mem** column of target LPAR then press **Enter** key. Adjust memory size on appeared sub-screen by using arrow keys then press **Enter** key.

|                                                                               |                         |     |     |     |                        |     |      |       |    |                       |                     |          |  |
|-------------------------------------------------------------------------------|-------------------------|-----|-----|-----|------------------------|-----|------|-------|----|-----------------------|---------------------|----------|--|
| Logical Partition(LPAR) Configuration                                         |                         |     |     |     |                        |     |      |       |    |                       |                     |          |  |
| #                                                                             | Name                    | Sta | Scd | Pro | Grp                    | Srv | Mem  | VN    | ID | AA                    | AC                  | PC VC PB |  |
| 1                                                                             | LPAR1                   | Dea | S   | 2   | 0                      | 100 | 1024 | 0     | Y  | *                     | N                   | N BIOS   |  |
| 2                                                                             |                         |     |     |     |                        |     |      |       |    |                       |                     |          |  |
| 3                                                                             | The memory size (in MB) |     |     |     |                        |     |      |       |    |                       |                     |          |  |
| 4                                                                             |                         |     |     |     |                        |     |      |       |    |                       |                     |          |  |
| 5                                                                             | +1024                   |     |     |     |                        |     |      |       |    |                       |                     |          |  |
| 6                                                                             |                         |     |     |     |                        |     |      |       |    |                       |                     |          |  |
| 7                                                                             | -256 00002048 +256      |     |     |     |                        |     |      |       |    |                       |                     |          |  |
| 8                                                                             |                         |     |     |     |                        |     |      |       |    |                       |                     |          |  |
| 9                                                                             | -1024                   |     |     |     |                        |     |      |       |    |                       |                     |          |  |
| 10                                                                            |                         |     |     |     |                        |     |      |       |    |                       |                     |          |  |
| Maximum size :                                                                |                         |     |     |     |                        |     |      | 11008 |    | [PageDown]: Page Down |                     |          |  |
| Effective max :                                                               |                         |     |     |     |                        |     |      | 11008 |    |                       |                     |          |  |
| Logical Information                                                           |                         |     |     |     |                        |     |      |       |    |                       |                     |          |  |
|                                                                               |                         |     |     | Pro | Within bounds          |     |      |       |    |                       | User Memory : 11008 |          |  |
| Assign Total                                                                  |                         |     |     | 2   |                        |     |      |       |    |                       | Processors : 16(16) |          |  |
| Act Total                                                                     |                         |     |     | 0   | F1: Input number in GB |     |      |       |    |                       | Shared : 0          |          |  |
| Remain                                                                        |                         |     |     |     |                        |     |      |       |    | Dedicate : 0          |                     |          |  |
| The memory size in Mega Byte                                                  |                         |     |     |     |                        |     |      |       |    |                       |                     |          |  |
| F1:VCAssign F2:MemAllocDsp F3:Act F4:Deact F5:React F6:Add F7:Remove Esc:Menu |                         |     |     |     |                        |     |      |       |    |                       |                     |          |  |

**Figure 5-22 Allocating the Memory**

2. Memory size is set to the target LPAR.

| Logical Partition(LPAR) Configuration                                         |              |     |     |     |     |     |                      |    |    |                     |    |          |
|-------------------------------------------------------------------------------|--------------|-----|-----|-----|-----|-----|----------------------|----|----|---------------------|----|----------|
| #                                                                             | Name         | Sta | Scd | Pro | Grp | Srv | Mem                  | VN | ID | AA                  | AC | PC VC PB |
| 1                                                                             | LPAR1        | Dea | S   | 2   | 0   | 100 | 2048                 | 0  | Y  | *                   | N  | N N BIOS |
| 2                                                                             |              |     |     |     |     |     |                      |    |    |                     |    |          |
| 3                                                                             |              |     |     |     |     |     |                      |    |    |                     |    |          |
| 4                                                                             |              |     |     |     |     |     |                      |    |    |                     |    |          |
| 5                                                                             |              |     |     |     |     |     |                      |    |    |                     |    |          |
| 6                                                                             |              |     |     |     |     |     |                      |    |    |                     |    |          |
| 7                                                                             |              |     |     |     |     |     |                      |    |    |                     |    |          |
| 8                                                                             |              |     |     |     |     |     |                      |    |    |                     |    |          |
| 9                                                                             |              |     |     |     |     |     |                      |    |    |                     |    |          |
| 10                                                                            |              |     |     |     |     |     |                      |    |    |                     |    |          |
| [PageUp]: Page Up / [PageDown]: Page Down                                     |              |     |     |     |     |     |                      |    |    |                     |    |          |
| Logical Information                                                           |              |     |     |     |     |     | Physical Information |    |    |                     |    |          |
|                                                                               |              |     | Pro | Shr | Ded |     | Mem                  | VN |    | User Memory : 11008 |    |          |
|                                                                               | Assign Total |     | 2   | 2   | 0   |     | 2048                 | 0  |    | Processors : 16(16) |    |          |
|                                                                               | Act Total    |     | 0   | 0   | 0   |     | 0                    | 0  |    | Shared : 0          |    |          |
|                                                                               | Remain       |     |     |     |     |     | 11008                |    |    | Dedicate : 0        |    |          |
| The memory size in Mega Byte                                                  |              |     |     |     |     |     |                      |    |    |                     |    |          |
| F1:VCAssign F2:MemAllocDsp F3:Act F4:Deact F5:React F6:Add F7:Remove Esc:Menu |              |     |     |     |     |     |                      |    |    |                     |    |          |

**Figure 5-23 Confirmation Screen for memory configuration**

## Configuration of PCI Device

---



### Note:

- When using the Windows, there are restrictions in the numbers of NIC ports which can be assigned to one LPAR.  
See [Restrictions of the numbers of NIC ports assignment for Windows on page 10-16](#) for details.
- 

Configure Scheduling Mode and details of PCI Devices on PCI Device Assignment screen.

See [PCI Device Assignment on page 10-8](#) for note.

- Scheduling mode of PCI Devices cannot be changed when scheduling mode of target device is Shared mode. For Configuration of shared NIC, see [Assign VNICs \(Virtual NICs\) to LPARs on page 5-26](#). And for configuration of shared FC, see [Assign Shared FCs to LPARs on page 5-28](#).
- The scheduling mode can be changed in PCI devices with + on the right of Schd. For a PCI device without +, the scheduling mode cannot be changed.
- Onboard USB ports assigned to an LPAR in Exclusive Shared Mode can be changed to another LPAR without stopping the LPAR. This switching is available only for the USB port of the primary server blade.
- Make sure the NIC scheduling mode of the FCoE boot is set to dedicated mode.

## Setting the Scheduling Mode to Shared Mode

1. On the **PCI Device Assignment** screen, place the cursor at **Schd** of the PCI device whose scheduling mode is to be changed and press **Enter**.



```

+-----+
|+ PCI Device Assignment -----+
|
| PCI Device#: 0 1 2 3 4 5 6 7 8 9 10 11
| Type: U N N F
| Schd: E S D+ S+
|
| # Name Sta
| 1 LPAR1 Dea A - * -
| 2
| 3 +-----+
| 4 | PCI Device Scheduling mode Assignment |
| 5 |
| 6 | D
| 7 | S
| 8 +-----+
| 9 | PCI Device is Shared Mode
|10 +-----+
|
| [PageUp]:Page Up / [PageDown]:Page Down
+-----+
|+ Selected PCI Device Information -----+
| # Vendor Device Name Slot# Bus# Dev# Func#
| 2 Emulex Corp. 10GbE Controller 2Port E11 20 0 0
+-----+
| F5:Attach/Detach F10:Update PCI Dev Schd F11:Left F12:Right Esc:Menu
+-----+

```

**Figure 5-24 PCI device Scheduling Mode Assignment screen**

2. Reflect the changed scheduling mode of the PCI device into the LPAR manager system. Press **F10** to display the **Save settings?** sub-screen. Select **Yes** and press **Enter**.

```

+-----+
|+ PCI Device Assignment -----+
|
| PCI Device#: 0 1 2 3 4 5 6 7 8 9 10 11
| Type: U N N F
| Schd: E S S+ S+
|
| # Name Sta
| 1 LPAR1 Dea A - - -
| 2
| 3 +-----+
| 4 | Save settings?
| 5 | This operation will require a few minutes.
| 6 |
| 7 | Yes
| 8 | No
| 9 +-----+
|10 | Save all changes
| +-----+
|
| [PageUp]: Page Up / [PageDown]: Page Down
+-----+
|+ Selected PCI Device Information -----+
| # Vendor Device Name Slot# Bus# Dev# Func#
| 2 Emulex Corp. 10GbE Controller 2Port E11 20 0 0
+-----+
| F5: Attach/Detach F10: Update PCI Dev Schd F11: Left F12: Right Esc: Menu
+-----+

```

**Figure 5-25 Saving PCI device Scheduling Mode Screen**

3. Wait for a couple of minutes before the **Config Changing** message appears.

```

+-----+
|+ PCI Device Assignment -----+
|
| PCI Device#: 0 1 2 3 4 5 6 7 8 9 10 11
| Type: U N N F
| Schd: E S S+ S+
|
| # Name Sta
| 1 LPAR1 Dea A - - -
| 2
| 3
| 4
| 5
| 6
| 7
| 8
| 9
|10
|
| [PageUp]: Page Up / [PageDown]: Page Down
|
+-----+
|+ Selected PCI Device Information -----+
| # Vendor Device Name Slot# Bus# Dev# Func# |
| 2 Emulex Corp. 10GbE Controller 2Port E11 20 0 0 |
|
+-----+
| F5: Attach/Detach F10: Update PCI Dev Schd F11: Left F12: Right Esc: Menu |
+-----+

```

**Figure 5-26 Config Changing execution screen**

4. The **Normal End** sub-screen appears, which completes the changing of the scheduling mode.

```

+-----+
|+ PCI Device Assignment -----+
|
| PCI Device#: 0 1 2 3 4 5 6 7 8 9 10 11
| Type: U N N F
| Schd: E S S+ S+
|
| # Name Sta
| 1 LPAR1 Dea A - - -
| 2
| 3
| 4
| 5
| 6
| 7
| 8
| 9
|10
|
| [PageUp]: Page Up / [PageDown]: Page Down
|
+-----+
|+ Selected PCI Device Information -----+
| # Vendor Device Name Slot# Bus# Dev# Func# |
| 2 Emulex Corp. 10GbE Controller 2Port E11 20 0 0 |
|
+-----+
| F5: Attach/Detach F10: Update PCI Dev Schd F11: Left F12: Right Esc: Menu |
+-----+

```

**Figure 5-27 Config Changing completion screen**

## Changing the Scheduling Mode to Dedicated Mode

1. On the **PCI Device Assignment** screen, place the cursor at Schd of the PCI device whose scheduling mode is to be changed and press **Enter**.

```

+-----+
|+ PCI Device Assignment -----+
|
| PCI Device#: 0 1 2 3 4 5 6 7 8 9 10 11
| Type: U N N F
| Schd: E S S+ S+
|
| # Name Sta
| 1 LPAR1 Dea A - - -
| 2
| 3 +-----+
| 4 | PCI Device Scheduling mode Assignment |
| 5 |
| 6 | D
| 7 | S
| 8 +-----+
| 9 | PCI Device is Dedicate Mode
|10 +-----+
|
| [PageUp]: Page Up / [PageDown]: Page Down
+-----+
|+ Selected PCI Device Information -----+
| # Vendor Device Name Slot# Bus# Dev# Func# |
| 2 Emulex Corp. 10GbE Controller 2Port E11 20 0 0 |
+-----+
| F5: Attach/Detach F10: Update PCI Dev Schd F11: Left F12: Right Esc: Menu |
+-----+

```

**Figure 5-28 Scheduling Mode Confirmation Screen**

2. Reflect the changed scheduling mode of the PCI device into the LPAR manager system. Press **F10** to display the **Save settings?** sub-screen. Select **Yes** and press **Enter**.

```

+-----+
|+ PCI Device Assignment -----+
|
| PCI Device#: 0 1 2 3 4 5 6 7 8 9 10 11
| Type: U N N F
| Schd: E S D+ S+
|
| # Name Sta
| 1 LPAR1 Dea A - * -
| 2
| 3 +-----+
| 4 | Save settings?
| 5 | This operation will require a few minutes.
| 6 |
| 7 | Yes
| 8 | No
| 9 +-----+
|10 | Save all changes
|
| [PageUp]: Page Up / [PageDown]: Page Down
+-----+
|+ Selected PCI Device Information -----+
| # Vendor Device Name Slot# Bus# Dev# Func# |
| 2 Emulex Corp. 10GbE Controller 2Port E11 20 0 0 |
+-----+
| F5: Attach/Detach F10: Update PCI Dev Schd F11: Left F12: Right Esc: Menu |
+-----+

```

**Figure 5-29 Configuration Saving Confirmation Screen**

3. Wait for a couple of minutes before the **Config Changing** message appears.

```

+-----+
|+ PCI Device Assignment -----+
|
| PCI Device#: 0 1 2 3 4 5 6 7 8 9 10 11
| Type: U N N F
| Schd: E S D+ S+
|
| # Name Sta
| 1 LPAR1 Dea A - * -
| 2
| 3
| 4
| 5
| 6
| 7
| 8
| 9
|10
|
| [PageUp]: Page Up / [PageDown]: Page Down
|
+-----+
|+ Selected PCI Device Information -----+
| # Vendor Device Name Slot# Bus# Dev# Func# |
| 2 Emulex Corp. 10GbE Controller 2Port E11 20 0 0 |
|
+-----+
| F5: Attach/Detach F10: Update PCI Dev Schd F11: Left F12: Right Esc: Menu |
+-----+

```

**Figure 5-30 Configuration Saving Screen**

4. The **Normal End** sub-screen appears which completes the changing of the scheduling mode.

```

+-----+
|+ PCI Device Assignment -----+
|
| PCI Device#: 0 1 2 3 4 5 6 7 8 9 10 11
| Type: U N N F
| Schd: E S D+ S+
|
| # Name Sta
| 1 LPAR1 Dea A - * -
| 2
| 3
| 4
| 5
| 6
| 7
| 8
| 9
|10
|
| [PageUp]: Page Up / [PageDown]: Page Down
|
+-----+
|+ Selected PCI Device Information -----+
| # Vendor Device Name Slot# Bus# Dev# Func# |
| 2 Emulex Corp. 10GbE Controller 2Port E11 20 0 0 |
|
+-----+
| F5: Attach/Detach F10: Update PCI Dev Schd F11: Left F12: Right Esc: Menu |
+-----+

```

**Figure 5-31 Configuration Saving Finished Screen**

## Assigning PCI Device to LPAR

Use the following procedure to assign the PCI device to an LPAR. Deactivate the LPAR to which the PCI device is assigned.

- ```

+----- PCI Device Assignment -----+
|
|      PCI Device#: 0 1 2 3 4 5 6 7 8 9 10 11
|      Type:       U N N F
|      Schd:       E S D+ S+
|
| # Name      Sta
| 1 LPAR1     Dea
|
| 2
| 3
| 4
| 5
| 6
| 7
| 8
| 9
| 10
|
|                                     [PageUp]: Page Up / [PageDown]: Page Down
+-----+
+----- Selected PCI Device Information -----+
| #  Vendor      Device Name      Slot#  Bus#  Dev#  Func# |
| 2  Emulex Corp. 10GbE Controller 2Port  E11    20    0     0   |
+-----+
| F5: Attach/Detach F10: Update PCI Dev Schd F11: Left F12: Right  Esc: Menu |

```

2. On the **PCI Device Number Assignment** sub-screen, select **A** (assignment) or ***** (unassignment) and press **Enter**.

- ```

+----- PCI Device Assignment -----+
|
| PCI Device#: 0 1 2 3 4 5 6 7 8 9 10 11
| Type: U N N F
| Schd: E S D+ S+
|
| # Name Sta
| 1 LPAR1 Dea
|
| A - * -
|
| 2
| 3
| 4
| 5
| 6
| 7
| 8
| 9
| 10
|
| +-----+
| | PCI Device Number Assignment |
| |
| | A
| | *
| |
| +-----+
| | PCI Device Assign
| |
| +-----+
|
|
| [PageUp]: Page Up / [PageDown]: Page Down
|
+-----+
+----- Selected PCI Device Information -----+
| # Vendor Device Name Slot# Bus# Dev# Func# |
| 2 Emulex Corp. 10GbE Controller 2Port E11 20 0 0 |
|
+-----+
| F5: Attach/Detach F10: Update PCI Dev Schd F11: Left F12: Right Esc: Menu |

```

3. PCI device is assigned

```

+-- PCI Device Assignment -----+
|
| PCI Device#: 0 1 2 3 4 5 6 7 8 9 10 11
| Type: U N N F
| Schd: E S D+ S+
|
| # Name Sta
| 1 LPAR1 Dea
| A - A -
| 2
| 3
| 4
| 5
| 6
| 7
| 8
| 9
| 10
|
| [PageUp]: Page Up / [PageDown]: Page Down
+-----+
+-- Selected PCI Device Information -----+
| # Vendor Device Name Slot# Bus# Dev# Func#
| 2 Emulex Corp. 10GbE Controller 2Port E11 20 0 0
+-----+
| F5: Attach/Detach F10: Update PCI Dev Schd F11: Left F12: Right Esc: Menu

```

### Figure 5-34 PCI Device Assignment Confirmation Screen



**Note:**

- A PCI device can be assigned to multiple LPARs. However, only an LPAR activated first can use the PCI device. To make another LPAR use the PCI device used by the LPAR, deactivate the LPAR using the PCI device and activate another LPAR.

However, when the PCI devices in exclusive shared mode can be assigned to a specified LPAR not to an LPAR activated first by setting USB Auto Allocation to LPAR to Disable.

See [PCI Device Assignment on page 7-39](#) for further details.

## Changing LPAR which using PCI Device

1. On the **PCI Device Assignment** screen, place the cursor on the line of a remote console and then press the **F5** key (Attach/Detach).
2. When the **Device Attach / Detach** sub-screen is displayed, select the number following the screen.
  - o When you select a LPAR number, the remote console is connected to the LPAR with the selected LPAR number (Attach). When the remote console is already used by another LPAR, detach the remote console from the LPAR, which is currently using the remote console, and connect it to the LPAR with the selected number.
  - o When **Detach only** is selected, the remote console is just disconnected.

```

+-----+
|+ PCI Device Assignment -----+
|
| PCI Device#: 0 1 2 3 4 5 6 7 8 9 10 11
| Type: U N N F
| Schd: E S S+ S+
|
| # Name Sta
| 1 LPAR1 Act R - - - - -
| 2 LPAR2 Act A - - - - -
| 3
| 4
| 5
| 6
| 7
| 8
| 9
|10
|
| [PageUp]: Page Up / [PageDown]: Page Down
+-----+
|+ Selected PCI Device Information -----+
| # Vendor Device Name Slot# Bus# Dev# Func# |
| 0 Intel Corp. USB Controller U1 0 1a 0 |
+-----+
| F5: Attach/Detach F10: Update PCI Dev Schd F11: Left F12:Right Esc: Menu |
+-----+

```

**Figure 5-35 PCI Device Attaching Screen**

3. Select **Yes** on the displayed sub-screen and press **Enter**.

```

+-----+
|+ PCI Device Assignment -----+
|
| PCI Device#: 0 1 2 3 4 5 6 7 8 9 10 11
| Type: U N N F
| Schd: E S S+ S+
|
| # Name Sta
| 1 LPAR1 Act R R - - - -
| 2
| 3
| 4 Target device is attached to LPAR1.
| 5 Are you sure detaching it from LPAR1 and attaching it to LPAR2 ?
| 6
| 7 Yes
| 8 No
| 9 Detach then Attach
|10
|
| [PageUp]: Page Up / [PageDown]: Page Down
+-----+
|+ Selected PCI Device Information -----+
| # Vendor Device Name Slot# Bus# Dev# Func# |
| 0 Intel Corp. USB Controller U1 0 1a 0 |
+-----+
| F5: Attach/Detach F10: Update PCI Dev Schd F11: Left F12: Right Esc: Menu |
+-----+

```

**Figure 5-36 PCI Device Attaching Confirmation Screen**

4. The LPAR which is using PCI device switched.

```

+-----+
| PCI Device Assignment |
+-----+
|
| PCI Device#: 0 1 2 3 4 5 6 7 8 9 10 11
| Type: U N N F
| Schd: E S S+ S+
|
| # Name Sta
| 1 LPAR1 Act
| 2 LPAR2 Act
| 3
| 4
| 5
| 6
| 7
| 8
| 9
| 10
|
| [PageUp]: Page Up / [PageDown]: Page Down
|
+-----+
| Selected PCI Device Information |
+-----+
| # Vendor Device Name Slot# Bus# Dev# Func# |
| 0 Intel Corp. USB Controller U1 0 1a 0 |
|
+-----+
| F5: Attach/Detach F10: Update PCI Dev Schd F11: Left F12: Right Esc: Menu |
+-----+

```

### Figure 5-37 PCI Device Attached Confirmation Screen



**Note:**

- When connecting via remote console, the remote console screen display or mouse operation may become slower due to SVGA emulation.
- When the USB device is assigned to another guest OS, it may take about 30 seconds before you can operate the keyboard and mouse.

## Assign VNICs (Virtual NICs) to LPARs



**Note:**

- When using the Windows, there are restrictions in the numbers of NIC ports which can be assigned to one LPAR. See [Restrictions of the numbers of NIC ports assignment for Windows on page 10-16](#) for details.

Assign a virtual NIC on the Virtual NIC Assignment screen. Deactivate the LPAR to assign the virtual NIC. (Virtual NICs which are Dedicated mode cannot be assigned to LPAR on this screen)

1. Place the cursor on **Virtual NIC Number** of the LPAR to which the virtual NIC is to be assigned and then press **Enter**.



```

+----- Virtual NIC Assignment -----+
|
|
| Virtual NIC Number
| 0 1 2 3 4 5 6 7 8 9
| # Name Sta #VNIC
| 1 LPAR1 Dea 0 * * * * * * * * *
| 2 LPAR2 Dea 0 * * * * * * * * *
| 3
| 4
| 5
| 6
| 7
| 8
| 9
| 10
|
| [PageUp]: Page Up / [PageDown]: Page Down
+-----+
+----- VNIC Information -----+
| No: 0 MAC Address: 00.00.87.62.c7.00 Shared NIC#: 0 Tag: Undef Prm: T
| Inter-LPAR Packet Filtering: Disable
| VLANID:
|
+-----+
| F2: Disp F5: Set Prom. Mode F6: Change MAC Addr F7: Select VLAN
| F8: Packet Filter F11: Left F12: Right Esc: Menu
+-----+

```

**Figure 5-38 VNIC Assignment Screen**

- The **Physical NIC/Port Number setting** sub-screen appears. Select the Shared NIC type (1a on the example below) to be specified and press **Enter**.

```

+----- Virtual NIC Assignment -----+
|
| Virtual NIC Number
| 8 9
| # Name Sta #V+-----+
| 1 LPAR1 Dea Physical NIC / Port Number setting * *
| 2 LPAR2 Dea * *
| 3 *
| 4 Va
| 5 Vb
| 6 Vc
| 7 Vd
| 8 1a
| 9 1b
| 10 2a
| 2b
| 3a
| 3b
|
| [PageDown]: Page Down
+-----+
+----- VNIC Information -----+
| No: 0 MAC Address+-----+ Tag: Undef Prm: T
| Inter-LPAR
| VLANID:
|
+-----+
| F2: Disp F5: Set Prom. Mode F6: Change MAC Addr F7: Select VLAN
| F8: Packet Filter F11: Left F12: Right Esc: Menu
+-----+

```

**Figure 5-39 VNIC Assignment Change Screen**

- Shared NIC is assigned below.

| Virtual NIC Assignment                                                |       |     |       |                    |   |   |   |   |   |   |   |           |
|-----------------------------------------------------------------------|-------|-----|-------|--------------------|---|---|---|---|---|---|---|-----------|
| #                                                                     | Name  | Sta | #VNIC | Virtual NIC Number |   |   |   |   |   |   |   |           |
| 1                                                                     | LPAR1 | Dea | 2     | 1a                 | * | * | * | * | * | * | * | *         |
| 2                                                                     | LPAR2 | Dea | 0     | *                  | * | * | * | * | * | * | * | *         |
| 3                                                                     |       |     |       |                    |   |   |   |   |   |   |   |           |
| 4                                                                     |       |     |       |                    |   |   |   |   |   |   |   |           |
| 5                                                                     |       |     |       |                    |   |   |   |   |   |   |   |           |
| 6                                                                     |       |     |       |                    |   |   |   |   |   |   |   |           |
| 7                                                                     |       |     |       |                    |   |   |   |   |   |   |   |           |
| 8                                                                     |       |     |       |                    |   |   |   |   |   |   |   |           |
| 9                                                                     |       |     |       |                    |   |   |   |   |   |   |   |           |
| 10                                                                    |       |     |       |                    |   |   |   |   |   |   |   |           |
| [PageUp]: Page Up / [PageDown]: Page Down                             |       |     |       |                    |   |   |   |   |   |   |   |           |
| +VNIC Information                                                     |       |     |       |                    |   |   |   |   |   |   |   |           |
| No: 0 MAC Address: 00.00.87.62.c7.00 Shared NIC#: 1 Tag: Undef Prm: T |       |     |       |                    |   |   |   |   |   |   |   |           |
| Inter-LPAR Packet Filtering: Disable                                  |       |     |       |                    |   |   |   |   |   |   |   |           |
| VLANID:                                                               |       |     |       |                    |   |   |   |   |   |   |   |           |
| F2: Disp F5: Set Prom. Mode F6: Change MAC Addr F7: Select VLAN       |       |     |       |                    |   |   |   |   |   |   |   |           |
| F8: Packet Filter F11: Left F12: Right                                |       |     |       |                    |   |   |   |   |   |   |   | Esc: Menu |

**Figure 5-40 VNIC Assignment Change Confirmation Screen**

## Assign Shared FCs to LPARs

Assign Shared FCs Configuration on the Shared FC Assignment Screen. See [Availability of Shared FC on page 10-12](#) for note.

- Scheduling device of PCI device which are Dedicated mode cannot be assigned to LPAR on this screen.
  - For an FCoE boot, you do not need to specify the shared FC settings.
1. Assign the shared FC to the LPAR on the **Shared FC Assignment** screen. Place the cursor on the **Shared FC#** to assign to the LPAR, and press **Enter**.

```

+-- Shared FC Assignment -----+
	Shared FC#:	0 1 2 3 4 5 6 7 8 9	
	Slot#:	E12 E12 E12 E12	
	Port#:	0 1 2 3	
	PortStatus:	A A D D	
	# Name	Sta	
	1 LPAR1	Dea	* * * *
	2 LPAR2	Dea	* * * *
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
		[PageUp]: Page Up / [PageDown]: Page Down	
+-- Selected Virtual FC Port WWN Information -----+			
	# LPAR# WWPN	WWNN	Bus#	Dev#	Func#	vfcID#
	0 1 0	0	2a	0	0	--
+--			
F11: Left F12: Right			
	Esc: Menu		

```

**Figure 5-41 Shared FC Assignment Screen**

- When the **Shared FC vfcWWNId Assignment** sub-screen is displayed, select vfcID and press **Enter**.

|                          |       |                               |    |  |  |   |                      |       |        |
|--------------------------|-------|-------------------------------|----|--|--|---|----------------------|-------|--------|
| +- Shared FC Assignment+ |       |                               |    |  |  |   |                      |       |        |
| Shared FC#               |       | Shared FC vfcWWNId Assignment |    |  |  | 6 | 7                    | 8     | 9      |
| Slot#                    |       |                               |    |  |  |   |                      |       |        |
| Port#                    |       | *                             |    |  |  |   |                      |       |        |
| PortStatus               |       | 1                             |    |  |  |   |                      |       |        |
| #                        | Name  | Sta                           | 2  |  |  |   |                      |       |        |
| 1                        | LPAR1 | Dea                           | 3  |  |  |   |                      |       |        |
| 2                        | LPAR2 | Dea                           | 4  |  |  |   |                      |       |        |
| 3                        |       |                               | 5  |  |  |   |                      |       |        |
| 4                        |       |                               | 6  |  |  |   |                      |       |        |
| 5                        |       |                               | 7  |  |  |   |                      |       |        |
| 6                        |       |                               | 8  |  |  |   |                      |       |        |
| 7                        |       |                               | 9  |  |  |   |                      |       |        |
| 8                        |       |                               | 10 |  |  |   |                      |       |        |
| 9                        |       |                               | 11 |  |  |   |                      |       |        |
| 10                       |       |                               | 12 |  |  |   |                      |       |        |
|                          |       |                               | 13 |  |  |   | PageDown]: Page Down |       |        |
|                          |       |                               | 14 |  |  |   |                      |       |        |
| +-Selected Virtual FC    |       |                               | 15 |  |  |   |                      |       |        |
| #                        | LPAR# | WWPN                          |    |  |  |   | ev#                  | Func# | vfcID# |
| 1                        | 1     | 0                             |    |  |  |   |                      | 0     | --     |
| +-                       |       |                               |    |  |  |   |                      |       |        |
| F11: Left F12: Right     |       |                               |    |  |  |   |                      |       |        |
| Esc: Menu                |       |                               |    |  |  |   |                      |       |        |

**Figure 5-42 Shared FC Change Screen**



**Tip:**

- vfdID can be selected in the range of 1 to 15 (for an 8Gb FC adapter) or 1 to 30 (for a 16Gb FC adapter) for each port. However, the same vfcID cannot be set for multiple LPARs. Also, multiple vfcIDs cannot be set for one LPAR.

- Information display may be different depending on the FC adapter installed.

3. Shared FC is assigned below.

```

+ Shared FC Assignment
|
| Shared FC#: 0 1 2 3 4 5 6 7 8 9
| Slot#: E12 E12 E12 E12
| Port#: 0 1
| PortStatus: A A 2 3
|
| # Name Sta
| 1 LPAR1 Dea 1 * * *
| 2 LPAR2 Dea * * * *
| 3
| 4
| 5
| 6
| 7
| 8
| 9
| 10
|
| [PageUp]: Page Up / [PageDown]: Page Down
+-----+
+ Selected Virtual FC Port WWN Information
|
| # LPAR# WWPN WWNN Bus# Dev# Func# vfcID#
| 0 1 2378000087012110 2378000087012111 2a 0 0 1
|
+-----+
| F11: Left F12: Right Esc: Menu

```

**Figure 5-43 Shared FC Change Confirmation Screen**

## Save Configuration Changed on LPAR manager Screen

To save settings you have made or changed on LPAR manager screens, go to the LPAR manager Menu screen and press **F9**: Save Configuration. The guest timer settings changed on the guest OSs also need to be saved by **F9** after the change before the LPAR manager shutdown or reboot; otherwise, the changed values may be lost.

1. Press **F9** (Save Configuration) key on the **LPAR manager Menu** screen.

```

+----- Menu [LP_192168020] -----+
| |
Logical Partition Configuration	System Configuration
Logical Processor Configuration	System Service State
Physical Processor Configuration	Date and Time
PCI Device Information	LP Options
PCI Device Assignment	LPAR Usage
VNIC Assignment	Front Panel
Shared FC Assignment	LP system logs
Allocated FC Information	Firmware Version Information
+-----+ Saving LP configuration... +-----+	
+----- Tips -----+	
F3 : Activate F8 : LPAR Screen	
F4 : Deactivate F9 : Save Configuration	
F5 : Reactivate	
F6 : Add Definition Alt + t : Screen Refresh	
F7 : Remove Alt + r : LP System Shutdown	
Configure Shared FC Port	
+-----+ : Move Cursor Enter: Select LP Ver.: VV-RR(TT-KK) +-----+

```

**Figure 5-44 Configuration Saving Screen**

2. When the new configuration has been saved successfully, a message "LPAR manager configuration is saved successfully" is displayed.

```

+----- Menu [LP_192168020] -----+
| |
Logical Partition Configuration	System Configuration
Logical Processor Configuration	System Service State
Physical Processor Configuration	Date and Time
PCI Device Information	LP Options
PCI Device Assignment	LPAR Usage
VNIC Assignment	Front Panel
Shared FC Assignment	LP system logs
Allocated FC Information	Firmware Version Information
+-----+ LP configuration is saved successfully +-----+	
+----- Tips -----+	
F3 : Activate F8 : LPAR Screen	
F4 : Deactivate F9 : Save Configuration	
F5 : Reactivate	
F6 : Add Definition Alt + t : Screen Refresh	
F7 : Remove Alt + r : LP System Shutdown	
Configure Shared FC Port	
+-----+ : Move Cursor nter: Select LP Ver.: VV-RR(TT-KK) +-----+

```

**Figure 5-45 Configuration Saving Screen**

# Boot the Guest OS

## Activating LPAR

This section describes how to activate an LPAR and how to boot the OS



**Note:**

- Set a virtual drive before activating LPAR when installing a guest OS.
1. On the **Logical Partition Configuration** screen, press **F3** for LPAR activation. On the **Activate LPAR** sub-screen, select an LPAR to activate and press **Enter**.

|                              |  |  |  |  |                     |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |
|------------------------------|--|--|--|--|---------------------|--|--|--|--|------------------------------|--|--|--|--|--|--|--|--|--|
| + Logical Partition (LPAR) + |  |  |  |  |                     |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |
| # Name Sta Scd Pro           |  |  |  |  | Activate LPAR       |  |  |  |  | ID AA AC PC VC PB            |  |  |  |  |  |  |  |  |  |
| 1 LPAR1 Dea S 2              |  |  |  |  | 1 LPAR1             |  |  |  |  | Y * N N N BIOS               |  |  |  |  |  |  |  |  |  |
| 2 LPAR2 Dea D 2              |  |  |  |  | 2 LPAR2             |  |  |  |  | Y * N * N BIOS               |  |  |  |  |  |  |  |  |  |
| 3                            |  |  |  |  |                     |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |
| 4                            |  |  |  |  | 3                   |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |
| 5                            |  |  |  |  | 4                   |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |
| 6                            |  |  |  |  | 5                   |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |
| 7                            |  |  |  |  | 6                   |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |
| 8                            |  |  |  |  | 7                   |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |
| 9                            |  |  |  |  | 8                   |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |
| 10                           |  |  |  |  | 9                   |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |
|                              |  |  |  |  | 10                  |  |  |  |  | Up / [PageDown]:Page Down    |  |  |  |  |  |  |  |  |  |
| + Logical Information +      |  |  |  |  |                     |  |  |  |  | ++ Physical Information ++   |  |  |  |  |  |  |  |  |  |
|                              |  |  |  |  | 12                  |  |  |  |  | User Memory : 11008          |  |  |  |  |  |  |  |  |  |
| Assign Total Pro Shr         |  |  |  |  | 13                  |  |  |  |  | Processors : 16 (16)         |  |  |  |  |  |  |  |  |  |
| 4 2                          |  |  |  |  | 14                  |  |  |  |  | Shared : 0                   |  |  |  |  |  |  |  |  |  |
| Act Total 0 0                |  |  |  |  | 15                  |  |  |  |  | Dedicate : 0                 |  |  |  |  |  |  |  |  |  |
| Remain                       |  |  |  |  | 16                  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |
|                              |  |  |  |  | 17                  |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |
| + Logical partition name +   |  |  |  |  |                     |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |
|                              |  |  |  |  | [-]:Prev/Next: [->] |  |  |  |  |                              |  |  |  |  |  |  |  |  |  |
| F1:VCAssign F2:MemAllocDsp   |  |  |  |  |                     |  |  |  |  | +t F6:Add F7:Remove Esc:Menu |  |  |  |  |  |  |  |  |  |

Figure 5-46 Activate LPAR Screen

2. When a sub-screen to confirm Activate: power on is displayed, select **Continue** and press **Enter**.

| Logical Partition (LPAR) Configuration                                                                                                            |       |     |     |     |     |     |      |    |    |    |    |    |       |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----|-----|-----|-----|-----|------|----|----|----|----|----|-------|
| #                                                                                                                                                 | Name  | Sta | Scd | Pro | Grp | Srv | Mem  | VN | ID | AA | AC | PC | VC PB |
| 1                                                                                                                                                 | LPAR1 | Dea | S   | 2   | 0   | 100 | 2048 | 2  | Y  | *  | N  | N  | BIOS  |
| 2                                                                                                                                                 | LPAR2 | Dea | D   | 2   | 0   | 100 | 2048 | 0  | Y  | *  | N  | *  | BIOS  |
| 3                                                                                                                                                 |       |     |     |     |     |     |      |    |    |    |    |    |       |
| 4                                                                                                                                                 |       |     |     |     |     |     |      |    |    |    |    |    |       |
| 5                                                                                                                                                 |       |     |     |     |     |     |      |    |    |    |    |    |       |
| 6                                                                                                                                                 |       |     |     |     |     |     |      |    |    |    |    |    |       |
| 7                                                                                                                                                 |       |     |     |     |     |     |      |    |    |    |    |    |       |
| 8                                                                                                                                                 |       |     |     |     |     |     |      |    |    |    |    |    |       |
| 9                                                                                                                                                 |       |     |     |     |     |     |      |    |    |    |    |    |       |
| 10                                                                                                                                                |       |     |     |     |     |     |      |    |    |    |    |    |       |
| <div> <div>LPAR1 [LPAR1]</div> <div>Activation means power-on.</div> <div>Do you continue?</div> <div>Continue</div> <div>Cancel</div> </div>     |       |     |     |     |     |     |      |    |    |    |    |    |       |
| <div> <div>Logical Information</div> <div>Continue (Don't show this message)</div> <div>Logical Information</div> </div>                          |       |     |     |     |     |     |      |    |    |    |    |    |       |
| <div> <div>Assign Total</div> <div>4</div> <div>2</div> <div>2</div> <div>4096</div> <div>2</div> <div>Processors</div> <div>16 (16)</div> </div> |       |     |     |     |     |     |      |    |    |    |    |    |       |
| <div> <div>Act Total</div> <div>0</div> <div>0</div> <div>0</div> <div>0</div> <div>0</div> <div>Shared</div> <div>0</div> </div>                 |       |     |     |     |     |     |      |    |    |    |    |    |       |
| <div> <div>Remain</div> <div>11008</div> <div></div> <div></div> <div></div> <div></div> <div>Dedicate</div> <div>0</div> </div>                  |       |     |     |     |     |     |      |    |    |    |    |    |       |
| <div> <div>Logical partition name</div> </div>                                                                                                    |       |     |     |     |     |     |      |    |    |    |    |    |       |
| <div> <div>F1:VCAssign F2:MemAllocDsp F3:Act F4:Deact F5:React F6:Add F7:Remove Esc:Menu</div> </div>                                             |       |     |     |     |     |     |      |    |    |    |    |    |       |

Figure 5-47 Activate LPAR Confirmation Screen



**Note:**

- The screen above may not be displayed depending on the Activation setting on the Options screen.
- When a guest screen is not correctly displayed and freezes after you have activated the LPAR, display LP system logs screen to check whether or not LP System Logs includes "LPAR manager-LFW detected internal error." If it includes the log, contact your reseller or maintenance personnel.

## Boot order setting

The boot order setting is set by the remote console. See the *Compute Blade 500 Series Remote Console User's Guide* for connecting to the remote console.

The boot order example is shown below for when booting a logical BIOS (IA32.UEFI). When booting a logical EFI (X64.UEFI), a display is partly different from a logical BIOS display.

## Boot setting

### EFI Driver Setting

Setting of the EFI driver is shown below. This setup is unnecessary when the EFI driver is already set up.

For an FCoE boot, you do not need to specify this setting.

1. Select **Boot Maintenance Manager**

```

ComputeBlade 520HB1 LP LPAR
Genuine Intel(R) CPU @ 2.60GHz
(IA32.UEFI) Ver: 1.20

2.60 GHz

Continue
Boot Maintenance Manager

This selection will
take you to the Boot
Maintenance Manager

^v=Move Highlight <Enter>=Select Entry

```

## 2. Select **Boot Options**

```

/-----Y
| |
| |
Y-----/

Boot Options Modify system boot
 options

Set Time Out Value

Reset System

/-----Y
| |
| ^v=Move Highlight <Enter>=Select Entry Esc=Exit without Save
| |
Y-----/

```

### 3. Select **Change Boot Order**





```

/-----¥
| |
| |
¥-----/

Change the order <Boot0001> Change the order
 <EFI Internal Shell>

Commit Changes and Exit
Discard Changes and Exit

/-----¥
| EFI Internal Shell |
| Boot0001 |
¥-----/

/-----¥
| + =Move Selection Up - =Move Selection Down |
¥-----/
<Enter>=Complete Entry Esc=Exit without Save

```

## 7. Select **Commit Changes and Exit**

```

/-----¥
| Boot Maintenance Manager |
¥-----/

Change the order <EFI Internal Shell>
 <Boot0001>

Commit Changes and Exit
Discard Changes and Exit

/-----¥
| |
| ^v=Move Highlight <Enter>=Select Entry Esc=Exit without Save |
| |
¥-----/

```

8. Click **Esc**

| Boot Maintenance Manager                                               |                            |
|------------------------------------------------------------------------|----------------------------|
| Boot Options                                                           | Modify system boot options |
| Set Time Out Value                                                     |                            |
| Reset System                                                           |                            |
| ^v=Move Highlight      <Enter>=Select Entry      Esc=Exit without Save |                            |

9. Select **Continue, Boot EFI shell**

|                                                                                        |                                                                               |          |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|----------|
| ComputeBlade 520HB1 LP LPAR<br>Genuine Intel(R) CPU @ 2.60GHz<br>(IA32.UEFI) Ver: 1.20 |                                                                               | 2.60 GHz |
| <u>Continue</u><br>Boot Maintenance Manager                                            | This selection will<br>direct the system to<br>continue to booting<br>process |          |
| ^v=Move Highlight      <Enter>=Select Entry                                            |                                                                               |          |

10. Enter `driver` command, Search the driver handle of Hitachi Fibre channel Driver.

Depending on the type of the fibre channel adapter, either of the following is displayed in the command results:

8Gb FC adapter: Hitachi PCI-X/PCIe Fibre channel Driver

16Gb FC adapter: Hitachi 16Gbps Fibre channel Driver

```

Shell> drivers [Enter]
 T D
D Y C I
R P F A
V VERSION E G G #D #C DRIVER NAME IMAGE NAME
=====
:
78 10000206 D X - 1 - Hitachi PCI-X/PCIe Fibre channel Dr ScsiBusFive
:
Shell>

```

In this example, 78 is a driver handle.

11. Enter `drvcfg driver handle`, then Search the controller handle.

```

Shell> drvcfg 78 [Enter]
Configurable Components
 Drv[78] Ctrl[84] Lang[eng]
Shell>

```

In this example, 84 is controller handle.



**Tip:**

- Multiple results are displayed when multiple FC ports are allocated to LPAR. Any displayed controller handle can be selected.

12. Enter `drvcfg -s driver handle controller handle` then `hfccfg >` prompt is shown.

```

Shell> drvcfg -s 78 84 [Enter]
Set Configuration Options
 Drv[78] Ctrl[84] Lang[eng]
hfccfg>

```

13. Enter `select` command then select FC adapter which is using for a booting.

```

hfccfg>select [Enter]
HBA FC Port List:
 Num Seg Bus Dev Func current WWPN original WWPN
 --- ---
 1 - 00 16 00 00 2348000087000150
 c - cancel
select Number --> 1 [Enter]

```

In this example, select 1.

14. Enter `Set` command, and then `Set` items are as follows. `Set` the other items according to your environment, if required.

Note that you do not need to set LUID scan mode if LUID scan mode is not displayed.

- Boot Function = Enabled
- Select Boot Device = Enabled
- LUID scan mode = Disabled (The LUID inheritance method is not supported.)
- Set the WWPN and LUN No. of port which are used on the target external disk array equipment to the Boot Device List, Usually List. Usually LU0 is considered as the boot LU, therefore setup 0.

```

hfcfg.2348000087000150>set [Enter]
Base Settings:
** Boot Function = Disabled
change? (y/[n]) -->y
0 - Disabled -[default]
1 - Enabled
c - cancel
please select -->1
** Connection Type = Auto Detection
please Enter -->
** Data Rate = 8Gbps
please Enter -->
** Spinup Delay = Disabled
change? (y/[n]) -->
** Login Delay Time = 3sec
change? (y/[n]) -->
** Persistent Bindings = Enabled
change? (y/[n]) -->
** Force Default Parameter for adapter driver = Disabled
change? (y/[n]) -->
** Select Boot Device = Disabled
change? (y/[n]) -->y
0 - Disabled -[default]
1 - Enabled
c - cancel
please select -->1
** << Boot Device List >> (LUN:decimal)
1 - WWPN:0000000000000000 LUN:0000
2 - WWPN:0000000000000000 LUN:0000
3 - WWPN:0000000000000000 LUN:0000
4 - WWPN:0000000000000000 LUN:0000
5 - WWPN:0000000000000000 LUN:0000
6 - WWPN:0000000000000000 LUN:0000
7 - WWPN:0000000000000000 LUN:0000
8 - WWPN:0000000000000000 LUN:0000
change? (y/[n]) -->y
please select a number (1-8, c(cancel)) -->1
** List#1: WWPN:0000000000000000 LUN:0000
1 - Scan Target
2 - Manual setup
3 - Clear this list
c - cancel
please select -->1
==> Target port serching... please wait
==> Target port serch End.
<< Target Device List >>
1 - D-ID:090C00 WWPN:50060E801025A261 HITACHI DF600F
c - cancel(return to <<Boot Device List>>)
select a Target for Boot Device. (1-xx, c): 1
*** #1: D-ID:090C00 WWPN:50060E801025A261 is selected ***
1 - Scan Lun
c - cancel(return to <<Target Device List>>)
please select -->1
<< LUN List (decimal)>>
1 - LUN : 0000
c - cancel(return to <<Target Device List>>)
select a LUN for Boot Device. (1-xx, c): 1
*** List#1 new WWPN and LUN ***
WWPN : 50060E801025A261
LUN : 0000
Update List#1 ? (y/[n]) -->y
List#1 update end
** << Boot Device List >> (LUN:decimal)
1 - WWPN:50060E801025A261 LUN:0000
2 - WWPN:0000000000000000 LUN:0000
3 - WWPN:0000000000000000 LUN:0000
4 - WWPN:0000000000000000 LUN:0000
5 - WWPN:0000000000000000 LUN:0000
6 - WWPN:0000000000000000 LUN:0000
7 - WWPN:0000000000000000 LUN:0000
8 - WWPN:0000000000000000 LUN:0000
change? (y/[n]) -->n
Base Settings is completed

```



#### Note:

- Execute the following setup to the FC port used as the share FC. See the *HITACHI Gigabit Fibre Channel Adapter USER'S GUIDE (BIOS/EFI Edition)* for the setting method. However, when FC adapter is in share mode, you cannot change the setting. Change it once to dedicated mode, if necessary.

| Connection Configuration                | Value                         |
|-----------------------------------------|-------------------------------|
| Connect to storage via FC switch module | Connection Type: Auto or PtoP |

15. Save the setting content in `save` command.

16. Return to **EFI Shell** by `exit` command.

17. Execute `reconnect -r` command, then execute `map -r` command.

```
Shell> reconnect -r [Enter]
ReconnectController (0,0,0) : Status = Success

Shell> map -r [Enter]
Device mapping table
:
 blk4 :BlockDevice - Alias (null)
 Acpi (PNP0A08, 0x0) /Pci (0x9, 0x0) /Pci (0x0, 0x0) /Pci (0x4, 0x0) /Fibre (0x50060E801025A261, 0x0)
:
Shell>
```

Display content depends on environment.

18. Enter `exit` command.

## Creating boot option



### Note:

- After installing the OS, if you set up a multi-path configuration, create a boot option for both paths. Note that, for a logical EFI (X64.UEFI), you can use the boot option that was automatically created during OS installation, for both paths in the multi-path configuration. In other words, you do not need to create individual boot options for each path.

It is necessary to create the boot option according to the use. If the boot option has been set already, you do not need the following procedure.

**Table 5-5 Boot option**

| Boot device              |                                                                                                                                                     | Boot type    | use           |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|
| Logical BIOS (IA32.UEFI) | Logical EFI (X64.UEFI)                                                                                                                              |              |               |
| FC STORAGE DEVICE        | <ul style="list-style-type: none"><li>NO VOLUME LABEL</li><li>SYSTEM</li></ul> (The displayed information might vary depending on the boot medium.) | SAN boot     | Boot guest OS |
| USB STORAGE DEVICE       | <ul style="list-style-type: none"><li>EFISECTOR</li><li>ANACONDA</li></ul> (The displayed information might vary depending on the boot medium.)     | CD/DVD boot  | Use CD/DVD    |
| NETWORK BOOT DEVICE      | Load File                                                                                                                                           | Network boot | Use SC/DPM    |



3. Select **Add Boot Option**.

Display content depends on environment.

- ```

|-----¥
|                               File Explorer                               |
|-----¥

FC STORAGE DEVICE.
[Acpi (PNP0A08, 0x0) /Pci (0x9, 0x0) /Pci (0x0, 0x0) /Pci (0x4
, 0x0) /Fibre (0x50060E801025A261, 0x0) ]

USB STORAGE DEVICE,
[Acpi (PNP0A08, 0x0) /Pci (0x1A, 0x0) /USB (0x0, 0x0) ]

NETWORK BOOT DEVICE
[PciRoot (0x1) /Pci (0x4, 0x0) /Pci (0x1, 0x0) /MAC (00008762
CB78, 0x0) ]

NETWORK BOOT DEVICE
[PciRoot (0x1) /Pci (0x4, 0x0) /Pci (0x2, 0x0) /MAC (00008762
CB79, 0x0) ]

|-----¥
| ^v=Move Highlight      <Enter>=Select Entry      Esc=Exit without Save
|-----¥

```



5. Select **Input the description.**


```

/-----¥
|                                     |
¥-----/

FC STORAGE DEVICE,
[Acpi (PNPOA08, 0x0) /Pci (0x9, 0x0) /Pci (0x0, 0x0) /Pci (0x4
, 0x0) /Fibre (0x50060E801025A261, 0x0) ]

Input the description      _
Input Optional Data       _

Commit Changes and Exit
Discard Changes and Exit


/-----¥
|                                     |
| ^v=Move Highlight        <Enter>=Select Entry          Esc=Exit without Save
¥-----/

```

6. Input the boot device name.

```

/-----¥
|                                     File Explorer                               |
¥-----/

FC STORAGE DEVICE,
[Acpi (PNPOA08, 0x0) /Pci (0x9, 0x0) /Pci (0x0, 0x0) /Pci (0x4
, 0x0) /Fibre (0x50060E801025A261, 0x0) ]

In/-----¥
In|
|                                     Please type in your data                 |
Co|SAN                               |
Di|
¥-----/

/-----¥
|                                     <Enter>=Complete Entry   Esc=Exit without Save   |
¥-----/

```



Tip:

- Available number of characters: 2 to 75 characters
- Available character types: alphanumeric and special characters (!"#\$%&'()*~|{}_-?*`+><.,/¥:];[@^~)

7. Select **Commit Changes and Exit**.

```

/-----¥
|                                     |
|                               File Explorer                               |
|-----¥

FC STORAGE DEVICE,                                     Commit Changes and Exit
[Acpi (PNPOA08, 0x0) /Pci (0x9, 0x0) /Pci (0x0, 0x0) /Pci (0x4
, 0x0) /Fibre (0x50060E801025A261, 0x0) ]

Input the description      SAN
Input Optional Data      -

Commit Changes and Exit
Discard Changes and Exit


/-----¥
|                                     |
| ^v=Move Highlight      <Enter>=Select Entry      Esc=Exit without Save      |
|-----¥

```

8. Select **Boot Options**.

```

/-----¥
|                                     |
|                               Boot Maintenance Manager                               |
|-----¥

Boot Options                                     Modify system boot
options

Set Time Out Value

Reset System


/-----¥
|                                     |
| ^v=Move Highlight      <Enter>=Select Entry      Esc=Exit without Save      |
|-----¥

```

9. Select **Add Boot Option**.

```

/-----¥
|                                     |
|                               Boot Maintenance Manager                       |
|-----¥

Go Back To Main Page                                     Add EFI Application or
Add Boot Option                                           Removable Fs as Boot
Delete Boot Option                                         Option
Change Boot Order

/-----¥
|                                     |
| ^v=Move Highlight      <Enter>=Select Entry      Esc=Exit without Save    |
|-----¥

```

10. Select the boot device to create boot option.

```

/-----¥
|                                     |
|                               File Explorer                               |
|-----¥

FC STORAGE DEVICE,
[Acpi (PNP0A08, 0x0) /Pci (0x9, 0x0) /Pci (0x0, 0x0) /Pci (0x4
, 0x0) /Fibre (0x50060E801025A261, 0x0) ]
USB STORAGE DEVICE.
[Acpi (PNP0A08, 0x0) /Pci (0x1A, 0x0) /USB (0x0, 0x0) ]
NETWORK BOOT DEVICE
[PciRoot (0x1) /Pci (0x4, 0x0) /Pci (0x1, 0x0) /MAC (00008762
CB78, 0x0) ]
NETWORK BOOT DEVICE
[PciRoot (0x1) /Pci (0x4, 0x0) /Pci (0x2, 0x0) /MAC (00008762
CB79, 0x0) ]

/-----¥
|                                     |
| ^v=Move Highlight      <Enter>=Select Entry      Esc=Exit without Save    |
|-----¥

```



Tip:

- Set the virtual drive configuration if CD/DVD device is not recognized.
- For a logical EFI boot, select **EFISECTOR** or **ANACONDA** as the boot device to create boot option.

Note that the displayed information might vary depending on the boot medium.

The example of **EFISECTOR** following:

EFISECTOR,

[Acpi (PNP0A08, 0x0) /Pci (0x1D, 0x0) /USB (0x0, 0x0) /USB (0x0, 0x0) /USB (0x2, 0x0) /Unit (0x0) /CDROM (0x1, 0x958, 0x1C11

Select **EFI > BOOT > BOOTX64.EFI** in the following windows.

```

/-----¥
|                                     File Explorer                                     |
¥-----/

USB STORAGE DEVICE,
[Acpi (PNP0A08, 0x0) /Pci (0x1A, 0x0) /USB (0x0, 0x0) ]

Input the description      _
Input Optional Data       _

Commit Changes and Exit
Discard Changes and Exit

/-----¥
|                                     |
| ^v=Move Highlight        <Enter>=Select Entry        Esc=Exit without Save        |
¥-----/

```

```

/-----¥
|                                     File Explorer                               |
¥-----/

USB STORAGE DEVICE,
[Acpi (PNPOA08, 0x0) /Pci (0x1A, 0x0) /USB (0x0, 0x0) ]

Input the description      _
In/-----¥
|                                     |
Co|                                     Please type in your data                |
Di| GD/DVD                           |
|                                     |
¥-----/

/-----¥
|                                     |
|                                     <Enter>=Complete Entry   Esc=Exit without Save |
¥-----/

```



- Available number of characters: 2 to 75 characters
- Available character types: alphanumeric and special characters
(!"#\$%&'()*= ~|{ } _ ? * ` + > < , . / ¥ :] ; [@ ^ -)

Hitachi Compute Blade 500 Series Logical partitioning manager User's Guide

```

/-----¥
|                                     |
|                                     | File Explorer |
|-----¥

USB STORAGE DEVICE,                               Commit Changes and Exit
[Acpi (PNP0A08, 0x0) /Pci (0x1A, 0x0) /USB (0x0, 0x0)]

Input the description      CD/DVD
Input Optional Data       -

Commit Changes and Exit
Discard Changes and Exit

/-----¥
|                                     |
| ^v=Move Highlight      <Enter>=Select Entry      Esc=Exit without Save |
|-----¥

```

14. Press **Esc**.

```

/-----¥
|                                     |
|                                     | Boot Maintenance Manager |
|-----¥

Boot Options                                           Modify system boot
                                                         options
Set Time Out Value

Reset System

/-----¥
|                                     |
| ^v=Move Highlight      <Enter>=Select Entry      Esc=Exit without Save |
|-----¥

```



Note:

- If you need to re-create the boot option because, for example, the boot option was deleted by mistake, perform the procedure below. Note that, for Windows booted by using a logical EFI (X64.UEFI), a new boot option is automatically added when the OS starts up. This boot option is the same as the one that was automatically created during OS installation and can be used for both paths in a multi-path configuration.

Guest OS Boot

1. Select **Boot Maintenance Manager**.

ComputeBlade 520HB1 LP LPAR
Genuine Intel(R) CPU @ 2.60GHz
(IA32.UEFI) Ver: 1.20

2.60 GHz

Continue

Boot Maintenance Manager

This selection will
take you to the Boot
Maintenance Manager

^v=Move Highlight <Enter>=Select Entry

2. Select **Boot Options**.

```

/-----¥
|                                     |
|                               Boot Maintenance Manager                       |
|-----¥
Boot Options                                Modify system boot
                                           options

Set Time Out Value

Reset System


/-----¥
|                                     |
| ^v=Move Highlight      <Enter>=Select Entry      Esc=Exit without Save    |
|-----¥

```

3. Select **Add Boot Option**.

```

/-----¥
|                                     |
|                               Boot Maintenance Manager                       |
|-----¥

Go Back To Main Page                                     Add EFI Application or
Add Boot Option                                           Removable Fs as Boot
Delete Boot Option                                         Option
Change Boot Order

/-----¥
|                                     |
| ^v=Move Highlight      <Enter>=Select Entry      Esc=Exit without Save      |
|-----¥

```

4. Select the boot device to create boot option.

```

/-----¥
|                                     |
|                               File Explorer                               |
|-----¥

FC STORAGE DEVICE
[Acpi (PNP0A08, 0x0) /Pci (0x9, 0x0) /Pci (0x0, 0x0) /Pci (0x4
, 0x0) /Fibre (0x50060E801025A261, 0x0) ] *
NETWORK BOOT DEVICE
[PciRoot (0x1) /Pci (0x4, 0x0) /Pci (0x1, 0x0) /MAC (00008762
CB78, 0x0) ]
NETWORK BOOT DEVICE
[PciRoot (0x1) /Pci (0x4, 0x0) /Pci (0x2, 0x0) /MAC (00008762
CB79, 0x0) ]

/-----¥
|                                     |
| ^v=Move Highlight      <Enter>=Select Entry      Esc=Exit without Save      |
|-----¥

```



Tip:

- Check the disk array configuration to make sure the configuration is correct if HBA device is not recognized.
- For a logical BIOS boot, "*" appears at the end of the message of the boot device that OS has been installed.
- For a logical EFI boot, select **NO VOLUME LABEL** or **SYSTEM** as the boot device to create boot option.

Note that the displayed information might vary depending on the boot medium.

The example of **NO VOLUME LABEL** following:

For Linux, select **EFI** > **redhat** > **grub.efi** in the following windows.

```

/-----¥
|                                     File Explorer                                     |
¥-----/

FC STORAGE DEVICE,
[Acpi (PNPOA08, 0x0) /Pci (0x9, 0x0) /Pci (0x0, 0x0) /Pci (0x4
, 0x0) /Fibre (0x50060E801025A261, 0x0) ] *

Input the description      _
Input Optional Data       _

Commit Changes and Exit
Discard Changes and Exit

/-----¥
|                                     |
| ^v=Move Highlight        <Enter>=Select Entry        Esc=Exit without Save        |
¥-----/

```

```

/-----¥
|                                     File Explorer                               |
¥-----/

FC STORAGE DEVICE,
[Acpi (PNPOA08, 0x0) /Pci (0x9, 0x0) /Pci (0x0, 0x0) /Pci (0x4
, 0x0) /Fibre (0x50060E801025A261, 0x0) ] *

In/-----¥
In|
|                                     Please type in your data                 |
Co|SAN                                |
Di|
¥-----/

/-----¥
|                                     <Enter>=Complete Entry   Esc=Exit without Save    |
¥-----/

```


**Tip:**

- Available number of characters: 2 to 75 characters
- Available character types: alphanumeric and special characters
(!"#\$%&'()*=~|{ }_?*`+>< ,./¥:];[@^ -)

7. Select Commit Changes and Exit.

```

/-----¥
|                                     File Explorer                               |
¥-----/

FC STORAGE DEVICE,                                     Commit Changes and Exit
[Acpi (PNP0A08, 0x0) /Pci (0x9, 0x0) /Pci (0x0, 0x0) /Pci (0x4
, 0x0) /Fibre (0x50060E801025A261, 0x0)] *

Input the description      SAN
Input Optional Data       -

Commit Changes and Exit
Discard Changes and Exit

/-----¥
|                                     |
| ^v=Move Highlight      <Enter>=Select Entry      Esc=Exit without Save      |
¥-----/

```

8. Press Esc.

```

/-----¥
|                                     Boot Maintenance Manager                     |
¥-----/

Boot Options                                     Modify system boot
Set Time Out Value                                options
Reset System

/-----¥
|                                     |
| ^v=Move Highlight      <Enter>=Select Entry      Esc=Exit without Save      |
¥-----/

```

Changing Boot order

You can set the priority order to boot device by changing a boot order. If the priority order of the boot device has been set already, you do not need the following setup.

Table 5-6 Boot option

Boot option example	Boot device		Boot type	Use
	Logical BIOS (A32.UEFI)	Logical EFI (X64.UEFI)		
SAN	FC STORAGE DEVICE	• NO VOLUME LABEL • SYSTEM (The displayed information might vary depending on the boot medium.)	SAN Boot	Guest OS Boot
CD/DVD	USB STORAGE DEVICE	• EFISECTOR • ANACONDA (The displayed information might vary depending on the boot medium.)	CD/DVD Boot	Use CD/DVD
DPM	NETWORK BOOT DEVICE	Load File	Network Boot	Use SC/DPM
EFI Internal Shell	-	-	EFI Shell Boot	Set EFI driver

OS Set up

1. Select **Boot Maintenance Manager**.

ComputeBlade 520HB1 LP LPAR Genuine Intel(R) CPU @ 2.60GHz (IA32.UEFI) Ver: 1.20		2.60 GHz
Continue <u>Boot Maintenance Manager</u>		This selection will take you to the Boot Maintenance Manager
^v=Move Highlight <Enter>=Select Entry		

2. Select **Boot Options**.

/----- Boot Maintenance Manager \-----	
<u>Boot Options</u> Set Time Out Value Reset System	Modify system boot options
/----- ^v=Move Highlight <Enter>=Select Entry Esc=Exit without Save \-----	

3. Select **Change Boot Order**.

```

/-----¥
|                                     |
|                                     |
|-----¥
|                                     |
| Go Back To Main Page               | Will be valid on next |
| Add Boot Option                    | boot                 |
| Delete Boot Option                 |                     |
| Change Boot Order                |                     |
|                                     |                     |
|                                     |                     |
|                                     |                     |
|-----¥
|                                     |
| ^v=Move Highlight    <Enter>=Select Entry    Esc=Exit without Save |
|-----¥

```

4. When the priority order of the boot device has been set already, **Change Boot Order** is not necessary. Select **Discard Changes and Exit**, then execute from the procedure 8.
5. In other case, select **Change the order**.

```

/-----¥
|                                     |
|-----¥
|                                     |
| Change the order    <EFI Internal Shell>    Change the order |
|                                     | <SAN> |
|                                     | <CD/DVD> |
|                                     |         |
| Commit Changes and Exit |         |
| Discard Changes and Exit |         |
|                                     |         |
|                                     |         |
|-----¥
|                                     |
| ^v=Move Highlight    <Enter>=Select Entry    Esc=Exit without Save |
|-----¥

```

6. Press + or -, change the priority order of the boot device as below.

9. Select **Continue**.

10. Press any key immediately one time, when "Press any key to boot from CD or DVD" is displayed.



Tip:

- If you press any key slowly, the install tool of the DVD-ROM assigned to the LPAR may not boot. In that case, deactivate the LPAR once, and activate the LPAR again.
- If you press any key multiple times, "Windows Boot Manager" might be displayed. In this case, select **Windows Setup [EMS Enabled]**, and continue the setup.

Guest OS Boot

1. Select **Boot Maintenance Manager**.

ComputeBlade 520HB1 LP LPAR		2.60 GHz
Genuine Intel(R) CPU @ 2.60GHz		
(IA32.UEFI) Ver: 1.20		
Continue		This selection will
<u>Boot Maintenance Manager</u>		take you to the Boot
		Maintenance Manager
^v=Move Highlight <Enter>=Select Entry		

2. Select **Boot Options**.

/-----¥		
	Boot Maintenance Manager	
¥	/-----¥	
<u>Boot Options</u>		Modify system boot
Set Time Out Value		options
Reset System		
/-----¥		
	^v=Move Highlight <Enter>=Select Entry Esc=Exit without Save	
¥	/-----¥	

3. Select **Change Boot Order**.

```

/-----¥
|                                     |
|                                     |
|-----¥
|                                     |
| Go Back To Main Page               | Will be valid on next |
| Add Boot Option                   | boot                 |
| Delete Boot Option                |                     |
| Change Boot Order                |                     |
|                                     |                     |
|                                     |                     |
|                                     |                     |
|-----¥
|                                     |
| ^v=Move Highlight      <Enter>=Select Entry      Esc=Exit without Save |
|-----¥

```

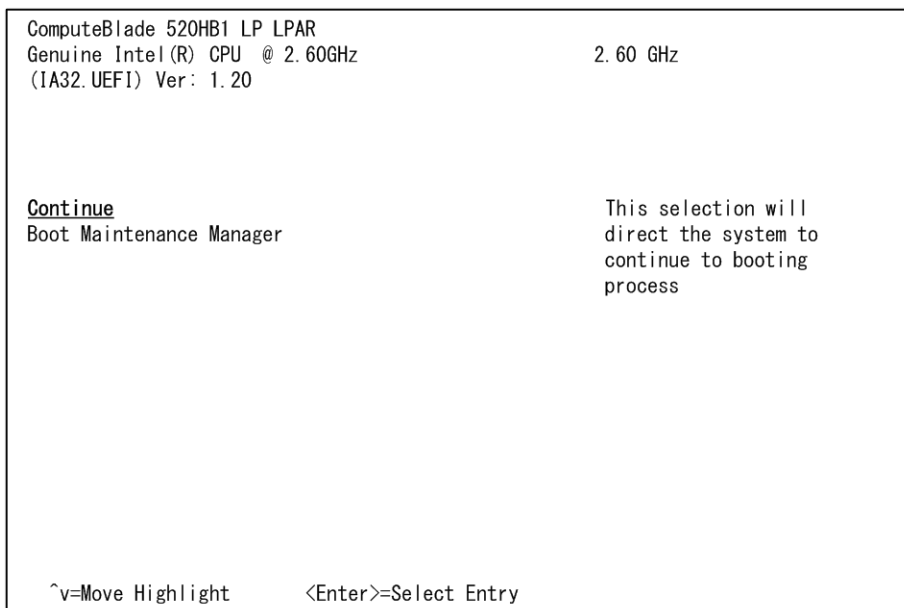
4. When the priority order of boot the device has been set already, **Change Boot Order** is not necessary. Select **Discard Changes and Exit**, then execute from procedure 8.
5. In other case, select **Change the order**.

```

/-----¥
|                                     |
|                                     |
|-----¥
|                                     |
| Change the order      <EFI Internal Shell>      Change the order |
|                                     | <SAN *>      |
|                                     | <CD/DVD>     |
|                                     |             |
| Commit Changes and Exit            |             |
| Discard Changes and Exit           |             |
|                                     |             |
|                                     |             |
|-----¥
|                                     |
| ^v=Move Highlight      <Enter>=Select Entry      Esc=Exit without Save |
|-----¥

```

6. Press + or -, change the priority order of the boot device as below.



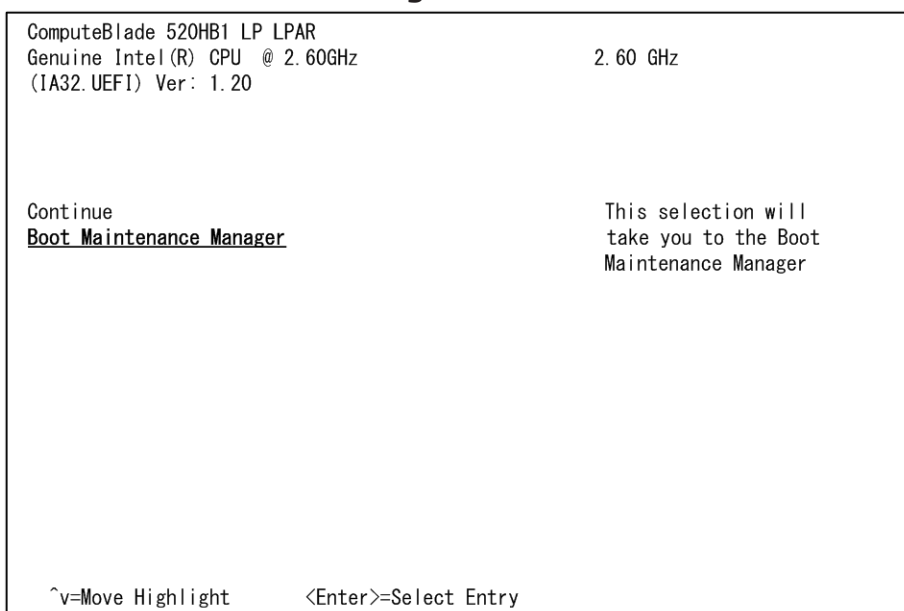
Tip:

- When the guest OS is Linux, you can change or reset the boot order by using the efibootmgr command of the guest OS.

Deleting Boot order

You can delete the unnecessary boot device to not boot. The following example provides the procedure for deleting the boot option of [CD/DVD].

1. Select **Boot Maintenance Manager**.



2. Select **Boot Options**.


```

/-----Y
|                                     |
|                               Boot Maintenance Manager                       |
|-----Y
CD/DVD                                [X]                                Acpi (PNP0A08, 0x0) / Pci (0x1
Windows                             [ ]                                D, 0x7) / USB (0x3, 0x0) / Unit (
EFI Internal Shell                   [ ]                                0x0)

Commit Changes and Exit
Discard Changes and Exit

/-----Y
|                                     |
| ^v=Move Highlight      <Spacebar>Toggle Checkbox   Esc=Exit without Save    |
|-----Y

```

5. Select **Commit Changes and Exit**.

```

/-----Y
|                                     |
|                               Boot Maintenance Manager                       |
|-----Y
CD/DVD                                [X]
Windows                             [ ]
EFI Internal Shell                   [ ]

Commit Changes and Exit
Discard Changes and Exit

/-----Y
|                                     |
| ^v=Move Highlight      <Enter>=Select Entry      Esc=Exit without Save   |
|-----Y

```

Display settings for Guest OS

The display of Guest OS is recommended as the following settings when using the installed Guest OS by the remote console.

In the case which the display is not set as the following settings, display speed and mouse action are slow in the remote console.

- [LPAR manager firmware version: 01-5X or lower]

Table 5-7 Recommended display settings

Guest OS	Screen resolution	Color quality
Windows	1024 x 768 pixels	16 bit
Linux	1024 x 768 pixels	16 bit

- [LPAR manager firmware version: 01-6X or later]

Table 5-8 Recommended display settings

Guest OS	Screen resolution	Color quality
Windows	1024 x 768 pixels	32 bit
Linux	1024 x 768 pixels	24 bit

Display settings for Windows



Note:

- When using Windows Server 2012 or later in EFI boot, the recommended display settings are "Screen resolution: 1024 by 768 pixels" and "Color quality: Highest (32 bit)" on Guest OS.
Display settings cannot be changed.

Set "Screen resolution" to "1024 by 768 pixels", "Color quality" to "Medium (16 bit)" (When setting 32 bit, set to "Highest (32 bit)") in the Display Properties dialog box. Click OK.

When the dialog box to confirm is displayed, click Yes.

Display settings for Linux



Note:

- When setting a display using System > Administration > Display or System > Preferences > Screen Resolution, the settings of resolution or color quality might not be reflected normally, or the display might be distorted after the resolution settings.
In that case, set the display using `/etc/X11/xorg.conf`.

Open `/etc/X11/xorg.conf` in an editor, and set the following settings.

1. Confirm that Section "Device" > Driver is `vesa` in `/etc/X11/xorg.conf`.

When other than `vesa`, set `vesa`.

Example of Section "Device" settings:

```
Section "Device"
Identifier "Videocard0"
Driver "vesa"
EndSection
```

2. If Section "Monitor" or Section "Screen" > Monitor line is not exist, refer to the following examples to create the new line.

Set Section "Screen" > SubSection "Display" > Modes as 1024x768.
If Modes line is not exist, create the new line.

Set Section "Screen" > DefaultDepth or Section "Screen" > SubSection "Display" > Depth as 16 (24 when set 24 bit).

Example of Section "Monitor" settings:

```
Section "Monitor"
    Identifier      "Monitor0"
    ModelName       "LCD Panel 1024x768"
    HorizSync       31.5 - 48.0
    VertRefresh     26.0 - 65.0
    Option          "dpms"
EndSection
```

Example of Section "Screen" settings:

```
Section "Screen"
    Identifier      "Screen0"
    Device          "Videocard0"
    Monitor         "Monitor0"
    DefaultDepth    16          <- "24" when set 24 bit

    SubSection "Display"
        Viewport    0 0
        Depth       16          <- "24" when set 24 bit
        Modes       "1024x768"
    EndSubSection
EndSection
```

Restart the X server to reflect the screen resolution.

Deactivation of LPAR

Execute [Shutdown of guest OS] when OS is operating normally.

Shutdown of Guest OS

Execute (Enter) the Shutdown command. When the Shutdown processing is finished, the LPAR is deactivated.

Deactivation of LPAR

Operation of LPAR deactivation corresponds to turning off power of Server Blade. Therefore take care enough for executing deactivation.

Especially, the deactivation during OS data access may destroy the data. So, be sure to execute OS shutdown before LPAR deactivation.

1. Deactivate a LPAR from the **LPAR manager** screen.
On the **LPAR manager Menu** or **LPAR manager Menu or Logical Partition Configuration** screen, press **F4** key for deactivation of LPAR.

On the sub-screen, select the LPAR to deactivate using the cursor and press **Enter**.

++ Logical Partition (LPAR) ++																			
#	Name	Sta	Scd	Pro	Deactivate LPAR					ID	AA	AC	PC	VC	PB				
1	LPAR1	Act	S	2						Y	*	N	N	N	BIOS				
2	LPAR2	Dea	D	2	1 LPAR1					Y	*	N	*	N	BIOS				
3					2														
4					3														
5					4														
6					5														
7					6														
8					7														
9					8														
10					9														
					10					Up / [PageDown]:Page Down									
++ Logical Information ++										++ Physical Information ++									
				Pro	Shr					User Memory : 11008									
Assign Total				4	2					Processors : 16(16)									
Act Total				2	2					Shared : 16									
Remain										Dedicate : 0									
The power status: 'Dea' (De										'Act' (Activated:power-on)									
[<-]:Prev/Next:[->]																			
F1:VCAssign F2:MemAllocDsp										F6:Add F7:Remove Esc:Menu									

Figure 5-48 LPAR Deactivate Screen

- When a sub-screen to confirm Deactivate: power-off appears, select **Yes**.

+ Logical Partition (LPAR) Configuration +														
#	Name	Sta	Scd	Pro	Grp	Srv	Mem	VN	ID	AA	AC	PC	VC	PB
1	LPAR1	Act	S	2	0	100	2048	2	Y	*	N	N	N	BIOS
2	LPAR2	Dea	D	2	0	100	2048	0	Y	*	N	*	N	BIOS
3														
4														
5														
6														
7														
8														
9														
10														
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+														
LPAR1 [LPAR1]														
Deactivation means power-off.														
Do you continue?														
Yes														
No														
[PageDown]: Page Down														
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+														
+ Logical Information														
Yes (Don't ask anymore)														
Physical Information														
Assign Total														
Act Total														
Remain														
The power status: 'Dea' (Deactivated: power-off), or 'Act' (Activated: power-on)														
F1:VCAssign F2:MemAllocDsp F3:Act F4:Deact F5:React F6:Add F7:Remove Esc: Menu														

**Note:**

- Sub-screen for confirmation of LPAR deactivation might not be displayed depending on configuration of **Deactivation and Reactivation in LP Options** screen.

3. Operated LPAR is deactivated as follows.

Logical Partition (LPAR) Configuration														
#	Name	Sta	Scd	Pro	Grp	Srv	Mem	VN	ID	AA	AC	PC	VC	PB
1	LPAR1	Dea	S	2	0	100	2048	2	Y	*	N	N	N	BIOS
2	LPAR2	Dea	D	2	0	100	2048	0	Y	*	N	*	N	BIOS
3														
4														
5														
6														
7														
8														
9														
10														
[PageUp]: Page Up / [PageDown]: Page Down														
Logical Information							Physical Information							
			Pro	Shr	Ded		Mem	VN			User Memory : 11008			
	Assign Total		4	2	2		4096	2			Processors : 16 (16)			
	Act Total		0	0	0		0	0			Shared : 0			
	Remain						11008				Dedicate : 0			
Logical partition name														
F1:VCAssign F2:MemAllocDsp F3:Act F4:Deact F5:React F6:Add F7:Remove Esc: Menu														

Figure 5-50 LPAR Status Confirmation Screen

**Note:**

- If **LP Auto Shutdown** is set in **LP Options** screen, the LPAR manager shutdown is performed automatically after all the LPARs have been deactivated.

Termination of LPAR manager

Shutting down of LPAR manager

All LPARs have to be deactivated for shutting down the LPAR manager. See [Deactivation of LPAR on page 5-65](#) to deactivate LPAR. See [LPAR manager Shutdown on page 10-13](#) for note.

1. Press **Alt + r** on any screen for displaying sub-screen of **Shutdown LPAR manager system**. Then select **Shutdown** and press **Enter** key.

```

+-----+
| Menu [LP_192168020] ----- yyyy/mm/dd hh: mm: ss |
+-----+
| Logical Partition Configuration      System Configuration |
| Logical Processor Configuration     System Service State  |
| Physical Processor Configuration    Date and Time         |
| PCI Device Information              LP Options             |
| PCI Device Assignment              LPAR Usage              |
| VNIC Assignment                    Front Panel            |
| Shared FC Assignment                +-----+             |
| Allocated FC Information | Shutdown LP system | sion Information |
|                               +-----+             |
|                               Shutdown         |             |
|                               Cancel           |             |
+-----+
| Tips -----+-----+ |
| F3 : Activate      F8 : LPAR Screen |
| F4 : Deactivate    F9 : Save Configuration |
| F5 : Reactivate |
| F6 : Add Definition  Alt + t : Screen Refresh |
| F7 : Remove        Alt + r : LP System Shutdown |
+-----+
| Configure logical partitioning of processors and memory |
+-----+
| : Move Cursor  Enter: Select | LP Ver. : VV-RR(TT-KK) |
+-----+

```

Figure 5-51 LPAR manager Shutdown Screen

2. A sub-screen will appear to confirm the shutdown of the LPAR manager system. Select **Yes** and press **Enter**.

```

+-----+
| Menu [LP_192168020] ----- yyyy/mm/dd hh: mm: ss |
+-----+
| Logical Partition Configuration      System Configuration |
| Logical Processor Configuration     System Service State  |
| Physical Processor Configuration    Date and Time         |
| PCI Device Information              LP Options             |
| PCI Device Assignment              LPAR Usage              |
| VNIC Assignment                    Front Panel            |
| Shared FC Assign+-----+ |
| Allocated FC Inf| Shutdown LP system.Do You Continue? |rmation |
|                               +-----+ |
|                               Yes         |
|                               No          |
+-----+
| Tips -----+-----+ |
| F3 : Activate      F8 : LPAR Screen |
| F4 : Deactivate    F9 : Save Configuration |
| F5 : Reactivate |
| F6 : Add Definition  Alt + t : Screen Refresh |
| F7 : Remove        Alt + r : LP System Shutdown |
+-----+
| Configure logical partitioning of processors and memory |
+-----+
| : Move Cursor  Enter: Select | LP Ver. : VV-RR(TT-KK) |
+-----+

```

Figure 5-52 LPAR manager Shutdown Confirmation Screen

3. A sub-screen will appear, saying that the LPAR manager system is shutting down. It will take a couple of minutes before the power supply for the server blade is shut off. Once the LPAR manager shutdown has begun, no operation on the LPAR manager screens is available.

```

+----- Menu [LP_192168020] ----- yyyy/mm/dd hh: mm: ss +-----
|
| Logical Partition Configuration      System Configuration
| Logical Processor Configuration     System Service State
| Physical Processor Configuration    Date and Time
| PCI Device Information              LP Options
| PCI Device Assignment               LPAR Usage
| VNIC Assignment                    Front Panel
| Shared FC Assignment                LP system logs
| Allocated FC Information             Firmware Version Information
|
+-----+ LP System will shutdown after a few minutes. +-----+
|
+----- Tips -----+
| F3 : Activate          F8 : LPAR Screen
| F4 : Deactivate        F9 : Save Configuration
| F5 : Reactivate
| F6 : Add Definition    Alt + t : Screen Refresh
| F7 : Remove            Alt + r : LP System Shutdown
|
+-----+
| Configure logical partitioning of processors and memory
|
+-----+
| : Move Cursor  Enter: Select                                LP Ver. : VV-RR(TT-KK)
+-----+

```

Figure 5-53 Screen during LPAR manager Shutdown

4. A sub-screen appears saying that the LP System Shutdown is complete, and the power supply of the server blade shuts off.

```

+----- Menu [LP_192168020] ----- yyyy/mm/dd hh: mm: ss +-----
|
| Logical Partition Configuration      System Configuration
| Logical Processor Configuration     System Service State
| Physical Processor Configuration    Date and Time
| PCI Device Information              LP Options
| PCI Device Assignment               LPAR Usage
| VNIC Assignment                    Front Panel
| Shared FC Assignment                LP system logs
| Allocated FC Information             Firmware Version Information
|
+-----+ LP System Shutdown. Bye... +-----+
|
+----- Tips -----+
| F3 : Activate          F8 : LPAR Screen
| F4 : Deactivate        F9 : Save Configuration
| F5 : Reactivate
| F6 : Add Definition    Alt + t : Screen Refresh
| F7 : Remove            Alt + r : LP System Shutdown
|
+-----+
| Configure logical partitioning of processors and memory
|
+-----+
| : Move Cursor  Enter: Select                                LP Ver. : VV-RR(TT-KK)
+-----+

```

Figure 5-54 Screen after LPAR manager shutdown completion



Note:

- It is also possible to shut down the LPAR manager system using ServerConductor / Blade Server Manager. For details, see the *ServerConductor / Blade Server Manager*.

- To shut down the LPAR manager system using the power control schedule of ServerConductor / Blade Server Manager, install ServerConductor / Advanced Agent to all the LPARs.
-

LPAR manager backup

This chapter explains LPAR manager backup.

- ☐ [LPAR manager backup files](#)
- ☐ [Creating backup files](#)
- ☐ [Restoring backup files](#)

LPAR manager backup files

- Create a backup file of LPAR manager, and keep the backup file safe before starting the operation, or when performing [Operations required creating backup files on page 6-2](#).
- Quick recovery can be performed due to creating backup files for LP configuration even when a failure occurs. We recommend that back up LP configuration files regularly in case the LP configuration should be restore to original settings.

Note that, by using the KeepConfig option, you are able to back up an LPAR manager configuration as of a point in time before device isolation, even after the device isolation. For details, see [Backing up the LPAR manager configuration as of a time before device isolation on page 6-3](#).

- When a hardware failure occurs, isolation or degradation may occur. Some devices cannot be recognized at the next LP startup time, and some LP configuration information are deleted or reconfigured when isolation/degradation occurs in a processor, a memory, or a PCI device. Restore backup files to return to the original LP configuration information after hardware exchange when this event occurs. For restrictions of isolation/degradation, see [Isolation/degradation for CPU, memory, or PCI device on page 10-14](#), [CPU core degradation on page 10-14](#).

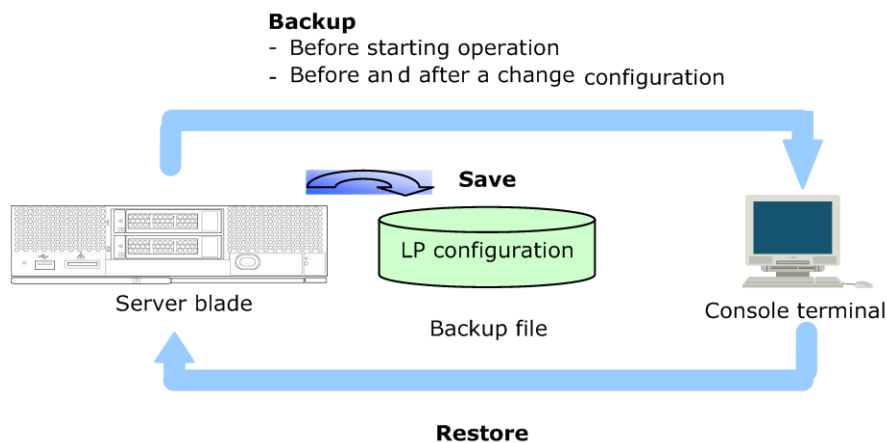


Figure 6-1 Saving and backing up the LPAR manager configuration information

Operations required creating backup files

Before creating backup files

- Increase or decrease of CPU, change of Hyper-Threading settings, change of plan degradation settings
- Increase or decrease of memory, change of plan degradation settings
- Increase or decrease of mezzanine card, change of type of cards
- Change of SMP configuration for server blade

After creating backup files

- Change of LP system settings
- Add and delete of LPAR, change of LPAR settings
- Change of boot order settings for LPAR
- Change of EFI driver settings for LPAR

Save/backup/restore tools for LP configuration

The following table shows the save/backup/restore tools for LP configuration.

Table 6-1 Save/backup/restore tools

LP status	Tools	Save	Backup	Restore
Non-operating state	Web/CLI console	-	Y	Y
	HCSM	-	-	-
	SC/BSM	-	Y	Y
	HVM Navigator	-	-	-
	LPAR manager screen	-	-	-
	HvmSh	-	-	-
Operating state	Web/CLI console	Y	Y	-
	HCSM	Y ¹	-	-
	SC/BSM	Y	Y	-
	HVM Navigator	Y	-	-
	LPAR manager screen	Y	-	-
	HvmSh	Y	-	-
Notes:				
1. When you use HCSM to change the LPAR manager configuration, HCSM automatically saves the LPAR manager configuration information.				

Backing up the LPAR manager configuration as of a time before device isolation

When device isolation occurs, the LPAR manager does not detect devices in startup of the LPAR manager. At that time, part of the LPAR manager configuration on devices is cleared or reset.

By using the KeepConfig option, the LPAR manager does not save the LPAR manager configuration in device isolation until exit of safe mode and holds LPAR manager configuration before device isolation.

You are able to set the KeepConfig option with HvmSh. For details, see the manual *HVM Management Command (HvmSh) Operation Guide*.

- When device isolation occurs with the KeepConfig option enabled, the LPAR manager outputs event logs and notifies HCSM of the event via an alert.
- When LPAR manager detects one of the following events comparing with the LPAR manager configuration, the LPAR manager determines that PCI devices are isolated.
 - The number of physical processor cores has reduced.
 - Available memory size has reduced.
 - One or more of IO devices are not detected.
- When an event log is output and the LPAR manager starts in safe mode, back up the LPAR manager configuration. After that, check device isolation and then exit safe mode. Also, after you change hardware devices for maintenance, restore the LPAR manager configuration with a backup file.



Note:

- When you use the KeepConfig option, install one of the following versions of management module firmware.

Server blade	Management Module firmware
CB 520H B3	A0245 or later
CB 520H B4	A0305 or later
CB 520X B1	A0245 or later
CB 520X B2	A0270 or later
CB 520X B3	A0320 or later
CB520H A1/B1/B2 CB520A A1 CB540A A1/B1	A0320 or later

- When you perform one of the following operations with the KeepConfig option enabled, the LPAR manager detects reduction of the number of PCI devices and then starts in safe mode. In this case, exit safe mode.
 - Removing PCI devices or coordinate the number of PCI devices by software operation
 - Performing N+M cold standby between the active and the standby server blades with different hardware configurations
-

Creating backup files

Save LP configuration files to create backup files. Keep the backup files safe.

For procedures, see the *Hitachi Compute Blade 500 Series Management Module Setup Guide*, and the *ServerConductor/Blade Server Manager Series Administration Guide*.

Restoring backup files

Restore backup files of LP configuration saved in [Creating backup files on page 6-4](#).

Check a LP system time and OS system time after restoring backup files. Set the system time if time lag occurs.

For procedures, see the *Hitachi Compute Blade 500 Series Management Module Setup Guide* and the *ServerConductor/Blade Server Manager Series Administration Guide*.

Operation by LPAR manager Screen

This chapter explains LPAR manager operation by using the LPAR manager screen. Contents on the screens depend on the version of HVM Navigator.

- [LPAR manager Key Operations](#)
- [Summary of LPAR manager Screen](#)

LPAR manager Key Operations

The Keys can change or perform operations on any selected item on the LPAR manager screen by pressing **Enter**. Use the arrow keys to move the cursor.

The following table shows main keys and their functions.

Table 7-1 LPAR manager Screen Key Operations Table

Key	Operation / Roll	Operation Performing Screen
↑, ↓, ←, →	Moves the cursor to a selectable item.	All Screens
Tab	Moves the cursor to a selectable item.	All Screens
Enter	Executes or changes the settings of the selected item. Sets the value in the sub-screen for selecting (setting) values, and closes the sub-screen.	All Screens
Esc	Press Esc on any LPAR manager screen other than the LPAR manager Menu screen to display the LPAR manager Menu screen. Nothing will happen if you press Esc in the LPAR manager Menu screen. Cancels the selection in the sub-screen, and closes the sub-screen.	All screens other than the LPAR manager menu screen
PageUp	Scrolls the displayed page up. Selects the largest value in the sub-screen for selecting values.	Screens that can be moved up or down Sub-screens with which selects a value
PageDown	Scrolls the displayed page down. Selects the smallest value in the sub-screen for selecting values.	Screens that can be moved up or down Sub-screens with which selects a value
F1	Used to specify the size of the memory to be allocated to LPAR in GB units	Memory allocation sub-screen for LPAR Configuration screen
	Used to select a VC number and display VC number/TCP-port assignment.	A sub-screen to assign virtual COM for LPAR configuration screen
	Adds processor groups.	Physical Processor Configuration
	[LPAR manager firmware version 01-9X or later] Sets a limited transmission bandwidth of VF NIC by a 100 Mbps.	A sub-screen for Virtual NIC Assignment
	Adds a user to be user-authenticated.	System Configuration
F2	Displays the memory allocation status on a sub-screen in the LPAR Configuration screen.	Logical Partition Configuration
	Deletes processor groups.	Physical Processor Configuration

Key	Operation / Roll	Operation Performing Screen
	Displays the PCI device mapping information.	PCI Device Information
	Displays the VLAN ID assignment and promiscuous mode setting list on a sub-screen in the VNIC Assignment screen.	Virtual NIC Assignment
	Deletes a user from user authentication.	System Configuration
F3	Activates (powers on) an LPAR.	LPAR manager Menu Logical Partition Configuration
	Changes the password used for user authentication.	System Configuration
F4	Deactivates (powers off) an LPAR.	LPAR manager Menu Logical Partition Configuration
F5	Reactivates (restarts) an LPAR.	LPAR manager Menu Logical Partition Configuration
	Switches USB devices assignment.	PCI Device Assignment
	Sets the promiscuous mode.	Virtual NIC Assignment
F6	Adds (defines) an LPAR.	LPAR manager Menu Logical Partition Configuration
	Change USB auto attach settings	PCI Device Assignment
	Changes the MAC address.	Virtual NIC Assignment
	Changes LPAR manager system time	Date and Time
F7	Deletes an LPAR.	LPAR manager Menu Logical Partition Configuration
	Sets the VLAN mode.	Virtual NIC Assignment
	Changes LPAR manager system time zone	Date and Time
F8	Switches to display of a guest screen.	LPAR manager Menu Logical Partition Configuration
	Sets the packet filter for communication between LPARs.	Virtual NIC Assignment
F9	Saves the LPAR manager configuration to the non-volatile storage in the Switch and Management Module.	LPAR manager Menu Logical Partition Configuration
	[LPAR manager firmware version 01-9X or later]	Virtual NIC Assignment

Key	Operation / Roll	Operation Performing Screen
	Changes a limited transmission bandwidth of VF NIC.	
F10	Used to change the schedule mode for the PCI device.	PCI Device Assignment
	Used to reflect specific settings, such as LP ID and VNIC System No., in the LPAR manager system	System Configuration
F11	Scrolls the displayed page to the left.	Any screen that can move to the left or right
F12	Scrolls the displayed page to the right.	Any screen that can move to the left or right
Alt + t	Refreshes the LPAR manager screen.	All Screens
Alt + r	Shutdown the LPAR manager system. After the shutdown process completed, the power of the server blade will turn off.	All Screens
Ctrl + l	Switches screen from Guest OS screen to LPAR manager screen. Default Key configuration of this function is Ctrl + l .	LP Menu Logical Partition Configuration
Ctrl + b	Returns to the system console for the management module.	All Screens
Ctrl + c	Cancels auto-activation.	Logical Partition Configuration

Summary of LPAR manager Screen

The following table shows the summary of the LPAR manager screens.

Table 7-2 LPAR manager Screens Summary

Screen Name	Usage
LPAR manager Menu	Displays the index screen of other LPAR manager screens.
Logical Partition Configuration	Sets the LPAR name, number of processors and memory size. Also provides the switching function to the LPAR guest screens, and sets the LPAR activated (power-on) and deactivated (power-off).
Logical Processor Configuration	Configures the logical processors for the LPARs. Displays the name of the defined LPARs and their power status.
Physical Processor Configuration	Displays the configuration and status of the physical processors.

Screen Name	Usage
	Adds, deletes, or changes a processor group.
PCI Device Information	Displays the PCI device information.
PCI Device Assignment	Assigns PCI devices to the LPARs. Displays the name of the defined LPARs and their status.
Virtual NIC Assignment	Assigns Logical NICs to the LPARs. The name and status of the defined LPAR are displayed.
Shared FC Assignment	Assigns the shared mode Hitachi 4Gbps Fibre Channel adaptor to the LPARs. The name and status of the defined LPAR are displayed.
Allocated FC Information	Displays the configuration (WWN) of the FCs installed in LPAR manager.
System Configuration	Used to configure the LPAR manager system and set up user authentication.
System Service State	Displays the service status of the LPAR manager system.
Date and Time	Sets the LPAR's SEL (System Event Log) time. Sets the LPAR's RTC (Real Time Clock) time. Sets the time zone. Sets the date and time in the LPAR manager system. Sets the time zone in the LPAR manager system. Adjusts the SEL time and RTC time to be the same as the system equipment time. The name and status of the defined LPAR are displayed.
LP Options	Sets the LPAR manager optional functions.
LPAR Usage	Displays the usage status of the LPAR manager system and the LPARs.
Front Panel	Collects Guest dumps and guest screen data. The name and status of the defined LPAR are displayed.
LP system logs	Displays various events occurred in LPAR manager.
Firmware Version Information	Displays firmware version of each component.

In addition, the relevant sub-screen may be displayed when you select the setting items (by pressing **Enter**).



Note:

- Execute operation ([alt]+t) for refreshing screen when following phenomenon occurred.
 - Previous display remains on the screen.
 - A part of display lacks on the screen.
 - A cursor cannot move by pressing arrow keys though selectable items exist on the screen.
 - A cursor is not displayed though selectable items exist on the screen.
- LPAR manager screen might be switched when any arrow key or any function key is consecutively pressed. Re-display a target screen if this phenomenon occurred.
- LPAR manager screen cannot be operated for one or two minutes while a lot of LPARs are being activated or deactivated by operating SC/BSM.

Common items for all screens

Common items for all screens are below.

```

(2) Safe Mode -----(1)Error Event Detected ---+
|+--- Menu [LP_192168020] ----- yyyy/mm/dd hh:mm:ss ---+ |
||                               ||

```

Figure 7-1 LPAR manager Status on the LPAR manager Screen

Table 7-3 Description of Error Event Detection

No.	Item	Description	Default Value	Supported LPAR manager Version
(1)	Error Event Detected	It indicates that error was detected in LP System Logs. Please confirm the LP System Logs on the LP system logs screen when this item is displayed. This item disappears on the screen by pressing Esc key or opening LP system logs screen again.	-	01-0X~
(2)	Safe Mode	It indicates that LPAR manager started in the safe mode. For details, see Safe mode on page 4-17	-	02-2X~

LPAR manager Menu

LPAR manager Menu screen is below.

(1) Menu	(2) [LP_192168020]	(3) yyyy/mm/dd hh:mm:ss
Logical Partition Configuration	System Configuration	
Logical Processor Configuration	System Service State	
Physical Processor Configuration	Date and Time	
PCI Device Information	LP Options	
PCI Device Assignment	LPAR Usage	
VNIC Assignment	Front Panel	
Shared FC Assignment	LP System Logs	
Allocated FC Information	Firmware Version Information	
(4) Tips		
F3 : Activate	F8 : LPAR Screen	
F4 : Deactivate	F9 : Save Configuration	
F5 : Reactivate		
F6 : Add Definition	Alt + t : Screen Refresh	
F7 : Remove	Alt + r : LP System Shutdown	
Configure logical partitioning of processors and memory		
:Move Cursor	Enter:Select	(5) LP Ver. : VV-RR (TT-KK)

Figure 7-2 LPAR manager Menu Main Screen

Each item on the screen is as follows.

Table 7-4 Details of the LPAR manager Menu Main Screen

No.	Item	Description	Default Value	Supported LPAR manager Version
(1)	Menu	Displays the title of screen that can be displayed by the LPAR manager. In addition, select the title of each screen using the arrow keys, and press Enter , the display changes into the selected screen.	-	01-0X~
(2)	LP Identifier	Displays ID to identify LPAR manager configured in the system configuration screen.	-	01-0X~
(3)	System time	Displays the system time configured in the Date and Time screen. Not updated regularly. Updated when the screen is operated or the screen requires Refresh in the LPAR manager. Use this as an approximate time.	-	01-0X~
(4)	Tips	Lists the function keys and the shortcut keys available in this screen. F3 : Activates an LPAR. F4 : Deactivates an LPAR. F5 : Reactivates an LPAR. F6 : Adds an LPAR definition.	-	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
		F7 : Removes an LPAR definition. F8 : Switches from the LPAR manager screen to an LPAR screen. F9 : Saves the LPAR manager configuration. Alt+t : Refreshes the LPAR manager screen display. Alt+r : Shutdown the LPAR manager system. F3, F5, F6, and F7 are not available on the LPAR where LPAR migration has failed.		
(5)	LPAR manager firmware version	Displays the LPAR manager firmware version and the LPAR manager firmware internal version.	-	01-0X~

How to Return to the LPAR manager Menu from Each LPAR manager Screen

Press **Esc** on each LPAR manager screen. If there are no settable items on the displayed screen, the cursor is always positioned on the Esc: Menu display. Pressing **Enter** in this status returns to the LPAR manager Menu screen.

How to Activate (turn on) an LPAR

Press **F3**: Act in this screen to display a sub-screen, place the cursor on an LPAR to activate on the sub-screen, and press **Enter**. You can perform "Activate" only to deactivated LPARs.

How to Deactivate (Turn off) an LPAR



Note:

- When an LPAR is deactivated, the power source of the LPAR is turned off and a guest OS operating on the LPAR is shut down forcibly. Particularly, when an LPAR is deactivated while the guest OS operating on the LPAR is loading or saving data in a disk, the disk might be destroyed. So, shut down a guest OS operating on the LPAR instead of the deactivating on the LPAR manager screen.
- When shutting down a guest OS operating on an LPAR, the guest OS might be hang up in the final process. In such a case, deactivate the LPAR. (As the connection between the LPAR and a disk has been disconnected, the disk data is not destroyed)

Press **F4**: 'Deact' in this screen to display a sub-screen, place the cursor on an LPAR to deactivate on the sub-screen, and press **Enter**. You can perform "Deactivate" only to activated LPARs.

How to Reactivate an LPAR



Note:

- When an LPAR is reactivated, the power source of the LPAR is rebooted and the guest OS on the LPAR is also rebooted forcibly. Particularly, when an LPAR is reactivated while the guest OS operating on the LPAR is loading or saving data in a disk, the disk might be broken down. So, reboot an LPAR by the operation on a guest OS on the LPAR instead of the reactivating operation on the LPAR manager screen.
- When a guest OS operating on an LPAR is rebooted by the operation on the guest OS, the guest OS might be hang up in the final process. In such a case, reactivate the LPAR. (Then, the connection between an LPAR and a disk is disconnected. So, the disk is not broken down.)

Press **F5**: React in this screen to display a sub-screen, place the cursor on an LPAR to reactivate on the sub-screen, and press **Enter**. You can perform "Reactivate" only to activated LPARs.

How to Add an LPAR

Press **F6**: Add in this screen to display a sub-screen, place the cursor on an LPAR to add on the sub-screen, and press **Enter**.

How to Delete an LPAR

Press **F7**: Remove in this screen to display a sub-screen, place the cursor on an LPAR to delete on the sub-screen, and press **Enter**. You can delete only a deactivated LPAR. When an LPAR is deleted, all resources assigned to the LPAR will be unassigned.

How to change from the LPAR manager screen to an LPAR screen

Press **F8**: LPAR Screen in this screen to display a sub-screen, places the cursor on an LPAR which you change on the sub-screen, and press **Enter**.

You can select only an activated LPAR to change to the screen.

How to Save configuration

Press **F9**: Save Configuration in this screen.

Logical Partition Configuration

Use the [Logical Partition Configuration] screen to do the followings. Example of Logical Partition Configuration screen is below.

+ Logical Partition (LPAR) Configuration +																
#	Name	Sta	Scd	Pro	Grp	Srv	Mem	VN	PN	MN	ID	AA	AC	PC	VC	PB
1	LPAR1	Dea	S	2	0	100	2048	2	A	A	Y	*	N	N	N	BIOS
2	LPAR2	Dea	D	2	0	100	2048	0	A	A	Y	*	N	*	N	BIOS
3	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)		(11)	(13)		(15)		(17)	
4										(10)	(12)		(14)		(16)	
5																
6																
7																
8																
9																
10																
(1)																
[PageUp]:Page Up / [PageDown]:Page Down																
+ Logical Information +								++ Physical Information ++								
			Pro	Shr	Ded		Mem	VN	(21)	User	Memory	:	11008			
(18)	Assign Total		4	2	2		4096	2	(22)	Processors	:	16	(16)			
(19)	Act Total		0	0	0		0	0		Shared	:	0				
(20)	Remain						11008			Dedicate	:	0				
+ Logical partition name +																
F1:VCAssign F2:MemAllocDsp F3:Act F4:Deact F5:React F6:Add F7:Remove																
F8:LPARScreen F9:SaveConfig F11:Left F12:Right																
(23)																
Esc:Menu																

Figure 7-3 LPAR Configuration Screen

LPAR manager firmware version 02-0X or later:

+ Logical Partition (LPAR) Configuration +															
#	Name	Sta	NUMA	PRTE											
1	LPAR1	Dea	N	N											
2	LPAR2	Dea	N	N											
3			(24)	(25)											
4															
5															
6															
7															
8															
9															
10															
[PageUp]:Page Up / [PageDown]:Page Down															
+ Logical Information +								++ Physical Information ++							
			Pro	Shr	Ded		Mem	VN		User	Memory	:	11008		
	Assign Total		4	2	2		4096	2		Processors	:	16	(16)		
	Act Total		0	0	0		0	0		Shared	:	0			
	Remain						11008			Dedicate	:	0			
+ Logical partition name +															
F1:VCAssign F2:MemAllocDsp F3:Act F4:Deact F5:React F6:Add F7:Remove															
F8:LPARScreen F9:SaveConfig F11:Left F12:Right														Esc:Menu	

Figure 7-4 LPAR Configuration Screen (LPAR manager firmware version 02-0X or later)

Description of each items are below.

Table 7-5 Details of the LPAR Configuration Screen

No.	Item	Description	Default Value	Supported LPAR manager Version
(1)	#	Displays the LPAR numbers.	-	01-0X~
(2)	Name	Sets the LPAR name. Maximum character length of LPAR name is 31. And identical LPAR name cannot set to 2 or more files. The 8th character is changed to tilde '~' and the later characters are omitted when the length of LPAR name is 9 or more. '0' ~ '9', 'A' ~ 'Z', 'a' ~ 'z', '-' and '_' can be used for LPAR name. However only 'A' ~ 'Z' and 'a' ~ 'z' can be used for the initial character.	NO_NAME	01-0X~
(3)	Sta	Displays the LPAR status. Act (Activate): The LPAR is powered on. Dea (Deactivate): The LPAR is powered off. Fai (Failure): The LPAR cannot be used due to an unrecoverable failure. Reboot LPAR manager when this happens. Activate, deactivate and reactivate the LPAR.	Dea	01-0X~
(4)	Scd	Sets a scheduling mode. S: Shared mode D: Dedicated mode	D	01-0X~
(5)	Pro	Sets the number of logical processors to allocate to the LPAR.	-	01-0X~
(6)	Grp	Sets the processor group number.	D	01-0X~
(7)	Srv (Service Ratio)	Set a value between 1 and 999 as the relative allocation (service ratio) of the time an LPAR uses a physical processor (Service-time). This value is only meaningful for shared mode LPARs. It is meaningless for dedicated mode LPARs and cannot be set for them.	100	01-0X~
(8)	Mem	Sets the memory size allocated to an LPAR in units of MB. This is always a multiple of 256.	1024	01-0X~
(9)	VN (Virtual Network)	Displays the number of Logical NICs allocated to the LPAR.	0	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
	Interface Card)			
(10)	PN	Displays the processor node. A: Shows the node is automatically assigned. 0 to Maximum Node number: Shows the displayed Node only has been assigned. M: Shows the multiple Nodes are assigned.	A	01-2X~
(11)	MN	Displays and configures the memory node. A: Shows the node is automatically assigned. 0 to Maximum Node number: Indicates that the displayed node number will be assigned to the LPAR when the LPAR is in Deactivate status. Indicates that the displayed node number is assigned to the LPAR when the LPAR is in Activate status. M: Indicates that multiple nodes are assigned to the LPAR. NM: Indicates that the NUMA setting of the LPAR is enabled.	A	01-2X~
(12)	ID (Idle Detection)	Enables/disables the function that detects the idle state of the logical processors. Y: Enables Idle Detection. N: Disables Idle Detection. Set this item to Y to use CPU resources efficiently.	Y	01-0X~
(13)	AA (Auto Activation Order)	Sets the automatic activation of an LPAR when LPAR manager boots. *: Auto Activate is not set. 1-99: Enables Auto Activate. The number represents the order in which the LPARs are activated. Small number is given priority.	*	01-0X~
(14)	AC (Auto Clear)	Enables/disables the function that automatically clears the logical SEL. Y: Enables Auto Clear. N: Disables Auto Clear.	N	01-0X~
(15)	PC	Enables/disables the Processor Capping function.	*	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
	(Processor Capping)	Y: Enables the Processor Capping when using shared logical processors (The capping fluctuates depending on the service ratio set by Srv.) N: Disables the Processor Capping when using shared logical processors *: For the logical processor in the occupation mode, the processor capping function is invalid. This item is valid only for the shared logical processors. And this item is invalid for the dedicated logical processors.		
(16)	VC (Virtual Console)	Enables/disables the virtual COM console function, or specifies VC number. (Maximum simultaneous connection number is 16) Y: Enables the virtual COM console. N: Disables the virtual COM console. 1-16: Specify a VC number of the virtual COM console with the F1 key.	N	01-0X~
(17)	PB (Pre-boot Firmware)	For CB 520H A1/B1/B2 / CB 520A A1 / CB 540A A1/B1: Displays the pre-boot firmware. BIOS: Starts the logical BIOS by activating an LPAR.	BIOS	01-0X~
		For CB 520H B3/B4 / CB 520X B1/B2/B3: Sets the Pre-boot firmware. 64UEFI: Starts the logical EFI when activating LPAR. BIOS: Starts the logical BIOS when activating LPAR. Do not change the value of this setting from the default value.	64UEFI	01-8X~
(18)	Assign Total (Total resources allocated to LPAR)	Displays the total resources on all the LPARs. Pro: Displays the total number of logical processors. Shr: Displays the total number of logical processors in the sharing mode. Ded: Displays the total number of logical processors in the occupation mode. Mem: Displays the total memory amount in megabytes.	-	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
		VN: Displays the total number of Logical NICs.		
(19)	Act Total (Total resources use by LPAR)	Displays the total resources on all the LPARs which are activated. Pro: Displays the total number of logical processors. Shr: Displays the total number of logical processors in the sharing mode. Ded: Displays the total number of logical processors in the occupation mode. Mem: Displays the total memory amount in megabytes. VN: Displays the total number of Logical NICs.	-	01-0X~
(20)	Remain (Configurable memory)	Displays the remains of configurable memory to be used by LPARs in MB: Total memory for LPAR minus total memory currently used by LPAR. The isolated memory by a detection of memory failure is not reflected to this display.	-	01-0X~
(21)	User Memory	Displays the total amount of memory that can be allocated to the LPARs in units of MB. Displays the memory capacity installed in the server blade minus the amount used by LPAR manager. The isolated memory by a detection of memory failure is not reflected to this display.	-	01-0X~
(22)	Processors (Number of processors)	Displays the total number of physical processors. The format is "n(m)". n: Displays the total number of physical processors that are normally active. m: Displays the total number of physical processors installed in the server blade. Displays the total number of physical processors per mode. Shared: Displays the total number of physical processors in the shared mode. Dedicate: Displays the total number of physical processors in the dedicated mode.	-	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
		0 is displayed when there is no LPAR in Activate status in shared or dedicated mode. Displays the number of threads with Hyper-Threading enabled; the number of cores with Hyper Threading disabled.		
(23)	Function Key	The function keys which are used on the LPAR manager screen. F1: Assigning memory capacity with the numerical value of the GB unit, selecting the VC number, or displaying the allocated status of the VC number /TCP port. F2: Confirm Memory capacity. F3: Activate LPAR. F4: Deactivate LPAR. F5: Reactivate LPAR. F6: Addition LPAR F7: Deleting LPARA. F8: Changing LPAR screen And following functions can also use on the LPAR manager screen. F8: Switching screen to Guest OS screen. F9: Registering LPAR manager Configuration Information. The LPARs which failed migration cannot be used F3, F5, F6 and F7 keys.	-	01-0X~
(24)	NUMA	Enables/disables the guest NUMA. Y: Enables the guest NUMA. N: Disables the guest NUMA.	N	02-0X~
		Enables/disables the guest NUMA. Y(PB): Enables the guest NUMA. The method for configuring logical processors for the guest NUMA is physical processor binding. Y(NB): Enables the guest NUMA. The method for configuring logical processors for the guest NUMA is physical NUMA node binding. N: Disables the guest NUMA.	N	02-40~
(25)	PRTE	Enables or disables the PRTE function. Y: Enables the PRTE function. N: Disables the PRTE function.	N	02-25~

NUMA Setting	Deactivate	Activate
Non-NUMA	A	A
NUMA	A	0 to Maximum Node or M

NUMA Setting	Deactivate	Activate
Non-NUMA	A	A
NUMA	A or 0 to Maximum Node	0 to Maximum Node or M

Results of the LPAR manager screen operations are below.

Table 7-6 LPAR Status on the LPAR Configuration Screen

Item	Status of LPAR			Remark	Supported LPAR manager Version
	Activate	Deactivate	Failure		
Name	N	Y	N	-	01-0X~
Sta	Y	Y	N	-	01-0X~
Scd	Y	Y	N	-	01-0X~
Pro	N	Y	N	-	01-0X~
Grp	C ¹	Y	N	-	01-0X~
Srv	C ¹	C ¹	N	-	01-0X~
Mem	N	Y	N	-	01-0X~
VN	N	N	N	Displays only	01-0X~
PN	N	N	N	Displays only	01-2X~
MN	N	C	N	Can be changed only if NUMA is enabled for the EFI.	01-2X~
ID	Y	Y	N	-	01-0X~
AA	N	Y	N	-	01-0X~
AC	N	Y	N	-	01-0X~
PC	C ¹	C ¹	N	-	01-0X~
VC	Y	Y	N	-	01-0X~
PB	N	Y	N	-	01-0X~

Item	Status of LPAR			Remark	Supported LPAR manager Version
	Activate	Deactivate	Failure		
NUMA	N	C	N	Can be changed only if NUMA is enabled for the EFI.	02-0X~
PRTE	N	Y	N	-	02-25~
Legend: Y: can be changed N: cannot be changed C: Can be changed with conditions Notes: 1. Can be changed only in shared mode.					

How to rename an LPAR

This rename an LPAR works only on LPARs that are deactivated.

The name is displayed at the beginning of the row under the Name column. Press **Enter** to display a sub-screen for renaming the LPAR. After entering the new name, press **Enter**.

How to activate (turn on) an LPAR

This activation operation works only on LPARs that are deactivated.

Move the cursor over the 'Sta' column of the 'LPAR' row that you want to activate, and press **Enter**. Move the cursor over "Activate" on the displayed sub-screen and press **Enter**.

You can also activate an LPAR by pressing **F3** in the Logical Partition Configuration screen. Move the cursor over the LPAR that you want to activate on the displayed sub-screen and press **Enter**.

How to deactivate (Turn off) an LPAR



Note:

- LPAR deactivation is equivalent to server power-off. So, care is necessary in performing this operation. Especially, if this operation is performed during data access (such as during start of a guest OS), a disk may be damaged. You are strongly recommended to shutdown the guest OS instead of deactivation.
- When shutting down a guest OS operating on an LPAR, the guest OS might be hang up in the final process. In such a case, deactivate the LPAR. (As the connection between an LPAR and a disk has been disconnected, the disk data is not destroyed)

This deactivation operation works only on LPARs that are activated.

Move the cursor over the 'Sta' column of the 'LPAR' row that you want to deactivate, and press **Enter**. Move the cursor over "Deactivate" on the displayed sub-screen and press **Enter**.

You can also deactivate an LPAR by pressing **F4** in the Logical Partition Configuration screen. Move the cursor over the LPAR that you want to deactivate on the displayed sub-screen and press **Enter**.

How to reactivate an LPAR



Note:

- LPAR reactivation is equivalent to server restarting. So, care is necessary in performing this operation. Especially, if this operation is performed during data access (such as during start of a guest OS), a disk may be damaged. You are strongly recommended to restart the guest OS instead of reactivation.
- When a guest OS operating on an LPAR is rebooted by the operation on the guest OS, the guest OS might be hang up in the final process. In such a case, reactivate the LPAR. (Then, the connection between an LPAR and a disk is disconnected. So, the disk is not broken down.)

This reactivation operation works only on LPARs that are activated.

Move the cursor over the 'Sta' column of the 'LPAR' row that you want to reactivate, and press **Enter**. Move the cursor over "Reactivate" on the displayed sub-screen and press **Enter**.

You can also reactivate an LPAR by pressing **F5** in the Logical Partition Configuration screen. Move the cursor over the LPAR that you want to reactivate on the displayed sub-screen and press **Enter**.

How to change scheduling modes of an LPAR

Place the cursor on the intersection between the LPAR line to change the scheduling mode and 'Scd' column, and press **Enter** to display a sub-screen. Type a scheduling mode to configure, and press **Enter** on the sub-screen.

You can change scheduling modes between Dedicated and Shared dynamically without deactivating the LPAR. If one of the following conditions is met, however, an error message will appear to terminate the screen.

- Sufficient physical processors do not exist for assigning all logical processors in shared mode to the groups assigned to the LPAR, when the shared mode is dynamically changed to the dedicated mode.
- A physical processor, not belonging to the LPAR group, is included in the physical processor assignment on the Logical Processor Configuration screen, when the shared mode is dynamically changed to the dedicated mode.

How to change the number of logical processors to assign to an LPAR

Logical processor number can be changed when a target LPAR is deactivated.

Place the cursor on the intersection between the LPAR line to change the logical processor number and Pro column, and press **Enter** to display a sub-screen. Type the number of logical processors to configure, and press **Enter** on the sub-screen.



Note:

- The following shows the recommended value for the number of logical processors to be assigned to LPARs in shared mode:
 - Number of logical processors for one LPAR $\leq$ Number of physical processors
 - Total number of logical processors for all LPARs $\leq$ Number of physical processors x 4
- To run Windows on an LPAR with more than 64 logical processors defined, enable the guest NUMA on the LPAR.
- To ensure that an LPAR with more than 64 logical processors defined is running, disable PRTE of the LPAR.
- The guest OS on the LPAR might not operate normally if all the following conditions are met:
 - The guest OS is Linux.
 - Hyper threading is enabled.
 - The guest NUMA is enabled.
 - The total number of NUMA nodes is 5 or more.

To avoid this problem, assign an even number of logical processors to each NUMA node.

- If all of the following conditions are met, do not assign the logical processors more than half the number of physical processors belonging to one socket.
 - A 4-blade SMP configuration is made, or the forcible multiple-queue scheduling is enabled.
The forcible multiple-queue scheduling can be specified by the HVM management command (HvmSh) option. The forcible multiple-queue scheduling is disabled by default.
 - Processor in shared mode are allocated to the LPAR
 - The guest OS is RHEL7.

The number of processors belonging to one socket is determined depending on the types of installed processors and the hyper-threading setting of the server blade. The following table provides an example.

Table 7-7 Example of Intel E7-8890v4 (24-core)

Installed processor	Hyper-threading	Half the number of physical processors belonging to one socket
E7-8890v4 (24-core)	Valid	48/2 = 24
	Invalid	24/2 = 12

You cannot set the number of logical processors on the screen if the guest NUMA is enabled and the method for configuring logical processors for the guest NUMA for an LPAR is physical NUMA node binding.

To set the number of logical processors of each node, use HvmSh. For details, see the *HVM Management Command (HvmSh) Operation Guide*.

How to change a processor group number of an LPAR

Place the cursor on the intersection between the LPAR line to change the processor group number and 'Grp' column, and press **Enter** to display a sub-screen. Select a processor group number of the LPAR to configure, and press **Enter** on the sub-screen.

You can change a processor group number, when the LPAR is deactivated or activated in shared mode. If one of the following conditions is met, however, an error message will appear to terminate the screen.

- The scheduling mode of an LPAR is 'Shared' and the LPAR is activated.
- No physical processor in shared mode exists in the group whose number is to be changed.

For adding and changing the processor group number, see [How to add a processor group on page 7-35](#) and [How to change the number of a processor group on page 7-34](#).



Note:

- When LPAR migration is completed, the processor group number is the default value, processor group 0.

How to change the service ratio allocation of processor shared between LPARS

Move the cursor over the 'Srv' column of the LPAR whose processor service ratio you want to change, and press **Enter**. This will open a sub-screen where you can enter a service ratio value. Enter the desired service ratio (between 1 and 999), and press **Enter**.

Shared processor mode must be configured to change this setting.



Note:

- Set the service ratio so that the service time becomes the number of processors assigned to an LPAR multiplied by 250ms. If not, processing performance may slow down under heavy load.
-

How to change the memory size allocated to an LPAR

Move the cursor over the 'Mem' column of the LPAR whose memory size you want to change, and press **Enter**.

This will open a sub-screen where you can enter the memory size. Adjust the memory size with the arrow keys, and press **Enter**.

For an LPAR for which the guest NUMA is enabled, specify the memory size for each node.

Move the cursor over the "Mem" column of the "LPAR" row whose memory size you want to change, and press **Enter**. On the displayed sub-screen, move the cursor over the "Mem Size" column of the "Node" row, and press **Enter**. This will open another sub-screen. Adjust the memory size with the arrow keys, and press **Enter**.



Tip:

- You can also specify the numeric number in GB unit after the pressing **F1**(Input number in GB) in the sub-screen, to allocate memory size to an LPAR.
-

How to change the memory Node number which would be allocated to an LPAR.

[LPAR manager Firmware version 01-2X or later]



Note:

- In the environment which has the LPAR specifying a memory node and the LPAR not specifying a memory node, when you activate the latter LPAR first, activation of the former LPAR might fail.
Specify the memory node to all LPARs when you have at least one LPAR which specifies the memory node.
If you need to use the environment which has both the LPAR specifying a memory node and the LPAR not specifying a memory node, be sure to activate the former LPAR first.
-

Move the cursor over the 'MN' column of the LPAR whose the Node number you want to change, and press **Enter** to open a sub-screen. Set "A" or the Node number, and press **Enter**.

How to check the node number of the processor and memory which is assigned to the LPAR.

[LPAR manager firmware version 01-2X or later]

You can know that the processor and memory belong to the same Node by checking the PN (Processor Node) and MN (Memory Node) on this screen are same.

When M (Multiple nodes) is displayed on PN or MN, you can check the Node number by the following procedure.

- The processor node when the dedicated processor has been assigned
 1. Jots the physical processor number assigned to the LPAR on the Logical Partition Configuration screen.
 2. Check the Node number (Node#) of the physical processor, shown by the number above, on the Physical Processor Configuration screen.
- The processor node when the shared processor has been assigned Check the node number (Node#) of the physical processor which belong to the processor group of the LPAR on Physical Processor Configuration screen.

The assigned memory node number can be checked in the memory allocation display which is displayed by pressing **F2** key on the Logical Partition Configuration screen.

When it corresponds to any of the following three conditions, the memory performance may not fully be obtained.

- When PN and MN are different number (the physical processor and the memory processor which are assigned to the LPAR belong to different node.)
- When M (Multiple nodes) is displayed on PN or MN of the dedicated processor which has been assigned.
- When the node of the memory allocated to LPAR differs from the node of the processor group assigned to the LPAR.

How to enable/disable Idle Detection function

Move the cursor over the ID column of the LPAR whose Idle Detection settings you want to change, and press **Enter**. This will open a sub-screen. Use the ↑ and ↓ keys to select Yes or No, and press **Enter**.

How to activate an LPAR automatically



Note:

- Auto Activate setting is ignored while [Pre-State Auto Activation] is set in the LP Options screen. Auto Activate setting is ignored when "Pre-State Auto Activation" is set on.
-

Open the Logical Partition Configuration screen. Move the cursor over the AA column of the LPAR which you want to set Auto Activate, and press **Enter**. This will open a sub-screen. Enter a value between 1 and 99, and press **Enter**. If you do not want to enable the Auto Activation, enter "*".

You can set Auto Activate on a deactivated LPAR.

When you start LPAR manager, it will automatically activate the LPARs in the order of the values set in the above sub-screen, starting with the smallest

numbers. If the same value has been set for two LPARs, LPAR manager will activate the LPAR with the lower LPAR number first.

If, for whatever reason (inability to secure assigned memory size, etc.), the Auto Activation of one of the LPARs fails, it will not execute on the other LPARs that have not yet been automatically activated.

Before starting the Auto Activate processing, LPAR manager accepts the cancellation requests for 15 seconds. When you cancel the process of Auto Activation, press **Ctrl + c**. It may not be possible to cancel the automatic activation of LPARs once it has already started.

If Pre-State Auto Activation is set, the Auto Activation Order may be ignored.

See Options for more on Pre-State Auto Activation.

How to enable the automatic clear function of an LPAR's logical SEL

Move the cursor over the AC column of the LPAR whose Auto Clear settings you want to change, and press **Enter**. This will open a sub-screen. Use the ↑ and ↓ keys to select 'Yes', and press **Enter**. The automatic logic SEL clear function can be changed only when the relevant LPAR is inactive.

How to enable the processor capping function

Move the cursor over the PC column of the LPAR whose Processor Capping you want to enable, and press **Enter**. This will open a sub-screen. Selects 'Yes', or Max Service Time and press **Enter**.

How to enable the virtual COM console function



Note:

- When the virtual COM console function is enabled and connected to the LPAR guest console via telnet, LPAR guest screen connection by using the **F8** key in the LPAR manager screen is still available. In this case, the LPAR guest screen displayed on the LPAR manager screen is preceded.
 - If the guest screen cannot be displayed while connecting to the virtual COM console, check the serial console configuration.
-

Place the cursor on the VC column of the LPAR line whose virtual COM console function you want to enable, and press the **Enter** key to display the sub-screen. Select 'Yes' by moving the cursor with the ↑ and ↓ keys, and then press the **Enter** key.

As a result, you can connect the LPAR guest screen via telnet. The TCP port to be used at the connection via telnet can be found in the comment that appears when pointing VC column of LPAR line or in the sub-screen appears when pointing VC column of LPAR line and pressing the **Enter** key.

Logical Partition (LPAR) Configuration																
#	Name	Sta	Sd	Pro	Grp	Srv	Mem	VN	PN	MN	ID	AA	AC	PC	VC	PB
1	LPAR1	Dea	S	2	0	100	2048	0	A	A	Y	*	N	N	N	BIOS
2	LPAR2	Dea	D	2	0	100	2048	0	A	A	Y	*	N	*	N	BIOS
3																
4																
5																
6																
7	LPAR1 Virtual Console															
8	(TCP Port=Unassigned)															
9																
10	Yes No															
p / [PageDown]:Page Down																
Logical Information				Virtual Console Enable				Physical Information								
		Pro	Shr					Free Memory : 14336								
Assign Total		4	2	2	4096		0	Processors : 24 (24)								
Act Total		0	0	0	0		0	Shared : 0								
Remain						14336		Dedicate : 0								
Virtual Console (TCP Port=20801)																
F1:VCAssign F2:MemAllocDsp F3:Act F4:Deact F5:React F6:Add F7:Remove Esc:Menu																

Figure 7-5 Virtual Console Enabling Screen

Place the cursor on the VC column of the LPAR line whose virtual COM console function you want to enable, and then press **F1** to display a sub-screen. Select a VC number to connect by moving the cursor with the **↑** and **↓** keys, and then press the **Enter** key.

As a result, you can connect to the LPAR guest screen via telnet. The TCP port to be used at the connection via telnet can be found in the comment that appears when pointing VC column of the LPAR line.

+ Logical Partition (LP				LPAR1 Virtual Console		+-----					

Figure 7-6 Virtual Console Mapping Screen

When you press **F1** on this sub-screen, allocation of VC numbers/TCP ports is displayed.

```

+-----+-----+-----+-----+-----+-----+-----+-----+
| +- Logical Partition(LP) | LPAR1 Virtual Console | +-----+ +-----+ |
| # Name Sta Sd Pr | VC TCP Port | D AA AC PC VC PB |
| 1 LPAR1 Dea S | V N 1 BIOS | Y * N N 1 BIOS |
| 2 LPAR2 Dea D | N Unassigned | Y * N * N BIOS |
| 3 | 1 20801 | | | | |
| 4 | | | | | | |
| 5 | +-----+ +-----+ |
| 6 | Allocated LPAR Information to VC/TCP Port |
| 7 | | | | | | |
| 8 | VC TCP LPAR VC TCP LPAR |
| 9 | 1 20801 1 9 20809 -- |
| 10 | 2 20802 -- 10 20810 -- |
| | 3 20803 -- 11 20811 -- |
| | 4 20804 -- 12 20812 -- |
| | 5 20805 -- 13 20813 -- |
| | 6 20806 -- 14 20814 -- |
| | 7 20807 -- 15 20815 -- |
| | 8 20808 -- 16 20816 -- |
| Assign Total | : 24(24) |
| Act Total | : 0 |
| Remain | : 0 |
| | 16 20816 |
| Virtual Console(TCP P |
| F1:Allocated VC Information |
| F1:VCAssign F2:MemAlloc | Add F7:Remove Esc:Menu |

```

Figure 7-7 Virtual Console Allocation Screen

How to change the Pre-boot firmware



Tip: Do not change the value of this setting from the default value.

[For CB 520H B3/B4 / CB 520X B1/B2/B3:]

The Pre-boot firmware only can be changed while deactivating LPAR.

Place the cursor on the PB column of the LPAR line, and press **Enter**. The sub-screen is displayed. Select 64UEFI/BIOS, and press **Enter**.

How to change the guest NUMA setting

[LPAR manager firmware version 02-0X or later]



Note:

- When the guest NUMA changes from "disabled" to "enabled", the method for configuring logical processors for the guest NUMA is physical processor binding by default.

For this reason, if you disable and then enable the guest NUMA, the method for logical processor binding is physical processor binding, even if the method for configuring logical processors for the guest NUMA for the LPAR is physical NUMA node binding.

You can change the quest NUMA setting only for deactivated LPARs.

The following table shows whether the guest NUMA setting can be configured.

NUMA for the EFI	Guest NUMA for LPAR manager	LPAR status	Guest NUMA setting for the LPAR
Enabled	Supported	Deactivated	Possible
Enabled	Supported	Activated	Not possible
Enabled	Not supported	--	Not possible
Disabled	--	--	Not possible

The guest NUMA is enabled or disabled for each LPAR.

Use the **F11** and **F12** keys to scroll the page to the left and right. Place the cursor on the NUMA column of the LPAR row, and press **Enter**. The sub-screen is displayed. Select Yes or No, and press **Enter**.

How to change the setting on the method for configuring logical processors for the guest NUMA

You cannot change the setting on method for configuring logical processors for the guest NUMA on the screen.

Use HvmSh to change the setting on the method for configuring logical processors for the guest NUMA. For details, see the *HVM Management Command (HvmSh) Operation Guide*.

How to change the PRTE setting

[LPAR manager firmware version 02-25 or later]

The PRTE setting can be specified only for an LPARs Deactivate status.

You can enable or disable PRTE for each LPAR.

Use the **F11** and **F12** keys to scroll the page to the left and right. Place the cursor on the PRTE column of the LPAR row, and press **Enter**. The sub-screen is displayed. Select Yes or No, and press **Enter**.

How to display memory allocation

Press **F2** in the Logical Partition Configuration screen to open the sub-screen shown below. This sub-screen displays the memory allocation status in the address ascending order.

No.	Item	Description
		LPARx: Indicates that the LPAR having number x is using the processor. (The LPAR name is not displayed.) Only the active LPARs are displayed. ISOLATED: Displays the isolated memory by detection of the memory failure. *****: Indicates an unallocated area

A single guest memory area can be allocated up to four separated memory blocks. When this happens, the display is also divided up into four blocks. NUMA is not effective for SYS1.

How to add an LPAR

Press **F6** in the Logical Partition Configuration screen. In the sub-screen that opens, move your cursor over the LPAR that you want to add and press **Enter**.

How to delete an LPAR

Press **F7** in the Logical Partition Configuration screen. Move your cursor on the displayed sub-screen over the LPAR that you want to remove and press **Enter**.

The LPAR can be deleted only when it is inactive. When you remove an LPAR, all the resources that have been assigned to the LPAR become unassigned.

How to switch from the LPAR manager screen to Guest OS screen

The LPAR manager screen can be switched to the Guest OS screen of the activated LPAR.

The sub-screen pops up on the LPAR manager screen by pressing **F8** key. Only activated LPARs are displayed on the sub-screen. Then select the target LPAR and press **Enter** key.

How to save the configuration information

Press **F9** key (save configuration) on the LPAR manager screen.

Logical Processor Configuration

The following functions are available in the Logical Processor Configuration screen.

Logical Processor Configuration														
(1)	(2)	(3)	(4)	(5)	(6)	Logical Processor Number								
#	Name	Sta	Scd	Pro	Grp	0	1	2	3	4	5	6	7	8 9 (7)
1	LPAR1	Act	S	2	0	A	A	*	*	*	*	*	*	*
2	LPAR2	Act	D	2	0	0	1	*	*	*	*	*	*	*
3														
4														
5														
6														
7														
8														
9														
10														
[PageUp]:Page Up / [PageDown]:Page Down														
(9)F11:Left F12:Right													Esc:Menu	

Figure 7-9 Logical Processors Configuration Screen

The following table shows the descriptions of all the items displayed in the Logical Processor configurations screen.

Table 7-9 Details of Logical Processors Configuration Screen

No.	Item	Description	Default Value	Supported LPAR manager Version
(1)	#	Displays LPAR numbers.	-	01-0X~
(2)	Name	Displays LPAR names.	NO_NAME	01-0X~
(3)	Sta	Displays LPAR status. Act (Activate): the power is on. Dea (Deactivate): the power is off. Fai (Failure): Not available due to unrecoverable failure. Reboot LPAR manager when this happens. If rebooting LPAR manager cannot solve the problem, contact the reseller from which you purchased this equipment or consult maintenance personnel.	Dea	01-0X~
(4)	Scd	Sets a scheduling mode. S: Shared mode D: Dedicated mode	D	01-0X~
(5)	Pro	Displays the number of logical processors assigned to the LPAR.	1	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
(6)	Grp	Displays a processor group number.	0	01-0X~
(7)	Logical Processor Number	Displays the logical processor number.	-	01-0X~
(8)	Logical Processor Assignment	Assigns a logical processor to each LPAR. *: Not assigned right now. A: Indicates that a physical processor is automatically selected and assigned when an LPAR is activated in the shared mode and in the dedicated mode. Numeric: Indicates that a physical processor with a displayed number is assigned when the status of the LPAR in the dedicated mode is Act(Activate), and that, if the status is other than Act(Activate), the function to assign a physical processor with a displayed number (function to specify a physical processor number) next time the LPAR is activated in the dedicated mode is enabled.	A	01-0X~
(9)	Function Key	Displays function keys available on this screen. F11: Scrolls a page to the left and displays it. F12: Scrolls a page to the right and displays it.	-	01-0X~

Results of the LPAR manager screen operations are below.

Table 7-10 LPAR Status on the Logical Processors Configuration Screen

Item	LPAR Status			Remark	Supported LPAR manager Version
	Activate	Deactivate	Failure		
Name	-	-	-	Displays Only	01-0X~
Sta	-	-	-	Displays Only	01-0X~
Scd	-	-	-	Displays Only	01-0X~
Pro	-	-	-	Displays Only	01-0X~
Grp	-	-	-	Displays Only	01-0X~
Logical Processor Number	-	-	-	Displays Only	01-0X~

Item	LPAR Status			Remark	Supported LPAR manager Version
	Activate	Deactivate	Failure		
Logical Processor Assignment	C ¹	Y	-	-	01-0X~
Legend: Y: can be changed -: cannot be changed C: Can be changed with conditions Notes: 1. Changeable in shared mode					

How to assign a physical processor to a logical processor

You can assign a physical processor to a logical processor, when the LPAR is deactivated or activated in shared mode. If not setting the physical processor number using this function, LPAR manager will assign a physical processor when the LPAR is activated.

Place the cursor on the intersection between the LPAR column and the logical processor number row, and press **Enter** to display the sub-screen. Enter the physical processor number, and press **Enter**.

You cannot assign physical processors to logical processors if the guest NUMA is enabled and the method for configuring logical processors for the guest NUMA for the LPAR is physical NUMA node binding.



Note:

- The re-setting of this configuration is required when using this function and changing the configuration that increases or decreases physical processor (including the change of the hyper-thread setting enable/disable). The condition and the reaction which require resetting of this configuration are shown below.

Condition	Countermeasure Content
Increase or decrease of the Physical Processor	Setting will be initialized. Re-set and save the configuration on the Logical Processor Configuration screen when the re-setting of physical processor number to logical processor is necessary. LPAR manager allocates the physical processor automatically when you do not re-set.

- For an LPAR for which the method for configuring logical processors for the guest NUMA is physical processor binding, when this configuration method is changed to physical NUMA node binding, all configuration information for the LPAR changes to "Auto". Afterwards, if you change the method for configuring logical processors for the guest NUMA to physical

processor binding or disable the guest NUMA, you must reconfigure this configuration.



Note:

- When there are an LPAR on which a processor number is specified and an LPAR on which no processor number is specified, activate the LPAR on which the processor number is specified first.

Physical Processor Configuration

The following functions are possible in the Physical Processor Configuration screen.

Example of Physical Processor Configuration is below.

+ Physical Processor Configuration -----+																
(1)Processor#	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
(2)Blade#	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
(3)Socket#	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
(4)Core#	0	0	1	1	2	2	3	3	0	0	1	1	2	2	3	3
(5)Thread#	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
(6)State	ACT	ACT	ACT	ACT	ACT	ACT	ACT	ACT	ACT	ACT	ACT	ACT	ACT	ACT	ACT	ACT
(7)Status	HIG	HIG	HIG	HIG	HIG	HIG	HIG	HIG	HIG	HIG	HIG	HIG	HIG	HIG	HIG	HIG
(8)Group#	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(9)Schedule	D	D	S	S	S	S	S	S	S	S	S	S	S	S	S	S
(10)Freq (GHz)	3.0	2.9	2.9	2.9	3.0	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.8	2.9	2.9	2.9
(11)Node#	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
+-----+																
+ Processor Group Configuration -----+																
(12)Group#	0															
(13)Name	NO_NAME															
(14)Total Core	8															
(15)Shr Core	7															
(16)Ded Core	1															
+-----+																
+-----+																
(17)F1:Add F2:Remove F11:Left F12:Right														Esc:Menu		
+-----+																

Figure 7-10 Physical Processors Configuration Screen

The following table describes each item on this screen.

Table 7-11 Details of Physical Processors Configuration Screen

No.	Item	Description	Default Value	Supported LPAR manager Version
(1)	Processor#	Displays the physical processor numbers.	-	01-0X~
(2)	Blade#	Displays the server blade number on which the physical processor is installed.	-	01-0X~
(3)	Socket#	Displays the die number/socket number in the server blade.	-	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
(4)	Core#	Displays the core number in the die.	-	01-0X~
(5)	Thread#	Displays the thread number.	-	01-0X~
(6)	State	Display status of a core. ACT (Activate): Normal state	-	01-0X~
(7)	Status	Displays the status of the physical processor. HIG: The physical processor is possible to run at the highest rate. The current clock frequencies of physical processors might not run at the maximum rate when a power capping function is enabled, Turbo Mode is enabled or processors are idle. MXX: The physical processor is possible to run at a moderate. M01 is the fastest; as the number of a processor increases, its rate decreases. LOW: The physical processor is running at the lowest rate FAI: The physical processor is in failure state. ERR: The physical processor is in error state. OFF: The physical processor is in off-line.	-	01-0X~
(8)	Group#	Sets the number of a processor group.	0	01-0X~
(9)	Schedule	S: Indicates that the physical processor can be used by the LPAR in shared mode. D: Indicates that the physical processor is used by the LPAR in dedicated mode.	D	01-0X~
(10)	Freq(GHz)	Displays the current clock frequencies of the physical processor. The current clock frequencies of physical processors might not run at the maximum rate when a power capping function is enabled, Turbo Mode is enabled or processors are idle.	-	01-0X~
(11)	Node#	Displays the Node number of a physical processor. '-' is displayed when Non-NUMA setting is set.	-	01-2X
(12)	Group#	Displays the number of a processor group.	0	01-0X~
(13)	Name	Sets a processor group name.	NO_NAME	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
		Maximum character length of processor group name is 31. And identical processor group name cannot set to 2 or more files. The 7th character is changed to tilde '~' and the later characters are omitted when the length of processor group name is 8 or more. '0' ~ '9', 'A' ~ 'Z', 'a' ~ 'z', '-' and '_' can be used for processor group name. However only 'A' ~ 'Z' and 'a' ~ 'z' can be used for the initial character.		
(14)	Total Core	Displays the number of total cores.	-	01-0X~
(15)	Shr Core	Displays the number of cores in shared mode.	-	01-0X~
(16)	Ded Core	Displays the number of cores in dedicated mode.	-	01-0X~
(17)	Function Key	Displays function keys available in this screen. F1 : Adds a processor group. F2 : Deletes a processor group. F11 : Scrolls the screen to the left. F12 : Scrolls the screen to the right.	-	01-0X~



Note:

- If unrecoverable failure occurs in the physical processor, the following symptom may occur.
 - NIC sharing function is temporarily unavailable and communication with the management module and external networks break down.
 - Dedicated mode: A failure occurs in the LPAR using the failed physical processor in the dedicated mode. Other LPARs are not affected.
 - Shared mode: LPARs using the processor in the shared mode will have failure when a fault occurs in the processor. Other LPARs performance in the shared mode may slow down. When this happens, deactivate the slow-down LPAR and then reactivate it to restore it.

How to change the number of a processor group

Place the cursor on the intersection between the Processor column whose group number to change and Group line, and press **Enter** to display a sub-screen that displays the numbers of defined processor groups. Select a processor group number to change, and press **Enter**.

Changing the number of a processor group can be performed to cores in Activate or Warning at any time. If one of the following conditions is met, an error message will appear to terminate the screen.

- (a) An LPAR in dedicated mode is activated on the target core.
- (b) When an LPAR in shared mode is activated in the target core: a shared mode LPAR is activated on the group whose number is to be changed, change in the group number of the target core removes the physical processor in shared mode in the source group.

How to change a processor group name

Place the cursor on the intersection between the Processor group column whose group name to change and Name line, and press **Enter** to display a sub-screen. Type a processor group name to change, and press **Enter**.

How to add a processor group

Press **F1**: Add on this screen to display a sub-screen, place the cursor a processor group number to add on the sub-screen, and press **Enter**.

How to delete a processor group

Press **F2**: Remove on this screen to display a sub-screen, place the cursor a processor group number to remove on the sub-screen, and press **Enter**.

Processor group 0, the default processor group, cannot be deleted.

PCI Device Information

The following functions are available in the PCI Device Information screen.

PCI Device Information					
#	Vendor	Device Name	Slot#	LPAR#	SNIC#
0	Intel Corp.	USB Controller	U1	M	-
1	Emulex Corp.	10GbE Controller 2Port	E11	S	1
2	Emulex Corp.	10GbE Controller 2Port	E11	S	2
3	Hitachi, Ltd.	Fibre Channel 8Gbps 2Port(S)	E12	S	-
(1) (2)		(3)	(4)	(5)	(6)
[PageUp]:Page Up / [PageDown]:Page Down					
(7)F2:MappingInfo			Esc:Menu		

Figure 7-11 PCI Devices Information Screen

The following table describes each item on this screen.

Table 7-12 Details of the PCI Devices Information Screen

No	Item	Description	Default Value	Supported LPAR manager Version
(1)	#	Displays the number that LPAR manager gives each PCI device for identification purposes.	-	01-0X~
(2)	Vendor	Displays the name of the vendor of the PCI device. (displays up to 15 characters)	-	01-0X~
(3)	Device Name	Displays the name of the PCI device. (displays up to 31 characters)	-	01-0X~
(4)	Slot#	Displays the slot number ¹ to which the PCI device is inserted. "!" is displayed on the right of the slot number when the PCI device is not recognized for the reason that the PCI device is removed through the hot-plug operation or powered off due to a failure causing the blockade of the PCI device.	-	01-0X~
(5)	LPAR#	Displays the LPAR number to which the PCI device is assigned. Number: When the PCI device has been assigned to single LPAR, the LPAR number that the PCI Device has been assigned to.	-	01-0X~

No	Item	Description	Default Value	Supported LPAR manager Version
		M: The PCI device has been assigned to multiple LPARs. S: The PCI device is being shared. -: The PCI device is not assigned.		
(6)	SNIC#	Displays the shared NIC number of a PCI device if it is a shared NIC. Number: Indicates that the PCI device is a shared NIC number -: Indicates that the PCI device is not a shared NIC.	-	01-0X~
(7)	Function Key	Displaying keys which can be used on this screen. F2: Displays PCI Device Mapping Information	-	01-0X~
Notes:				
1. The following table describes the correspondence between the device type and the slot number.				

Table 7-13 Slot No.

Device Type	Slot No.	
	CB 520H A1/B1/B2/B3/B4 CB 520A A1 CB 540A A1/B1	CB 520X B1/B2/B3
USB	Ux	Ux
KVM, Remote Console		UKx
Onboard	Gx0 to Gx1, or Gx	Gx
Mezzanine card slot	Ex1 to Ex4	Ex1 to Ex4
x: Server Blade No		

How to display the PCI Device Mapping Information

PCI Device Mapping Information is displayed by pressing **F2** (MappingInfo) key on the PCI Device Information screen.

Example screen of PCI Device Mapping information is below.

```

+----- PCI Device Information -----+
| # Vendor                Device Name                Slot#  LPAR#  SNIC# |
| 0 Intel Corp.           USB Controller              U1     M    -   |
| 1 Emulex Corp.          10GbE Controller 2Port      E11    S    1   |
+-----+
| (1) LPAR1[LPAR1] PCI Device Mapping Information |
+-----+
| (2) Host PciConfig              (3) LPAR PciConfig(Sta:Dea) |
| (4) --- (5) --- (6) - (7) ----- (8) ----- (7) ----- (8) ----- |
| Type Schd  ID  Slot  Seg. Bus. Dev. Fnc  Slot  Seg. Bus. Dev. Fnc |
| U   E   --  U1    0000.00.1a.00  -> U1    0000.00.1a.00 |
| U   E   --  U1    0000.00.1d.00  -> U1    0000.00.1d.00 |
| N   S   1a  E11   0000.16.00.00  -> E11   0000.f7.01.00 * |
| N   S   1b  E11   0000.16.00.00  -> E11   0000.f7.03.00 * |
| N   S   1a  E11   0000.16.00.01  -> E11   0000.f7.02.00 * |
| N   S   1a  E11   0000.16.00.01  -> E11   0000.f7.04.00 * |
| F   S   3   E12   0000.2a.00.00  -> E12   0000.2a.00.00 |
+-----+
|                                     [PageUp]:Page Up / [PageDown]:Page Down |
+-----+
| F2:MappingInfo                                     Esc:Menu |

```

Figure 7-12 PCI Devices Mapping Information Screen

The following table describes each item on this screen.

Table 7-14 Details of PCI Devices Mapping Information Screen

No.	Item	Description
(1)	LPARxxx[yyy]	Displays LPAR No. and LPAR Name xxx: LPAR No. yyy: LPAR Name
(2)	Host PciConfig	Displays physical PCI device information which is assigned to the LPAR.
(3)	LPAR PciConfig	Displays PCI config address of physical PCI devices which are assigned to the LPAR.
(4)	Type	Displays the type of physical PCI devices. U: USB controller N: Network Interface Card (NIC) Add "v" to the end of line when using VF NIC. F: Fibre Channel (FC) S: SCSI controller or RAID controller
(5)	Schd	Displays scheduling mode of physical PCI devices. D: Dedicated mode S: Shared mode E: Exclusive shared mode -: Virtual NIC
(6)	ID	Displays IDs which are used by the LPAR. (Only case that scheduling mode of physical NIC is shared mode)

No.	Item	Description
		1~15: vfcID 1a to 8h: Network segment identifier of shared NIC Add "v" to the end of line when using VF NIC. (The contents of a display depend on the number of installed controllers of NIC, and numbers of ports.) Va to Vd: Network segment identifier of Virtual NIC
(7)	Slot	Host PciConfig Displays equipped location of physical PCI devices ('—' are displayed when the virtual NIC are equipped) "err" or "!" next to the slot display indicates that the physical PCI device is blocked or hot removed. LPAR PciConfig Displays equipped location of logical PCI devices. ('—' are displayed when the virtual NIC are equipped) "!" next to the slot display indicates that the physical PCI device is hot removed.
(8)	Seg.Bus.Dev.Fnc	Host PciConfig Displays PCI config address of physical NIC and virtual NIC. LPAR PciConfig Displays Config address of logical PCI devices on the LPAR. (End character '*' of the PCI config address means that the physical and logical PCI information are different)

PCI Device Assignment

The following functions are available in the PCI Device Assignment screen.

+----- PCI Device Assignment -----+-----											
(4) PCI Device#: 0 1 2 3 4 5 6 7 8 9 10 11											
(5) Type: U N N F											
(6) Schd: E S S+ S+											
# Name Sta											
1 LPAR1 Act #R - - -											
2 LPAR2 Act A - - -											
3 (2) (3) (7)											
4											
5											
6											
7											
8											
9											
10											
(1) [PageUp]:Page Up / [PageDown]:Page Down											
+----- (8) Selected PCI Device Information -----+-----											
# Vendor Device Name Slot# Bus# Dev# Func#											
0 Intel Corp. USB Controller U1 0 1a 0											
+----- (9) F5:Attach/Detach F6:Set/Reset F10:Update Schd F11:Left F12:Right Esc:Menu											

Figure 7-13 PCI Devices Assignment Screen

The following table describes each item on this screen.

Table 7-15 Details of the PCI Devices Assigned Screen

No.	Item	Description	Default Value	Supported LPAR manager Version
(1)	#	Displays the LPAR numbers.	-	01-0X~
(2)	Name	Displays the LPAR name.	NO_NAME	01-0X~
(3)	Sta	Displays the LPAR status. Act (Activate): The LPAR is powered on. Dea (Deactivate): The LPAR is powered off. Fai (Failure): The LPAR cannot be used due to an unrecoverable failure. Reboot LPAR manager when this happens. If rebooting LPAR manager cannot solve the problem, contact your reseller or consult maintenance personnel.	Dea	01-0X~
(4)	PCI Device#	Displays the number that LPAR manager gives each PCI device for identification purposes.	-	01-0X~
(5)	Type	Displays the PCI device type. S: SCSI controller N: Network interface Card (NIC) Add "v" to the end of line when using VF NIC.	-	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
		F: Fibre Channel U: USB controller		
(6)	Schd	Sets the PCI device's scheduling mode. D: Assigns to an LPAR in the dedicated mode. E: Assigns to an LPAR in the exclusively shared mode. S: Assigns to an LPAR in the shared mode.	-	01-0X~
(7)	PCI Device Assignment	Sets the assignation of the PCI device to LPARs. *: unassigned A: assigned but not activated R: activated and attached -: cannot be assigned PCI device is set USB automatic attach that is shown "#" when an assignment status is "A" or "R". "!" is displayed on the right of the slot number when the PCI device is not recognized for the reason that the PCI device is removed through the hot-plug operation or powered off due to a failure causing the blockade of the PCI device.	-	01-0X~
(8)	Selected PCI Device Information	Displays the information for the PCI device selected with the cursor. #: Displays the number that LPAR manager gives each PCI device for identification purposes. Vendor: Displays the vendor name (up to 15 characters) Device Name: The device name (up to 31 characters) Slot#: Displays the slot number. Bus#: Displays the bus number of the PCI configuration space Dev#: Displays the device number of the PCI configuration space Func#: Displays the function number of the PCI configuration space "!" is displayed on the right of the slot number when the PCI device is not recognized for the reason that the PCI device is removed through the hot-plug operation or powered off due to a failure causing the blockade of the PCI device.	-	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
(9)	Function Key	Displays the function keys that can be used in this screen. F5: Switches USB device assignment. F6: Changes USB Auto Attach settings. F10: Updates the content of any changes to the Scheduling Mode of a PCI device to LPAR manager. F11: Scrolls the page to the right within the screen. F12: Scrolls the page to the left within the screen. Note: Operation with F10 (Update PCI Dev Schd) should be done when no LPAR is activated. If you do with any LPAR in activation, network communication of the LPAR is disconnected for a few minutes. SC/BSM displays Deactivate as LPAR manager status, and no error message is provided.	-	01-0X~

The following table describes each item on this screen.

Table 7-16 LPAR Status on the PCI Devices Assigned Screen

Item	LPAR Status			Remark	Supported LPAR manager Version
	Activate	Deactivate	Failure		
Name	N	N	N	Display Only	01-0X~
Sta	N	N	N	Display Only	01-0X~
PCI Device#	N	N	N	Display Only	01-0X~
Type	N	N	N	Display Only	01-0X~
Schd	N	Y	N	-	01-0X~
PCI Device Assignment	N	C (dedicated mode and exclusively shared mode)	N	-	01-0X~
Legend: Y: Can be changed N: Cannot be changed C: Can be changed with conditions					

How to change Scheduling Mode (Schd)

You can change the Scheduling Mode (Schd) of a NIC or FC that support shared allocation. "+" is added to the scheduling mode (Schd) of the PCI device that can be configured.

Before modifying the Schd setting of a NIC or FC, you must deactivate all LPARs. Move the cursor to the intersection between the Schd row and the PCI device number column, and press **Enter**. This opens a sub-screen where you can select assignments.

Move the cursor over the item that you want to change, and press **Enter**. To apply the changes of Schd to the LPAR manager system, press **F10** and select "Yes" in the confirmation sub-screen that opens. After you select "Yes", you will not be able to perform any operations on LPAR manager for two or three minutes until the setting changes completes.

To abort the change of Schd, press **F10** and select "**No**" in the confirmation screen that opens. All changed settings are restored to their original values.

Since the time necessary to the change becomes enable for an LPAR manager system. You cannot change except the Schd or move to other screens until finish the change process. To change except the Schd or move to other screens, press **F10**, select either "Yes" or "No" and conclude the change process, or cancel it.

How to assign a PCI device to an LPAR

Move the cursor over the intersection between the LPAR, to which you want to assign the PCI device, and the PCI device column, and press **Enter**. In the sub-screen that appears, move the cursor over A and press **Enter**. To undo an assignment, select "*".

How to change a using direction of PCI device

Press **F5** (Attach/Detach) to display a sub-screen, select LPAR of changing and press **Enter**.

How to change USB Auto Attach settings



Note:

- Make sure to disable USB Auto Allocation to LPAR in the LP Options screen before using this function.
- When you activate an LPAR with #A for the USB assignment, the state is changed to #R. If the USB has been attached to another LPAR, Auto Attach/Detach will not be performed.
- When you have a USB device state unassigned, the Auto Attach setting is cancelled.

USB Auto Attach settings can be changed with a LPAR activated or deactivated.

USB Auto Attach is performed only with LPARs with #A for USB allocation status when the LPAR is activated / reactivated. If USB allocation status is not #A, USB Auto Attach cannot be performed. If with no #A LPAR, USB Auto Attach will not be performed for any LPAR.

Example of VNIC Assignment is below.

```

++ Virtual NIC Assignment -----
||
||
||          (5) Virtual NIC Number
|| # Name      Sta #VNIC   0   1   2   3   4   5   6   7   8   9
|| 1 LPAR1     Dea    2   1a 1b  *  *  *  *  *  *  *  *  *
|| 2 LPAR2     Dea    0   *  *  *  *  *  *  *  *  *  *
|| 3 (2)       (3)    (4)  (6)
|| 4
|| 5
|| 6
|| 7
|| 8
|| 9
|| 10
|| (1)
||
||                                     [PageUp]:Page Up / [PageDown]:Page Down
++-----
(7) VNIC Information-----
|| No: 0  MAC Address: 00.00.87.62.c7.00  Shared NIC#: 1  Tag: Undef  Prm: T
||      Inter-LPAR Packet Filtering: Disable
|| VLANID:
++-----
(8) F2:Disp  F5:Set Prom. Mode  F6:Change MAC Addr  F7:Select VLAN
|  F8:Packet Filter  F11:Left  F12:Right
|
|                                     Esc:Menu

```

The following table describes each item on the screen.

Table 7-17 Details of the VNIC assignment Screen

No.	Item	Description	Default Value	Supported LPAR manager Version
(1)	#	Displays the LPAR numbers.	-	01-0X~
(2)	Name	Displays the LPAR name.	NO_NAME	01-0X~
(3)	Sta	Displays the LPAR status. Act (Activate): The LPAR is powered on. Dea (Deactivate): The LPAR is powered off. Fai (Failure): The LPAR cannot be used due to an unrecoverable failure. Reboot LPAR manager when this happens. If rebooting LPAR manager cannot solve the problem, contact the reseller from which you purchased this equipment or consult maintenance personnel.	Dea	01-0X~
(4)	#VNIC	Displays the number of Logical NICs assigned to LPARs.	0	01-0X~
(5)	Virtual NIC Number	Displays the Logical NIC number.	-	01-0X~
(6)	VNIC Assignment	Assigns Logical NIC to each LPAR. *: Not assigned Va - Vd: Displays the identifier for the network segment of the VNIC. 1a - 8h: Displays the identifier for the network segment of the shared NIC. Add "v" to the end of line when using VF NIC. "!" is displayed on the right of the slot number when the PCI device is not recognized for the reason that the PCI device is removed through the hot-plug operation or powered off due to a failure causing the blockade of the PCI device.	*	01-0X~
(7)	VNIC Information	Displays the information on the Logical NIC selected by the cursor. No: Displays the Logical NIC number. MAC Address: Displays the MAC address of the Logical NIC. Shared NIC#: Displays the shared NIC number. Tag: Displays the VLAN mode. Undef: VLAN mode not defined. Untag: Defined to the UnTagged port. Prm: Displays the promiscuous mode. R: Receives the same MAC address.	Tag: Undef (Shared NIC/Virtual NIC) Tag: Tag (VF NIC) Prm: T (Shared NIC/Virtual NIC) Prm: R (VF NIC)	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
		T: Received all packets. VLANID: Displays the defined VLAN ID. See Table 7-18 VLAN ID on page 7-46. Inter-LPAR Packet filtering: Displays the inter-LPAR packet filter. Disable: Inter-LPAR packets are transferred inside LPAR manager; but not transferred outside LPAR manager. Enable: Inter LPAR packets are transferred outside LPAR manager, but not inside LPAR manager. Disable (ALL): Inter-LPAR packets are transferred to both inside and outside LPAR manager. [LPAR manager firmware version 01-9X or later] TXRATE: Sets a limited transmission bandwidth of VF NIC.	Inter-LPAR Packet Filtering: Disable TXRATE: 10000Mbps Others: -	
(8)	Function Key	Displays the function keys that can be used in this screen. F2: Displays the list of assigned VLAN ID. F5: Used to set the promiscuous mode. F6: Used to change MAC addresses. F7: Used to set the VLAN mode. F8: Used for setting Inter-LPAR Packet Filtering. LPAR manager firmware version 01-9X or later F9: Sets a limited transmission bandwidth of VF NIC by a 100 Mbps in the range 100Mbps to 10000Mbps.	-	01-0X~

Table 7-18 VLAN ID

VLAN Mode	VLAN ID
Tagged	Up to 16 IDs from 1 to 4094, or All (IDs) Only "All" (all ID) can be specified when VF NIC is assigned.
Untagged	One ID from 1 to 4094.

The following table describes each operation on this screen.

Table 7-19 LPAR Status on the VNIC Assignment Screen

Item		LPAR Status			Remark	Supported LPAR manager Version
		Activate	Deactivate	Failure		
Name		N	N	N	Display Only	01-0X~
Sta		N	N	N	Display Only	01-0X~
#VNIC		N	N	N	Display Only	01-0X~
VNIC Number		N	N	N	Display Only	01-0X~
VNIC Assignment		N	Y	N	-	01-0X~
VNIC Information (Shared NIC/ Virtual NIC)	MAC Address	N	Y	N	-	01-0X~
	Tag	Y	Y	N	-	01-0X~
	Prm	Y	Y	N	-	01-0X~
	VLANID	Y	Y	N	-	01-0X~
	Inter-LPAR Packet Filtering	Y	Y	N	-	01-0X~
VNIC Information (VF NIC)	MAC Address	N	Y	N	-	01-9X~
	Tag	N	Y	N	-	01-9X~
	Prm	Y	Y	N	-	01-9X~
	VLANID	N	Y	N	-	01-9X~
	Inter-LPAR Packet Filtering	Y	Y	N	-	01-9X~
	TXRATE	Y	Y	N	-	01-9X~
Legend: Y: can be changed N: cannot be changed						

How to Change Logical NIC assignment



Note:

- You can assign a number of VF NIC over the maximum number of shares per port on screen settings. However, the total number of VF NIC on activated LPAR can be assigned up to the maximum number of shares per port.
- If the total number of VF NIC on activated LPAR is assigned over the maximum number of shares per port, "The VF is already assigned the maximum assignable times to LPARs." is displayed while activating LPAR, and then activation fails.

Deactivate the LPAR to change the Logical NIC assignment. Place the cursor on the crossing item of the LPAR in line and the virtual NIC number in the column, and press **Enter** to display the sub-screen for selecting the assignment. Place the network segment of the Logical NIC you want to change, and then press **Enter**.

How to show the list of VLAN ID assignment and Promiscuous Mode settings

Press **F2: Disp** to show the list of VLAN ID assignment and Promiscuous Mode settings defined in the network segment identifier where the cursor is placed on this screen.

If placing on the area without the network segment identifier defined, nothing is displayed by pressing **F2: Disp**.

To close the list, press **Esc**. To display the list of VLAN ID assignment and Promiscuous Mode settings defined in the different network segment identifier from the list displayed with **F2: Disp**, press **Esc** to close the current display, move the cursor, and press **F2: Disp** again.

The following figure is an example for the list of VLAN ID assignment and Promiscuous Mode settings.

```

+ Virtual NIC Assignment +
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
```

Figure 7-15 Promiscuous Mode Detail Setting Screen

The following table shows the list of VLAN ID assignment and Promiscuous Mode settings.

Table 7-20 Details of Promiscuous Mode Setting Screen

No.	Item	Description
(1)	Segment	Displays the network segment identifier to show the list.

No.	Item	Description
(2)	LPAR#	Displays the LPAR number to set the network identifier shown in (1) from smaller to larger numbers.
(3)	VNIC#	Displays the virtual NIC number corresponding to the LPAR shown in (2) from smaller to larger numbers.
(4)	Prm	Displays the promiscuous mode defined in the virtual NIC shown in (3).
(5)	Mode	Displays the VLAN mode defined in the virtual NIC shown in (3).
(6)	VLAN ID	Displays VLAN IDs defined in the virtual NIC shown in (3) from smaller to larger numbers. VLAN IDs are displayed in two rows when the assigned VLAN IDs are 9 or more (up to 16). Only 'ALL' is displayed when the VLAN ID is assigned ALL.
(7)	TXRATE ASSIGN	[LPAR manager firmware version 01-9X or later] When VF NIC is assigned, an amount of limited transmission bandwidth assigned LPAR is displayed.
(8)	ACT	[LPAR manager firmware version 01-9X or later] When VF NIC is assigned, an amount of limited transmission bandwidth that LPAR uses (Active state) is displayed.
(9)	TXRATE	[LPAR manager firmware version 01-9X or later] When VF NIC is assigned, a limited transmission bandwidth of LPAR is displayed.
(10)	ACT	[LPAR manager firmware version 01-9X or later] When VF NIC is assigned, a state of LPAR is displayed. Y (Activate): Activated LPAR N (Deactivate): Deactivated LPAR



Note:

- If the VLAN ID is not defined in the network segment identifier specified by the cursor and **F2**: Disp VLAN ID Map is pressed, a message 'VLAN ID is not set.' is displayed.

How to change Promiscuous Mode



Note:

- When VF NIC is assigned, you can only select "Restricted".

Place the cursor on the crossing item of the LPAR in line and the virtual NIC number in column, and press **F5**: Set Prom. Mode to show a sub-screen. Select a promiscuous mode and press **Enter**.

Table 7-21 Details of Promiscuous Mode

Promiscuous Setting		Receiving Packets
Guest OS	LPAR manager Screen	
Disable	Restricted/Through	Receives packets with the address only to the concerned LPAR (MAC).
Enable	Restricted	Receives packets with the address only to the concerned LPAR (MAC).
	Through	Receives all packets on the identical network segment.

```

+-- Virtual NIC Assignment -----+
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
||
```

Figure 7-16 Promiscuous Mode Setting Screen

How to Change MAC address

Place the cursor on the crossing item of the LPAR in line and the virtual NIC number in the column, and press **F6**: Change MAC Add to display the sub-screen. Enter the new value and press **Enter**. Values to set range from 00:00:00:00:00:00 to FF: FF: FF: FF: FF: FF. The value reserved by LPAR manager, however, cannot be set. Do not set a multi-cast address and broadcast address.



Note:

- It is not recommended to change the MAC address.
Confirm that there is not the same MAC address port on the network before changing the MAC address. Otherwise, the fatal failure may occur on the network.

How to change VLAN mode



Note:

- When VF NIC is assigned, you can specify only All to Tagged VLAN ID.
- Do not change VLAN settings for VF NIC assigned to an activated LPAR.

Place the cursor on the intersection between the LPAR in line and the virtual NIC number in column, and press **F7**: Select VLAN to display the sub-screen. Select the VLAN mode and press **Enter**.

```

+-----+
|+- Virtual NIC Assignment -----+
|
|
|      Virtual NIC Number
|      # Name   Sta #VNIC  0  1  2  3  4  5  6  7  8  9
|      1 LPAR1   Dea    2  1a 1b *  *  *  *  *  *  *  *
|      2 LPAR2   Dea    0  *  *  *  *  *  *  *  *  *
|      3
|      4
|      5
|      6
|      7
|      8
|      9
|     10
|
|                               +-----+
|                               | Select VLAN mode |
|                               +-----+
|                               | UNDEFINE         |
|                               | TAGGED           |
|                               | UNTAGGED        |
|                               +-----+
|                               | Cancel VLAN mode |e Up / [PageDown]:Page Down
|
+-----+
|+-VNIC Information-----+
|
| No: 0  MAC Address: 00.00.87.62.c7.00 Shared NIC#: 1 Tag: Undef Prm: T
|      Inter-LPAR Packet Filtering: Disable
|      VLANID:
|
+-----+
| F2:Disp F5:Set Prom. Mode F6:Change MAC Addr F7:Select VLAN
| F8:Packet Filter F11:Left F12:Right
|
+-----+

```

Figure 7-17 VLAN Mode Changing Screen

When selecting Tagged or Untagged as the VLAN mode, a sub-screen is displayed. Enter the VLAN ID to change, and press **Enter**. If entering a wrong VLAN ID, the sub-screen to show the error message. Enter the correct VLAN ID.

```

+----- Virtual NIC Assignment -----+
|
|                                     Virtual NIC Number
|
| # Name      Sta #VNIC   0   1   2   3   4   5   6   7   8   9
| 1 LPAR1     Dea      2   1a 1b *   *   *   *   *   *   *
| 2 LPAR2     Dea      0   *   *   *   *   *   *   *   *   *
| 3
| 4
+-----+
|
|      VLAN ID Setting (a limit input : 1 to 4094 or 'All')
|
|      1, 2, 3
|
+-----+
|
+-----+
+----- Virtual NIC Information -----+
|
| No: 0  MAC Address: 00.00.87.62.c7.00  Shared NIC#: 1  Tag: Undef  Prm: T
|
|      Inter-LPAR Packet Filtering: Disable
|
| VLANID:
|
+-----+
|
| F2:Disp  F5:Set Prom. Mode  F6:Change MAC Addr  F7:Select VLAN
|
| F8:Packet Filter  F11:Left  F12:Right
|
| Esc:Menu

```

Figure 7-18 VLAN ID Setting Screen

When selecting Tagged as the VLAN mode and the number of VLAN ID settings is less than 16, another sub-screen is displayed. Select Yes if continuing to set VLAN IDs, or select No and press **Enter** if finishing the VLAN ID setting.

```
+-- Virtual NIC Assignment -----+
|
|                               Virtual NIC Number
|   # Name      Sta #VNIC    0   1   2   3   4   5   6   7   8   9
|   1 LPAR1     Dea       2   1a 1b *   *   *   *   *   *   *   *
|   2 LPAR2     Dea       0   *   *   *   *   *   *   *   *   *
|   3
|   4
|   5
|   6           +-----+
|   7           | VLAN ID count is less than 16. |
|   8           |         Do you continue?        |
|   9                   Yes
|  10                  No
|           +-----+
|                                     [PageDown]:Page Down
+-----+
+-- VNIC Information -----+
| No: 0 MAC Address: 00.00.87.62.c7.00 Shared NIC#: 1 Tag: Undef Prm: T
| Inter-LPAR Packet Filtering: Disable
| VLANID:
+-----+
| F2:Disp F5:Set Prom. Mode F6:Change MAC Addr F7>Select VLAN
| F8:Packet Filter F11:Left F12:right
| Esc:Menu
```

Figure 7-19 VLAN ID Warning Message Screen

When selecting Yes, one more sub-screen is displayed. Enter the VLAN ID and press **Enter**. If entering the wrong VLAN ID, the sub-screen with the error message is displayed. Enter the correct VLAN ID.

```

+-- Virtual NIC Assignment -----+
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
```

Figure 7-20 VLAN ID Setting Screen

Example: Defining VLAN mode=Tab; VLANID=1, 2, 3, 4, 5, 6 to LPAR1; Virtual NIC 1a with virtual NIC Number0

```

+----- Virtual NIC Assignment -----+
|
|
|
|      Virtual NIC Number
|      0   1   2   3   4   5   6   7   8   9
|  # Name   Sta #VNIC
|  1 LPAR1   Dea   2   1a 1b * * * * * * * *
|  2 LPAR2   Dea   0   * * * * * * * * * *
|  3
|  4
|  5
|  6
|  7
|  8
|  9
| 10
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
```

Figure 7-21 VLAN ID Configuration Screen

How to change the inter-LPAR packet filtering



Note:

- When VF NIC is assigned, you can select only Disable.

- Place the cursor at an item where an LPAR line crosses a VNIC number column, and press **F8**: Packet Filter to display the sub-screen. Select an inter-LPAR packet filtering to change, and press the **Enter** key.

Table 7-22 Details of Inter-Packet Filtering

Inter-LPAR packet filtering	Inter-LPAR packets		Packets to outside LPAR manager	Purpose
	Inside LPAR manager	Outside LPAR manager		
Disable	Transmit	Not Transmit	Transmit	Permits inter-LPAR communication in the same segment. Used for inter-LPAR communication only inside LPAR manager.
Enable	Not Transmit	Transmit	Transmit	Disables inter-LPAR communication in the same segment. Used for improving independence and security of LPARs when each LPAR has a respective owner.
Disable (ALL)	Transmit	Transmit	Transmit	Permits Inter-LPAR communication in the same segment. Used for inter-LPAR communication using network redundancy configuration such as Intel(R) PROSet connection monitoring with Windows and bonding with Linux.


```

+-----+
|+ Virtual NIC Assignment -----+
|
|
|      Virtual NIC Number
|      # Name   Sta #VNIC  0  1  2  3  4  5  6  7  8  9
|      1 LPAR1   Dea    2  1a 1b *  *  *  *  *  *  *  *
|      2 LPAR2   Dea    0  *  *  *  *  *  *  *  *  *  *
|      3
|      4
|      5
|      6
|      7
|      8
|      9
|     10
|
|      +-----+
|      | Inter-LPAR Packet Filtering |
|      |
|      | Disable
|      | Enable
|      | Disable (ALL)
|      +-----+
|
|-----+ / [PageDown]:Page Down
+-----+
+-----+
|+ VNIC Information-----+
|
| No: 0  MAC Address: 00.00.87.62.c7.00  Shared NIC#: 1  Tag: Undef  Prm: T
|      Inter-LPAR Packet Filtering: Disable
|      VLANID:
|
+-----+
|
| F2:Disp  F5:Set Prom. Mode  F6:Change MAC Addr  F7:Select VLAN
| F8:Packet Filter  F11:Left  F12:Right
|
+-----+

```

Figure 7-22 LPAR Packet Filtering Enabling Screen



Note:

- If you press **F8**: Packet Filter when the shared NIC, specified with the cursor, is not defined in the network segment identifier, the sub-screen is not displayed.

How to change the transmission bandwidth limitation for VF NIC (for LPAR manager firmware version 01-9X or later)

Place the cursor at an item where an LPAR line crosses a VNIC number column, and press **F9**: Set TXRATE to display the subscreen. Select a numeric value to change, and press the **Enter** key.

When pressing **F1** on the subscreen, you can enter a numeric value by the 100 Mbps.

Table 7-23 Details of Shared FC Assignment Screen

No.	Item	Description	Default Value	Supported LPAR manager Version
(1)	#	Displays the LPAR numbers.	-	01-0X~
(2)	Name	Displays the LPAR name.	NO_NAME	01-0X~
(3)	Sta	Displays the LPAR status. Act (Activate): The LPAR is powered on. Dea (Deactivate): The LPAR is powered off. Fai (Failure): The LPAR cannot be used due to an unrecoverable failure. Reboot LPAR manager when this happens. If rebooting LPAR manager cannot solve the problem, contact your reseller or consult maintenance personnel.	Dea	01-0X~
(4)	Shared FC#	Displays the number of the shared FC.	-	01-0X~
(5)	Slot#	Displays the number of the PCI slot into which the FC is inserted.	-	01-0X~
(6)	Port#	Displays the shared FC port number.	-	01-0X~
(7)	PortStatus	Displays the shared FC port status: A: Available. Normal status D: LinkDown. Unavailable because the cable is not connected. C: ConfigCheck. Unavailable due to configuration problem. E: ErrorCheck. Unavailable due to unrecoverable failure.	-	01-0X~
(8)	Shared FC Assignment	Sets the shared FC port to each LPAR. To assign the shared FC port, select the shared FC port by eh cursor to display a sub-screen and set VfcID. "!" is displayed on the right of the slot number when the PCI device is not recognized for the reason that the PCI device is removed through the hot-plug operation or powered off due to a failure causing the blockade of the PCI device.	*	01-0X~
(9)	Selected Virtual FC Port WWN Information	Displays the information on the shared FC port selected by the cursor. LPAR#: Displays the LPAR# to which the shared FC is assigned. WWPN: Displays WWPN of the shared FC. WWNN: Displays WWNN of the shared FC.	-	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
		Bus#/Dev#/Func#: Displays Bus#/Dev#/Fuc# of the PCI device with the shared FC implemented. vfdOD#: Displays vfcWWN-ID set in the shared FC.		
(10)	Function Key	Displays the function keys that can be used in this screen. F11 : Scrolls the page rightward to show the screen. F12 : Scrolls the page leftward to show the screen.	-	01-0X~

The following table describes each operation on this screen.

Table 7-24 LPAR Status on the Shared FC Assignment Screen

Item	LPAR Status			Remark	Supported LPAR manager Version
	Activate	Deactivate	Failure		
Name	N	N	N	Display Only	01-0X~
Sta	N	N	N	Display Only	01-0X~
Slot#	N	N	N	Display Only	01-0X~
Port#	N	N	N	Display Only	01-0X~
PortStatus	N	N	N	Display Only	01-0X~
Shared FC Assignment	N	Y	N	-	01-0X~
Selected Virtual FC Port WWN Information	N	N	N	Display Only	01-0X~
Legend: Y: can be changed N: cannot be changed					

How to change the shared FC assignment

Deactivate the LPAR to change the shared FC assignment.

```

+----- Shared FC Assignment -----+
|  |      Shared FC#:      0    1    2    3    4    5    6    7    8    9    |
|  |          Slot#:      E12  E12                                     |
|  |          Port#:      0    1                                     |
|  |      PortStatus:      A    A                                     |
|  |  # Name      Sta                                     |
|  |  1 LPAR1      Dea      1    *                                     |
|  |  2 LPAR2      Dea      *    *                                     |
|  |  3                                                     |
|  |  4                                                     |
|  |  5                                                     |
|  |  6                                                     |
|  |  7                                                     |
|  |  8                                                     |
|  |  9                                                     |
|  | 10                                                     |
|  |                                                     [PageUp]:Page Up / [PageDown]:Page Down |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
+----- Selected Virtual FC Port WWN Information -----+
|  |  #  LPAR#  WWPN      WWNN      Bus#  Dev#  Func#  vfcID#  |
|  |  0   1    2348000087000110  2348000087000111  2a   0    0    1    |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
|  | F11:Left  F12:Right                                     Esc:Menu  |

```

Figure 7-24 Change of the Shared FC Assignment

Place the cursor on the intersection between the LPAR in line and the Shared FC number in column, and press **Enter** to display the sub-screen for assigning vfcID. Select the vfcID# shown on the sub-screen, place the cursor on it, and press **Enter**.

vfdID can be selected in the range of 1 to 15 (for an 8Gb FC adapter) or 1 to 30 (for a 16Gb FC adapter) for each port. However, the same vfcID cannot be set for multiple LPARs. Also, multiple vfcIDs cannot be set for one LPAR.

+ Shared FC Assignment +-----											

Figure 7-25 vfc Assignment for Shared FC

Example for assigning Shared FC#=0 with vfcID#=2 to LPAR1

+ Shared FC Assignment									
	Shared FC#:	0	1	2	3	4	5	6	7
	Slot#:	E12	E12						
	Port#:	0	1						
	PortStatus:	A	A						
#	Name	Sta							
1	LPAR1	Dea	2	*					
2	LPAR2	Dea	*	*					
3									
4									
5									
6									
7									
8									
9									
10									
[PageUp]:Page Up / [PageDown]:Page Down									
+ Selected Virtual FC Port WWN Information									
#	LPAR#	WWPN	WWNN	Bus#	Dev#	Func#	vfcID#		
0	1	2348000087000110	2348000087000111	2a	0	0	1		
++									
F11:Left F12:Right								Esc:Menu	

Figure 7-26 Changed Assignment of Shared FC

WWN for Shared FC

WWN used for the shared FC is called vfcWWN, which is created automatically by the vfcID value assigned on the Shared FC Assignment screen. Select FC Assign on the Shared FC Assignment screen, the created vfcWWN is displayed in Selected Virtual FC Port WWN Information.

The Allocated FC Information screen displays WWN information on dedicated and shared FCs implemented in LPAR manager.

PortStatus

If PortStatus is none but "'A': Available", execute the following.

- When PortStatus is "'D': LinkDown, unavailable because the cable is not connected", check the following:
 - Is the FC cable properly plugged into the FC adapter?
 - Are FC switches connected to the FC adapter powered on and performing properly?
 - Does the same symptom occur using a new FC cable? (Execute this if possible.)
- When PortStatus is "'C': Config Check, unavailable due to configuration problem", check the following:
 - When fibre channel adapter connected to FC switch which does not support NPIV, is it a loop connection? (Also when NPIV is disabled)
- When PortStatus is "'E': Error Check, unrecoverable failure, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Allocated FC Information

The following functions are available on the Allocated FC Information screen.

Displaying configuration information on the Fibre Channel adapter assigned to each LPAR (WWN) as a list

+- Allocated FC Information -----(1) WWN --+									
(2)	(3)	(4)	(5)	(6)	(9)	Vfc Seed Info. 1	(10)<<	1/	4>>
Lpar#	Slot#	Port#	SchMd	vfcID	WWPN	(7) WWNN	(8)		
1	E12	0	S	1	2348000087000110	2348000087000111			
--	E12	0	S	2	2348000087000120	2348000087000121			
--	E12	0	S	3	2348000087000130	2348000087000131			
--	E12	0	S	4	2348000087000140	2348000087000141			
--	E12	0	S	5	2348000087000150	2348000087000151			
--	E12	0	S	6	2348000087000160	2348000087000161			
--	E12	0	S	7	2348000087000170	2348000087000171			
--	E12	0	S	8	2348000087000180	2348000087000181			
--	E12	0	S	9	2348000087000190	2348000087000191			
--	E12	0	S	10	23480000870001a0	23480000870001a1			
--	E12	0	S	11	23480000870001b0	23480000870001b1			
--	E12	0	S	12	23480000870001c0	23480000870001c1			
--	E12	0	S	13	23480000870001d0	23480000870001d1			
--	E12	0	S	14	23480000870001e0	23480000870001e1			
--	E12	0	S	15	23480000870001f0	23480000870001f1			
--	E12	1	S	1	2348000087000112	2348000087000113			
[PageUp] :Page Up / [PageDown] :Page Down									
									Esc:Menu

Figure 7-27 Allocated FC Information Screen

The following table describes each item on this screen.

Table 7-25 Details of the FC Allocation Information Screen

No.	Item	Description	Default Value	Supported LPAR manager Version
(1)	Select Display	Selects which World Wide Names to display: This item is displayed only for a configuration in which LPAR migration is supported. WWN: World Wide Name for FC WWN (Migration): World Wide Name for FC temporarily used in LPAR migration in concurrent maintenance mode.	WWN	01-3X~
(2)	Lpar#	Displays the LPAR numbers to which a fibre channel (FC) has been allocated, in ascending order. "-" is displayed if the FC has not been allocated to any LPAR.	-	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
(3)	Slot#	Displays the physical slot number to which the FC is inserted.	-	01-0X~
(4)	Port#	Displays the port number of the FC.	-	01-0X~
(5)	SchMd	Displays the FC's scheduling mode. D: Allocated to an LPAR in the dedicated mode. S: Allocated to an LPAR in the shared mode.	D	01-0X~
(6)	vfcID	Displays the configured vfcWWNID if the allocated FC is in the shared mode. Displays "-" for anything other than the shared FC.	-	01-0X~
(7)	WWPN	Displays the FC's World Wide Port Name. Displays "?" for non-Hitachi fibre channel adapters and NICs for which the FCoE functionality is enabled.	-	01-0X~
(8)	WWNN	Displays the FC's World Wide Node Name. Displays "?" for non-Hitachi fibre channel adapters and NICs for which the FCoE functionality is enabled.	-	01-0X~
	WWPN (Migration)	Displays World Wide Name for FC temporarily used in LPAR migration in concurrent maintenance mode. This item is displayed when WWN (Migration) is selected in item (1). Displays "?" for non-Hitachi fibre channel adapters and NICs for which the FCoE functionality is enabled. Displays "-" for an unsupported FC adapter.	-	01-3X~
(9)	Vfc Seed Info.	Displays the Vfc seed information used in creating WWN.	-	01-0X~
(10)	Pages	Numerator: Displays the current page. Denominator: Displays the total number of pages.	-	01-0X~

How to change displaying WWN

Place the cursor on Select Display on the upper right and press **Enter** to display a sub-screen. On the sub-screen, select item to display, and press **Enter**.

System Configuration

The following functions are available in the System Configuration screen.
Example of System Configuration screen is below.

```

+-----+
|+- System Configuration -----|<< 1/ 3>>+|
||                               ||
|| LP ID          LP_192168020 (1) | Alert Language      Japanese  (10) ||
||                               | Virtual Console Port 20801    (11) ||
|| LP IP Address  192.168.0.20 (2) |                               ||
|| Subnet Mask    255.255.255.0 (3) | SYS2 Processors     Default(2) (12) ||
|| Default Gateway 0.0.0.0 (4) |                               ||
|| SVP IP Address 192.168.0.1 (5) |                               ||
|| BSM1 IP Address 192.168.0.168 (6) | LP CLI 1 IP Address 0.0.0.0 (13) ||
|| BSM2 IP Address 0.0.0.0 | LP CLI 2 IP Address 0.0.0.0 ||
|| BSM3 IP Address 0.0.0.0 | LP CLI 3 IP Address 0.0.0.0 ||
|| BSM4 IP Address 0.0.0.0 | LP CLI 4 IP Address 0.0.0.0 ||
|| BSM1 Alert Port 20079 (7) | LP CLI 5 IP Address 0.0.0.0 ||
|| BSM2 Alert Port 20079 | LP CLI 6 IP Address 0.0.0.0 ||
|| BSM3 Alert Port 20079 | LP CLI 7 IP Address 0.0.0.0 ||
|| BSM4 Alert Port 20079 | LP CLI 8 IP Address 0.0.0.0 ||
||                               ||
|| Management Path Default (8) | LP-SVP Communication IPv4 (14) ||
|| VNIC System No : 1 (9) |                               ||
+-----+
| F10:Update System Config F11:Left F12:Right Esc:Menu |
+-----+

```

Figure 7-28 LPAR manager System Configuration Screen (1/3)

```

+-----+
|+- System Configuration -----|<< 2/ 3>>+|
|+- IPv6 Address Configuration -----|
||
|| (15)IPv6 Static Address Disable
||
|| (16)LP IP Address      xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx
|| (17)Prefix Length      xxx
|| (18)Default Gateway    xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx
|| (19)SVP IP Address      xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx
|| (20)LP CLI1 IP Address  xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx
|| LP CLI2 IP Address      xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx
|| LP CLI3 IP Address      xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx
|| LP CLI4 IP Address      xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx
|| LP CLI5 IP Address      xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx
|| LP CLI6 IP Address      xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx
|| LP CLI7 IP Address      xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx
|| LP CLI8 IP Address      xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx
||
|| (21)IPv6 Stateless Address Disable
||
+-----+
| F11:Left F12:Right Esc:Menu |
+-----+

```

Figure 7-29 LPAR manager System Configuration Screen (2/3)

```

+-----+
|+ System Configuration -----<< 3/ 3>>+|
|+ Authentication -(26)User List (1) -----+|
|(22)VC      Disable (27)Name                (28)Remain  |
|(23)LP CLI  Disable Administrator          ---      |
|+-----+|
|+ Option -----+|
|(24)Expiry      0 |
|+-----+|
|+ VC Connect -----(29)Host key -----(30)Generate Host Key +|
|(25)Type      Telnet | e2:4f:cb:fd:28:df:70:8e:9b:cf:7d:1e:43:85:f2:ab |
|(31)User Information -----+|
| User Administrator |
| Remain: ---      |
|+-----+|
|                                     [PageUp]:Page Up / [PageDown]:Page Down |
|+-----+|
|(32)F1:Add  F2:Remove  F3:PW Change  F11:Left  F12:Right      Esc:Menu |
+-----+

```

Figure 7-30 LPAR manager System Configuration Screen (3/3)

The following table describes each item on this screen.

Table 7-26 Details of the LPAR manager System Configuration Screen

No.	Item	Description	Default Value	Supported LPAR manager Version
(1)	LP ID	Sets the ID that identifies LPAR manager Numbers, in which periods are omitted from the LP IP Address, are reflected as the initial value following "LP_". If you set an IP address in IPv4 format, "LP_" followed by that LP IP address excluding periods (.) is applied as the initial value. If you set only an IP address in IPv6 format instead, the numbers between which the colons have been omitted from the IPv6 address without omitting the 0's, or the twelve low-order digits of the IPv6 address in hexadecimal notation, are reflected following "LP_".	LP_XXXX	01-0X~
(2)	LP IP Address (IPv4)	Display LP IP Address LP IP Address which is set as the management module is reflected.	-	01-0X~
(3)	Subnet Mask	Display Subnet Mask Subnet Mask which is set as the management module is reflected.	-	01-0X~
(4)	Default Gateway	Sets the IP address of the Default Gateway.	-	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
	(IPv4)	Default Gateway which is set as the management module is reflected.		
(5)	SVP IP Address (IPv4)	Set the IP Address. SVP IP Address which is set as the management module is reflected.	-	01-0X~
(6)	BSM1~4 IP Address	Sets the IP addresses for the ServerConductor/Blade Server Manager (BSM). When LPAR manager is started, the System Manager 1~4 IP Addresses, which are set to the management module, are applied as the initial values.	-	01-0X~
(7)	BSM1~4 Alert Port	Sets the alert port numbers for the ServerConductor/Blade Server Manager (BSM). When LPAR manager is started, the System Manager 1~4 Alert Ports, which are set to the management module, are applied as initial values. (Recommended setting)	-	01-0X~
(8)	Management Path	Displays the PCI device of the NIC used for the management path. Default: network segment 1a and 1b are set as management paths. The management path is a path used for communication to the management server, where SC/ BSM/HvmSh commands operate, by LPAR manager. This item is not displayed in the firmware combinations that support change of management path specification. For the firmware combination details, see "Firmware combinations"	Default	01-0X~
(9)	VNIC System No	Sets a value that is not identical to the other LPAR manager systems, including Compute Blade Series. Table VNIC System No shows the range of numbers that VNIC System No can be set. This value is used as part of the Logical NICs MAC address. Without setting this number, you cannot go to another screen.	0	01-0X~
(10)	Alert Language	Sets the language used in the alert messages. When LPAR manager is started, the Language Mode that has been set to the	-	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
		management module will be applied as the initial value. (Recommended setting) Japanese: Displays the alert message in Japanese. English: Displays the alert message in English.		
(11)	Virtual Console Port	Set the TCP port to connect the guest console via Telnet or SSH. However, if the virtual COM console connection method is "Telnet for which user authentication is enabled" or "ssh", the values that can be set are 1024 to 65504. Can set only a TCP port that is connected to VC1. One is added to the TCP number of VC2 and consecutive TCPs as one is added to the number of VC. When booting LPAR manager, the TCP ports (serial numbers starting from 20801) that LPAR manager obtains are reflected by default: this setting is recommended. This item cannot be set for the TCP ports used by LPAR manager. For details about the TCP ports used by LPAR manager, see Appendix D, LPAR manager use Port numbers on page D-1 .	20801	01-0X~
(12)	SYS2 Processors	Displays the upper limit of the number of the physical processors used by SYS2. "Default(n)" is displayed if the value is not changed from the default value. The SYS2 Processors setting can be changed only when all LPARs are in Deactivate status. Move the cursor to SYS2 Processors, and then press Enter. On the displayed SYS2 Processors Setting sub-screen, you can change the SYS2 Processors setting. Setting SYS2 Processors to 3 improves the response time in LPAR manager operation.	2	02-62~
(13)	LP CLI1~8 IP Address (IPv4)	Sets LP CLI IP Address. Sets the IP address of a server where commands such as HvmSh and HVMGetPerf work.	0.0.0.0	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
(14)	LP-SVP Communication	Displays the protocol that is used for communication between the LPAR manager and the management module. IPv4: IPv4 is used. IPv6(Static): IPv6 is used. The protocol set on the management module is applied to this item.	IPv4	02-25~
(15)	IPv6 Static Address	Displays whether use of IPv6 static addressing is enabled or disabled. Enable: The IPv6 static address is used. Disable: The IPv6 static address is not used. The IPv6 static address set on the management module is applied to this item.	Disable	02-25~
(16)	LP IP Address (IPv6)	Displays the LP IPv6 address. The LP IPv6 address set on the management module is applied to this item.	-	02-25~
(17)	Prefix Length	Displays the prefix length of the LP IPv6 address. The prefix length set on the management module is applied to this item.	-	02-25~
(18)	Default Gateway (IPv6)	Displays default gateway for the LP IPv6 address. The default gateway set on the management module is applied to this item.	-	02-25~
(19)	SVP IP Address (IPv6)	Displays the SVP IPv6 address. The SVP IPv6 address set on the management module is applied to this item.	-	02-25~
(20)	LP CLI1~8 IP Address (IPv6)	Sets LP CLI IP Address. Sets the IP address of a server from which HvmSh commands are issued.	::	02-25~
(21)	IPv6 Stateless Address	Specifies whether use of the IPv6 stateless addressing is enabled or disabled. Enable: The IPv6 stateless address is used. Disable: The IPv6 stateless address is not used.	Disable	02-25~

No.	Item	Description	Default Value	Supported LPAR manager Version
		The IPv6 stateless address set on the management module is applied to this item.		
(22)	VC ¹	Sets whether to perform user authentication when connecting to the guest console. Disable: Does not perform user authentication. Enable: Performs user authentication. -----: Displayed when the virtual COM console connection method is SSH.	Disable	02-05~
(23)	LP CLI ¹	Sets whether to perform user authentication when performing connection by using the LP CLI. Disable: Does not perform user authentication. Enable: Performs user authentication.	Disable	02-05~
(24)	Expiry ¹	Sets the password expiration date. 0: Sets the password expiration date to indefinite. 1 to 365: Sets the password expiration date in the range from 1 to 365 days.	0	02-05~
(25)	Type ¹	Sets the virtual COM console connection method. Telnet: Connects by using Telnet. ssh: Connects by using SSH.	Telnet	02-05~
(26)	User List ²	Displays a user list. The number of registered users is displayed in parentheses. - Displays user names in ascending ASCII order. - Up to 10 people are displayed per page.	---	02-05~
(27)	Name ²	Displays the user name.	---	02-05~
(28)	Remain ²	Displays the password expiration date. The number of days remaining excluding the current day is displayed as the expiration date. The number of days changes at UTC 0:00. ---: There is no expiration date. Numbers: Displays the number of days left until expiration. *: The number of remaining days until expiration is 14 or less.	---	02-05~

No.	Item	Description	Default Value	Supported LPAR manager Version
		Expired: The expiration date has passed. NaN: The state is other than the above.		
(29)	Host key ²	Displays the host key to be used for SSH connection to virtual COM console.	---	02-05~
(30)	Generate Host Key ¹	Re-creates a host key to be used for SSH connections to virtual COM console.	---	02-05~
(31)	User Information ²	Displays user information. Name: Displays the name of the user. Remain: Displays the password expiration date.	---	02-05~
(32)	Function Key	Displays the function keys that can be used in this screen. F10 : Used when changes are reflected in the LPAR manager system. [LPAR manager firmware version: 02-05 or later] F1 : Used when adding a user. F2 : Used when deleting a user. F3 : Used when changing the password. F11 : Scrolls the page to the left to show the screen. F12 : Scrolls the page to the right to show the screen.	---	01-0X~
Notes: 1. When the firmware of LPAR manager is version 02-45 or later, only management module users who have the LPAR manager security permission can perform this operation. 2. When the firmware of LPAR manager is version 02-45 or later, this item is displayed only for management module users who have the LPAR manager security permission.				

Table 7-27 VNIC System No

Item	LPAR manager firmware version	
	01-01 or later	01-4x or later
Range of settable VNIC System No	1 to 128	1 to 1024

The following table describes each operation on this screen.

Table 7-28 LPAR Status on the LPAR manager System Configuration Screen

Item	LPAR Status			Remark	Supported LPAR manager Version
	Activate	Deactivate	Failure		
LP ID	-	Y	-	-	01-0X~
LP IP Address (IPv4)	-	-	-	displayed only	01-0X~
Subnet Mask	-	-	-	displayed only	01-0X~
Default Gateway (IPv4)	-	-	-	displayed only	01-0X~
SVP IP Address (IPv4)	-	-	-	displayed only	01-0X~
BSM1~4 IP Address	Y	Y	Y	-	01-0X~
BSM1~4 Alert Port	Y	Y	Y	-	01-0X~
Management Path	-	-	-	displayed only This item is not displayed in the firmware combinations that support change of management path specification.	01-0X~
VNIC System No	-	Y	-	-	01-0X~
Alert Language	-	Y	Y	-	01-0X~
Virtual Console Port	-	Y	-	-	01-0X~
SYS2 Processors	-	Y	Y	-	02-62~
LP CLI1~8 IP Address (IPv4)	Y	Y	Y	-	01-0X~
LP-SVP Communication	-	-	-	displayed only	02-25~
IPv6 Static Address	-	-	-	displayed only	02-25~
LP IP Address (IPv6)	-	-	-	displayed only	02-25~
Prefix Length	-	-	-	displayed only	02-25~
Default Gateway (IPv6)	-	-	-	displayed only	02-25~

Item	LPAR Status			Remark	Supported LPAR manager Version
	Activate	Deactivate	Failure		
SVP IP Address (IPv6)	-	-	-	displayed only	02-25~
LP CLI1~8 IP Address (IPv6)	Y	Y	Y	-	02-25~
IPv6 Stateless Address	-	-	-	displayed only	02-25~
VC	Y	Y	Y	Virtual COM console is disconnected when VC is changed.	02-05~
LP CLI	Y	Y	Y	-	02-05~
Expiry	Y	Y	Y	-	02-05~
Type	Y	Y	Y	Virtual COM console is disconnected when Type is changed.	02-05~
User List	-	-	-	displayed only	02-05~
Name	-	-	-	displayed only	02-05~
Remain	-	-	-	displayed only	02-05~
Host key	-	-	-	displayed only	02-05~
Generate Host Key	Y	Y	Y	-	02-05~
User Information	-	-	-	displayed only	02-05~
Legend: Y: can be changed -: cannot be changed					

How to set the LP ID

Place the cursor on the LP ID and press **Enter** to display a sub-screen. Enter the new ID on the sub-screen. LP ID is used to identify of each when the multiple LPAR manager systems exist. For example, when you control the LPAR manager system from ServerConductor/Blade Server Manager (BSM),

LP ID is used to identify each. Therefore, when setting the LP ID, set a value that is unique among all LPAR manager systems including Compute Blade Series.

LPAR manager does not check if the entered value is used for another LPAR manager system. You can change the LP ID only when all LPARs are deactivated.

How to set the ServerConductor/Blade Server Manager (BSM) IP Address

Place the cursor on the BSM IP Address and press **Enter** to display a sub-screen. Enter the new System Manager IP Address on the sub-screen and press **Enter**.



Note:

- Operation with **F10**: Update System Config is not required to reflect a setting change. It may take about 10 seconds to reflect a setting change.
-

How to set the ServerConductor/Blade Server Manager (BSM) Alert Port

Place the cursor on the BSM Alert Port and press **Enter** to display a sub-screen. Enter the new BSM Alert Port Number in the sub-screen and press **Enter**.



Note:

- Operation with **F10**: Update System Config is not required to reflect a setting change. It may take about 10 seconds to reflect a setting change.
-

How to set the VNIC System No.

Place the cursor on the VNIC System No. and press **Enter** to display a sub-screen. Enter the new virtual NIC Setting Number on the sub-screen and press **Enter**. The initial setting of the VNIC System No. is 0. Set the new value except 0 at the first LPAR manager boot. Otherwise, the LPAR manager system will not boot.

You can change the VNIC System No. only when all LPARs are deactivated. LPAR manager does not check if the entered value is used for another LPAR manager system.



Note:

- A VNIC System No. is used for creating a unique MAC address to a Logical NIC. Thus, set a unique value to all LPAR manager system such as Compute Blade Series.
 - Do not change the VNIC system No., otherwise the following phenomena might occur.
 - The MAC address of the Logical NIC assigned to the guest OS on LPAR manager will change.
 - When reusing VNIC System No. which was used on other LPAR manager, MAC address of Logical NIC might overlap with others.
-

How to set the Alert Language

Place the cursor on the Alert Language and press **Enter** to display a sub-screen. Select a language to use on the sub-screen and press **Enter**.

How to set the Virtual Console Port

Place the cursor on Virtual Console Port and press the **Enter** key to display a sub-screen. Input a virtual console port that you want to change, and then press the **Enter** key.

When changing the virtual console port value, the TCP port is changed. Therefore, reconnecting the LPAR guest screen is necessary.

If the changed value of the virtual console port is the same as the TCP port used in another application, you may not be able to access the LPAR guest console.

How to set LP CLI IP Address

Place the cursor on LP CLI IP Address, and press the **Enter** key to display a sub-screen. Type an LP CLI IP address you want to change and press the **Enter** key.

Do not set a multicast address and broadcast address.



Note:

- Operation with **F10**: Update System Config is not required to reflect a setting change. It may take about 10 seconds to reflect a setting change.
-

How to apply the changes to the LPAR manager system

Operations using **F10** (Update System Config) are not available on the second page of the System Configuration screen.

To apply all the changes made in the System Configuration screen to the LPAR manager system, press **F10**: Update System Config and select Yes in the confirmation sub-screen that opens.

After selecting Yes, you will not be able to perform any operations on LPAR manager for a couple of minutes.

To cancel the changes, press **F10**: Update System Config and select No in the confirmation screen that opens. All changed settings will be restored to their original values.

Because it takes time for the changed settings to be reflected in the LPAR manager system, the movement to another screen is not allowed before the reflection has finished completely. If you go to another screen, press **F10**: Update System Config and select Yes to complete the reflection, or select "No" to cancel the changes.



Note:

- Operation with **F10** (Update system Config) provides a temporary change in the screen when LPAR manager is running. Thus, the setting, which is not saved, will disappear when LPAR manager is rebooted. Execute **F9** (Save configuration) in the LPAR manager Menu screen to save the new setting.
 - If you change a BSM IP address, BSM alert port, or Alert language in this screen, the setting values are effective only during LPAR manager running and not saved with **F9** (Save Configuration). When you reboot LPAR manager, the value set in the management module will become the initial value.
-

How to change user authentication for the virtual COM console connection



Note:

- When the firmware of LPAR manager is version 02-45 or later, only management module users who have the LPAR manager security permission can perform the following operations.
-

[LPAR manager firmware version 02-05 or later]

Place the cursor on VC, and then press **Enter**. On the displayed sub-screen, select Enable/Disable, and then press **Enter**. After the setting is completed, the configuration information is automatically saved.

If VC is Disable, Telnet connections cannot be established to IPv6 LP IP addresses.

How to change user authentication for the LP CLI connection



Note:

- When the firmware of LPAR manager is version 02-45 or later, only management module users who have the LPAR manager security permission can perform the following operations.
-

[LPAR manager firmware version 02-05 or later]

Place the cursor on LP CLI, and then press **Enter**. On the displayed sub-screen, select Enable/Disable, and then press **Enter**. After the setting is completed, the configuration information is automatically saved.

How to set the password expiration date



Note:

- When the firmware of LPAR manager is version 02-45 or later, only management module users who have the LPAR manager security permission can perform the following operations.
-

[LPAR manager firmware version 02-05 or later]

Place the cursor on Expiry, and then press **Enter**. On the displayed sub-screen, enter the password expiration date, and then press **Enter**. After the setting is completed, the configuration information is automatically saved.

If this value is changed, the value for Remain in User List is also changed.

How to set the virtual COM console connection method



Note:

- When the firmware of LPAR manager is version 02-45 or later, only management module users who have the LPAR manager security permission can perform the following operations.

[LPAR manager firmware version 02-05 or later]

Place the cursor on Type, and then press **Enter**. On the displayed sub-screen, select Telnet or ssh, and then press **Enter**.

How to re-create a host key to be used for SSH connections to virtual COMconsole



Note:

- When the firmware of LPAR manager is version 02-45 or later, only management module users who have the LPAR manager security permission can perform the following operations.

[LPAR manager firmware version 02-05 or later]

Place the cursor on Generate Host Key, and then press **Enter**. On the displayed sub-screen, select Yes, and then press **Enter**.

How to add a user



Note:

- When the firmware of LPAR manager is version 02-45 or later, only management module users who have the LPAR manager security permission can perform the following operations.
- When the firmware of LPAR manager is version 02-45 or later, users who are created by using the following operations are assigned the Administrators role. For details, see [Role-Based Access Control on page 3-11](#).

[LPAR manager firmware version 02-05 or later]

Press **F1** (Add) to display the sub-screen. Enter the user name, and then press **Enter**.

Next, enter the password, and then press **Enter**. Then, re-enter the password, and then press **Enter**. After the setting is completed, the configuration information is automatically saved.

- The user name must be 1 to 31 characters, and can contain alphanumeric characters, periods (.), hyphens (-), and underscores (_). The user name must begin with a letter.
- The password must be 1 to 31 characters, and can contain alphanumeric characters and symbols other than spaces.

How to delete a user



Note:

- When the firmware of LPAR manager is version 02-45 or later, only management module users who have the LPAR manager security permission can perform the following operations.

[LPAR manager firmware version 02-05 or later]

Place the cursor on the user displayed for Name in User List, and then press **F2** (Remove). On the displayed sub-screen, select Yes, and then press **Enter**. After the setting is completed, the configuration information is automatically saved.

How to change the password



Note:

- When the firmware of LPAR manager is version 02-45 or later, only management module users who have the LPAR manager security permission can perform the following operations.

[LPAR manager firmware version 02-05 or later]

Place the cursor on the user displayed for Name in User List, and then press **F3** (PW Change). On the displayed sub-screen, enter the password, and then press **Enter**. Then, re-enter the password, and then press **Enter**. After the setting is completed, the configuration information is automatically saved.

- The password must be 1 to 31 characters, and can contain alphanumeric characters and symbols other than spaces.

System Service State

The following functions are available in the System Service State screen. Example of System Service State screen is below.

```

+----- System Service State -----<< 1/ 2>>--+
+----- System Service -----++ Virtual LAN Segment State +-----+
(1) SVP Access      : RUN          || PORT#/NIC#: V 1 2 3 4 5 6 7 8 |
(2) BSM Access      : RUN          || (7) a (8) : D A D             |
(3) HA Monitor       : RUN          || b : D A D                   |
(4) NTP              : SYNC         || c : D                       |
||                  || d : D                                     |
||                  || e :           (9)                             |
||                  || f :                               |
||                  || g :                               |
||                  || h :                               |
(5) Force Recovery   ||          ||
+-----+-----+-----+-----+-----+-----+-----+-----+
+----- Hardware Component -----++ SVP Network Path State +-----+
(6) BMC              : RUN          || Port#                State    |
+-----+-----+(10) Mgmt0: E11-0        Active    |
||                  Mgmt1: E11-1        Standby    |
||                  +-----+-----+-----+-----+
|
|
|
|
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
[PageUp]:Page Up / [PageDown]:Page Down Esc:Menu

```

```

+-- System Service State ----- Shared PCI Device Port State--<< 2/ 2>>--+
(11) TYPE           :      N      N      F
(12) NIC#           :      1*      2      -
|| PORT#/SLOT#      :    E11    E11    E12
|| (13) 0 (14)      :      U      A
|| 1                :      U      A
|| 2                :              D
|| 3                :              D
|| 4                :              (15)
|| 5                :
|| 6                :
|| 7                :
|| 8                :
|| 9                :
|| 10               :
|| 11               :
|| 12               :
|| 13               :
|| 14               :
|| 15               :
+-----+
[PageUp]:Page Up / [PageDown]:Page Down   Esc:Menu

```

The following table describes each item on this screen.

Table 7-29 Details of the LPAR manager System Service State Screen

No.	Item	Description	Default Value	Supported LPAR manager Version
(1)	SVP Access	Displays the SerVice Processor (SVP) access status. RUN: The service is operating normally. STOP: The service is stopping. ERROR: The service is in the error state. UNKNOWN: No updates from the service patrol.	STOP	01-0X~
(2)	BSM Access	Displays the ServerConductor/Blade Server Manager (BSM) access status. RUN: The service is operating normally. STOP: The service is stopping. ERROR: The service is in the error state. UNKNOWN: No updates from the service patrol.	STOP	01-0X~
(3)	HA Monitor	Displays the HA Monitor status. RUN: The service is operating normally. STOP: The service is stopping. ERROR: The service is in the error state. UNKNOWN: No updates from the service patrol.	STOP	01-0X~
(4)	NTP	Displays the NTP status. SYNC: Succeeded synchronization with NTP NO SYNC: Not synchronized with NTP ERROR: Failed synchronization with NTP INACTIVE: Terminated synchronization with NTP When multiple NTP servers are configured and LPAR manager can synchronize the time with any of the NTP servers, "SYNC" is displayed on the NTP status. When LPAR manager cannot synchronize the time with any of NTP servers, "ERROR" is displayed on the NTP status. If a time difference is to be corrected by NTP time synchronization that is supported by LPAR manager firmware version 01-60 or later and takes place at a regular interval of 15 minutes, and if a time difference of more than 60 seconds occurs, any subsequent attempts to perform the NTP time synchronization will be canceled. If this phenomenon occurs, review the LPAR manager system log message that	NO SYNC	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
		includes "An abnormal time difference was detected", and then take action as described in the message.		
(5)	Force Recovery	Recovers the System Service when it is not operating normally.	-	01-0X~
(6)	BMC	Displays the physical Baseboard Management Controller (BMC) status. RUN: BMC is operating normally. ERROR: BMC is in the error state.	RUN	01-0X~
(7)	PORT#	Displays the port number.	-	01-0X~
(8)	NIC#	Displays the NIC number.	-	01-0X~
(9)	Virtual LAN Segment State	Displays the status of the virtual LAN segment.(Not supported for VF NIC.) A: Active S: Standby D: Down F: Fault Blank: Not a shared NIC	-	01-0X~
(10)	SVP Network Path State	Displays the management path status. Connect: displays the management path connection is in 'Success' or 'Fail'. Success: Communication with the management module is enabled. Fail: Communication with the management module is disabled. Link: displays the link state. Yes: "Linked up" No: "Link down" Port#: displays the port number of the management path.	-	01-0X~
		Displays the management path status. Port#: displays the NIC and port number of the management path (Mgmt0/Mgmt1). State: displays the status of the management path. Active: The path is in the active state, and is used for communication with the management module. Standby: The path is in the standby state, and can be used for external communication.	-	02-2X~

No.	Item	Description	Default Value	Supported LPAR manager Version
		Error: The path is in a network failure state. Link down: The path is in a link-down state, or the management path is in a blocked state. Unknown: LPAR manager is unable to communicate externally. -----: No port is specified for the path. This item is displayed if firmware combination supports changing management path specification. For the firmware combination details, see "Firmware combinations".		
(11)	TYPE	Shows the type of the PCI device in the shared scheduling mode on the PCI Device Assignment screen. N: Network interface Card (NIC) Add "v" to the end of line when using VF NIC. F: Fibre Channel	-	01-0X~
(12)	NIC#	Displays the shared NIC number (1 ~ 6) when the device type is No shown in (7). Displays "-" when the device type is F in (7).	-	01-0X~
(13)	PORT#	Displays the port number (0 ~ 3).	-	01-0X~
(14)	SLOT#	Displays the slot number.	-	01-0X~
(15)	Shared PCI Device Port State	Displays the status of the PCI device in the shared scheduling mode on the PCI Device Assignment screen. When Device Type is N shown in (7): U: Link Up status D: Link Down status E: The device cannot be used due to an unrecoverable error. -: The status is unknown. Blank: Shared NIC is not defined. When Device Type is F shown in (7): A: Available. The device is in the normal status and usable. D: LinkDown. The device cannot be used because no cable is connected to it. C: ConfigCheck. The device cannot be used because of a configuration problem.	D	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
		E: ErrorCheck. The device cannot be used because of an unrecoverable error.		

How to recover System Service to a normal state

Since the cursor is already placed on Force Recovery, just press **Enter** to display a sub-screen. Select 'Yes', and press **Enter**. Force Recovery processing takes about three minutes to complete. During the period, you will not be able to perform any operations on LPAR manager.



Note:

- Operation with Force Recovery should be done when no LPAR is activated. If you do with any LPAR in activation, network communication of the LPAR is disconnected for a few minutes. SC/BSM displays Deactivate as LPAR manager status, and no error message is provided.
- Do not perform the Force Recovery operation when the management module and LPAR manager cannot communicate with each other.
For details, see [Management Path on page 1-32](#)
- If the Force Recovery operation is performed while an LPAR to which a shared NIC is assigned is running, network communication of the shared NIC on the LPAR is disconnected for a few minutes.
- If the Force Recovery operation is performed while an LPAR for which a VF NIC is defined is running, the VF NIC cannot be used from the OS on the LPAR.
To recover the VF NIC, reboot the OS on the LPAR after the Force Recovery operation is completed.
- If the Force Recovery operation is performed during the operation using the LPAR manager IP address, the operation using the LPAR manager IP address ends in error.
- If the Force Recovery operation is performed, communication with the management module is disconnected for a few minutes.

Date and Time



Note:

- It is recommended to adjust the LPAR manager system time by using NTP servers. If the LPAR manager is rebooted (including an unexpected LPAR manager system failure and switching N+M) after running for a long time without adjusting the LPAR manager system time, the time of guest OS appear without adjustment. Be sure to save the configuration after NTP setting is enabled. RTC time of LPAR might not synchronize as correction time of NTP, if you rebooted without saving the configuration.

- Use same time zone in management modules, BMC, and LPAR manager. If not, you can't know the exact time when a failure occurs, because each time shows different.
- Set synchronizing the time by management modules to BMC and LPAR manager.(Recommended)

The following actions are possible in the Date and Time screen.

Any values modified on this screen will not be saved automatically in the LPAR manager System and lost at the LPAR manager boot. Press **F9**: Save Configuration on the LPAR manager Menu screen explicitly to save the newly set value. For the LPAR manager system time,

Change the system equipment time or synchronize the LPAR manager system time by NTP server for set of LPAR manager system time.

This Date and Time screen refreshes every second, so the cursor display may not be stable. Moreover, the time may be displayed during updating.

The following two figures show the Date and Time screen. Display of the Date and Time screen differs, depending on whether the time setting from the NTP server is performed.

```

+-----+
|+- Logical Partition(LPAR) Date and Time ----- (1) LPAR RTC -+|
|| # Name      Sta Time Mode   Date and Time      Time Zone Current RTC ||
|| 1 LPAR1     Dea -----   yyyy/mm/dd hh:mm:ss   ----- 0    ||
|| 2 LPAR2     Dea -----   yyyy/mm/dd hh:mm:ss   ----- 0    ||
|| 3 (3)       (4) (5)        (6)                   (7)   (8)    ||
|| 4           ||           ||           ||           ||           ||
|| 5           ||           ||           ||           ||           ||
|| 6           ||           ||           ||           ||           ||
|| 7           ||           ||           ||           ||           ||
|| 8           ||           ||           ||           ||           ||
|| 9           ||           ||           ||           ||           ||
|| 10          ||           ||           ||           ||           ||
|+- (2) -----+
|                                     [PageUp]:Page Up / [PageDown]:Page Down |
|+- System Date and Time -----+
| (9)Date and Time   yyyy/mm/dd hh:mm:ss   Time Zone   + 9:00   Adjust LPAR Time ||
| (12)Setting----- (10)----- (11)-----+
| (13)Import Config None                                     ||
| (14)TimeSync      Disable                                   ||
|+-----+
|
+-----+
| (16)F6:Change System Date and Time  F7:Change System Time Zone      Esc:Menu |
+-----+

```

Figure 7-33 Date and Time screen when NOT using NTP server

+-- Logical Partition(LPAR) Date and Time -----					(1) LPAR RTC -----			+--	
		#	Name	Sta	Time Mode	Date and Time	Time Zone	Current	RTC
		1	LPAR1	Dea	-----	yyyy/mm/dd hh:mm:ss	-----	0	
		2	LPAR2	Dea	-----	yyyy/mm/dd hh:mm:ss	-----	0	
		3	(3)	(4)	(5)	(6)	(7)	(8)	
		4							
		5							
		6							
		7							
		8							
		9							
		10							
+-- (2) -----					[PageUp]:Page Up / [PageDown]:Page Down				
+-- System Date and Time -----					-----				
(9)Date and Time		yyyy/mm/dd hh:mm:ss		Time Zone		+ 9:00		Adjust LPAR Time	
(12)NTP(Disable)		-----		(10)-----		(11)-----			
(15)NTP Server 1		None							
NTP Server 2		None							
+-----+-----+-----+-----+-----+-----+-----+-----+									
+-----+-----+-----+-----+-----+-----+-----+-----+									
(16)F6:Change System Date and Time					F7:Change System Time Zone			Esc:Menu	

Figure 7-34 Date and Time screen when using NTP server

The following table describes each item on this screen.

Table 7-30 Items on the Date and Time screen and their descriptions

No.	Item	Description	Default Value	Supported LPAR manager Version
(1)	Select Display	Select displaying time. LPAR RTC: Displays the current RTC time of the LPAR. LPAR SEL Time: Displays the logical SEL time of the LPAR. Last Activated: Displays the RTC time when the LPAR is activated last. Last Deactivated: Displays the RTC time when the LPAR is deactivated last. RTC Last Modified: Displays the RTC time of the LPAR updated last by the guest.	LPAR RTC	01-0X~
(2)	#	Displays the LPAR numbers.	-	01-0X~
(3)	Name	Displays the LPAR name.	NO_NAME	01-0X~
(4)	Sta	Displays the LPAR status. Act (Activate): The LPAR is powered on. Dea (Deactivate): The LPAR is powered off. Fai (Failure): The LPAR cannot be used due to an unrecoverable failure. Reboot LPAR manager when this happens. If rebooting LPAR manager cannot solve the problem,	Dea	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
		contact your reseller or consult maintenance personnel.		
(5)	Time Mode	Sets the SEL date and time mode. GMT: GMT (Greenwich Mean Time) mode Local-Time: Local time mode The SEL time mode can be set when LPAR SEL Time has been displayed in the display time selection.	Local-Time	01-0X~
(6)	Date and Time	Displays the time selected in the display time selection. The format is "yyyy/mm/dd hh:mm:ss." yyyy: Calendar year mm: Month dd: Day hh: Hour (24-hour representation) mm: Minute ss: Second The minimum value is 2000/01/01 00:00:00 and the maximum value is 2099/12/31 23:59:59. The SEL time can be set when LPAR SEL Time has been displayed in the display time selection. When the SEL time mode is local mode, the time that has added the SEL time zone is displayed. When the SEL time mode is GMT, the SEL time zone is not added. The time stamp of the logical SEL to be reported to the LPAR becomes this SEL time.	-	01-0X~
(7)	Time Zone	Displays or sets which time zones the SEL date and time belongs to. When the SEL date and time mode is Local-Time, the changes to this will automatically adjust the SEL date and time. You can specify it on 1-hour basis, and the minimum value is -12 hours and the maximum value is +12 or +14 hours. You cannot set when the SEL date and time mode is GMT. The SEL time zone is set only when LPAR SEL Time is displayed in the display time selection.	LPAR manager System Time Zone	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
(8)	Current RTC	Displays in decimal the difference between the LPAR RTC time and the LP system time.	0	01-0X~
	Init RTC	Displays, in decimal, the difference value between the LPAR RTC time saved in the configuration information and the LPAR manager system time. This value is determined immediately after the LPAR manager system startup and is not changed during LPAR manager system operation. The initial RTC value is displayed when RTC Last Modified has been displayed in the display time selection.		
(9)	Date and Time	Displays the LPAR manager System date and time. The system equipment time is applied as the default at LPAR manager boot.	-	01-0X~
(10)	Time Zone	Displays and sets which time zone the LPAR manager System date and time belongs to. If you change the value, LPAR manager time will not be changed because this item only shows the difference between LPAR manager system time and GMT. You can specify it on 1-hour basis, and the minimum value is -12 hours and the maximum value is +12 or +14 hours. LPAR manager system time zone will be set in the SEL time zone when an LPAR is created.	+ 0:00	01-0X~
(11)	Adjust LPAR Time	Adjusts the RTC and SEL time of LPARs to the LPAR manager system time or UTC time. In this case, the following times of the LPAR to be changed are also cleared: Last Activate RTC time, last Deactivate RTC time, and last RTC update RTC time. [LPAR manager firmware version 01-6X or later] LP System Time: Synchronizes RTC time and SEL time of an LPAR with LPAR manager system time. Specified Zone: In a specified time zone, synchronizes RTC time and SEL time of an LPAR with LPAR manager system time. UTC: Synchronizes RTC time and SEL time of an LPAR with UTC time.	-	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
		[All LPAR manager firmware versions] All LPAR: Adjusts the times of all LPARs. LPAR name: Adjusts the times of the specified LPAR.		
(12)	Select Setting Display	Select the NTP configuration item. Setting: Displays Import Config and TimeSync NTP: Displays NTP Server configuration	Setting	01-0X~
(13)	Import Config	Select Import configuration for NTP. None: None import for NTP configuration SVP: Import SVP's value and TimeZone for NTP configuration BMC: Import BMC's value and TimeZone for NTP configuration	None	01-0X~
(14)	TimeSync	Select NTP Server configuration for time synchronization. Disable: Does not synchronize time to NTP server NTP: Synchronize time to NTP Server 1,2 SVP: Synchronize time to SVP - Interval of time synchronization is 15 minutes (fixed value).	Disable	01-0X~
(15)	NTP Server 1,2	Configure IP addresses of NTP Servers. - This item is valid only when "(14) TimeSync" is "NTP". - NTP Servers have to be based on NTP Version 3 or 4.	None	01-0X~
(16)	Function Key	Displays function keys available on this screen. F6: Changes the LPAR manager system time. F7: Changes the LPAR manager system time zone.	-	01-0X~

The following table describes LPAR manager screen operations to each LPAR status.

Table 7-31 LPAR status for the items on the Date and Time screen

Item		LPAR Status			Remark	Supported LPAR manager Version
		Activate	Deactivate	Failure		
LPAR Date and Time	Select Display	Y	Y	Y	-	01-0X~
	Name	N	N	N	Display Only	01-0X~
	Sta	N	N	N	Display Only	01-0X~
	Time Mode	N	C	N	Changeable only when LPAR SEL Time has been displayed.	01-0X~
	Date and Time	N	C	N	Changeable only when LPAR SEL Time has been displayed.	01-0X~
	Time Zone	N	C	N	Changeable when LPAR SEL Time has been displayed. Changeable only when the time mode is only Local-Time.	01-0X~
	Current RTC Init RTC	N	N	N	Display Only	01-0X~
System Date and Time	Date and Time	C	C	C	Changeable only when TimeSync is Disabled.	01-0X~
	Time Zone	C	C	C	Changeable only when TimeSync is Disabled.	01-0X~
	Adjust LPAR Time	N	Y	N	-	01-0X~
	Select Setting Display	Y	Y	Y	-	01-0X~
	Import Config	Y	Y	Y	-	01-0X~
	TimeSync	Y	Y	Y	-	01-0X~

Item		LPAR Status			Remark	Supported LPAR manager Version
		Activate	Deactivate	Failure		
	NTP Server 1~2	Y	Y	Y	-	01-0X~
Legend: Y: Can be changed N: Cannot be changed C: Can be changed with conditions.						

How to switch the time display

Place the cursor on Select Display at the upper right side and press **Enter** to display a sub-screen for selecting the displayed time. Place the cursor on the time to display and press **Enter**.

How to change the SEL time mode of the LPAR

The SEL time mode can be changed only when the relevant LPAR is deactivated.

Specifying "GMT" does not add the SEL time zone to the SEL time. Specifying "Local-Time" adds the SEL time zone to the SEL time.

Place the cursor on Select Display at the upper right side and press **Enter** to display a sub-screen for LPAR SEL Time, and press **Enter**. The SEL time of the LPAR appears.

Place the cursor on the Time Mode column of the LPAR line to change the SEL time mode and press **Enter**. The sub-screen for selecting the SEL time mode appears. Select SEL time mode and press **Enter**.

How to change the SEL time of the LPAR

The SEL time can be set only when the relevant LPAR is deactivated. Place the cursor on Select Display at the upper right side and press **Enter** to display a sub-screen for selecting the time to display.

Place the cursor on LPAR SEL Time and press **Enter**. The SEL time of the LPAR appears. Place the cursor on the Date and Time column of the LPAR line to change the SEL time and press **Enter**. The sub-screen for selecting the SEL time appears. Select SEL time, and press **Enter**.

How to change the SEL time zone of the LPAR

The SEL time zone can be set only when the relevant LPAR is deactivated. Place the cursor on Select Display at the upper right side and press **Enter** to display a sub-screen for selecting the time to display.

Place the cursor on LPAR SEL Time and press **Enter**. The SEL time of the LPAR appears. Place the cursor on the Time Zone column of the LPAR line to change the SEL time zone and press **Enter**. The sub-screen for selecting the SEL time zone appears. Select SEL time zone, and press **Enter**.

Adjust LPAR Time

"Adjust LPAR Time" adjusts the time of LPAR to the LPAR manager system time. The time of LPAR can be adjusted only for a deactivated LPAR.

[LPAR manager firmware version 01-5X or lower]

- Place the cursor on Adjust LPAR Time and press **Enter** key on the Date and Time screen.

```

|+- System Date and Time -----+
|| Date and Time   yyyy/mm/dd hh:mm:ss  Time Zone  + 9:00  Adjust LPAR Time ||
|+-Setting-----+
|| Import Config None                                     ||
|| TimeSync      SVP                                     ||
|+-----+

```

- Select the target LPAR and press **Enter** key.

```

|| 6 |-----+-----+-----+-----+-----+-----+-----+
|| 7 |         | Time Adjust LPAR |         |         |         |
|| 8 |         |         |         |         |         |         |
|| 9 |         | 0 All LPAR  |         |         |         |         |
||10 |         | 1 LPAR1    |         |         |         |         |
|+---+-----+-----+-----+-----+-----+-----+-----+
||         | 2 LPAR2    |         |         |         |         |         |
||         | 3 LPAR3    |         |         |         |         |         |
||         | 4 LPAR4    |         |         |         |         |         |
|+- System Date and Time -----+
|| Date and Time   yyyy/mm/dd+-----+ + 9:00  Adjust LPAR Time ||

```

- Save the configuration using **F9**: Save Configuration on the LPAR manager Menu screen.

```

||-----+-----+-----+-----+-----+-----+-----+
| LP configuration is saved successfully |
|-----+-----+-----+-----+-----+-----+-----+

```

[LPAR manager firmware version 01-6X or later]

Example for using Adjust LPAR Time (LP System Time, Specified Zone, and UTC) as follows:

Table 7-32 Adjust LPAR Time

Guest OS Timer Mode	Guest OS Time Zone	Adjust LPAR Time		
		LP System Time	Specified Zone	UTC
LocalTime	Same as LPAR manager Time Zone.	Y	-	-
	Different from LPAR manager Time Zone.	-	Y	-
	Unknown which is the same as Time Zone.	-	-	-
UTC	Same as LPAR manager Time Zone.	-	-	Y

Guest OS Timer Mode	Guest OS Time Zone	Adjust LPAR Time		
		LP System Time	Specified Zone	UTC
	Different from LPAR manager Time Zone.	-	-	Y
	Unknown which is the same as Time Zone.	-	-	Y
Unknown	Same as LPAR manager Time Zone.	-	-	-
	Different from LPAR manager Time Zone.	-	-	-
	Unknown which is the same as Time Zone.	-	-	-
Legend: Y: Adjust the time using Adjust LPAR Time. -: Adjust the time as a guest EFI or guest OS without using Adjust LPAR Time.				

- Place the cursor on Adjust LPAR Time and press **Enter** key on the Date and Time screen.

```

|+- System Date and Time -----+
|| Date and Time   yyyy/mm/dd hh:mm:ss Time Zone  + 9:00  Adjust LPAR Time ||
|+-Setting-----+
|| Import Config None                                     ||
|| TimeSync      SVP                                     ||
|-----+

```

- Select the time source and press **Enter** key, and then select Specified Zone.

```

|| 6      |-----+
|| 7      | Select Source time to adjust LPAR time. |
|| 8      |-----+
|| 9      |          LP System Time                 ||
|| 10     |          Specified Zone                 ||
|-----+          UTC                    ||
|          |-----+Down]:Page Down      ||
|+- System Date an| Adjust LPAR time with Specified Zone. |-----+
|| Date and Time  +-----+djust LPAR Time ||

```

- In the sub-screen, set the time zone and press **Enter** key.

```

|| 7      |-----+
|| 8      |          +10                            ||
|| 9      |-----+
|| 10     | -1   + 9:00  +1                         ||
|-----+
|          |          -10                         ||
|+- System Date and Time -----+ge Up / [PageDown]:Page Down

```

- Select the target LPAR and press **Enter** key.

```

|| 5                                     +-----+
|| 6                                     | Time Adjust LPAR |
|| 7                                     | (with Specified Zone) |
|| 8                                     +-----+
|| 9                                     0 All LPAR
|| 10                                    1 LPAR1
+-----+                               2 LPAR2
|+- System Date and Time -|            3 LPAR3
|| Date and Time      yyyy/mm+-----+ 9:00 Adjust LPAR Time ||

```

- Save the configuration using **F9**: Save Configuration on the LPAR manager Menu screen.

```

||                                     +-----+
|+-----+ LP configuration is saved successfully |-----+
|                                     +-----+

```

How to adjust the RTC time of LPARs to the LPAR manager system time

The RTC time of LPARs can be set only when the relevant LPAR is deactivated.

Case1: When synchronizes LPAR manager system time by an NTP server (recommended)

See [How to use NTP on LPAR manager on page 7-95](#) for setting NTP.

Perform the procedure as below, when NTP setting has already been done.

- Place the cursor on Adjust LPAR Time in the Date and Time screen, and press **Enter** to display a sub-screen. Select the target LPAR and press **Enter**.
- This operation makes the RTC time of LPAR (logical RTC time) adjusted to LPAR manager system time.

```

|+- System Date and Time -----+
|| Date and Time      yyyy/mm/dd hh:mm:ss Time Zone + 9:00 Adjust LPAR Time ||
|+-Setting-----+
|| Import Config None
|| TimeSync      SVP
+-----+

```

Figure 7-35 Date and Time Screen

- Save the configuration using **F9**: Save Configuration on the LPAR manager Menu screen.

```

||                                     +-----+
|+-----+ LP configuration is saved successfully |-----+
|                                     +-----+

```

Figure 7-36 LPAR manager Menu Screen

Case2: When do not synchronize the LPAR manager system time by a NTP server

- Shutdown All the guest Oss
- Shutdown the LPAR manager

- Synchronizes the system time
- Boot the LPAR manager and connect to the LPAR manager screen
- Place the cursor on LPAR RTC on the Date and Time screen and press **Enter** to display a sub-screen. Select LPAR SEL Time and press **Enter**.

+ Logical Partition(LPAR) Date and Time ----- LPAR RTC +					
#	Name	Sta	Time Mode	Date and Time	Time Zone
1	LPAR1	Dea	-----	yyyy/mm/dd hh:mm:ss	-----
2	LPAR2	Dea	-----	yyyy/mm/dd hh:mm:ss	-----
3					
4					
5					
6					
7					
8					
9					
10					
+-----+-----+-----+-----+-----+-----+					
Select Display Time					
+-----+-----+-----+-----+-----+-----+					
LPAR RTC					
LPAR SEL Time					
Last Activated					
Last Deactivated					
RTC Last Modified					
+-----+-----+-----+-----+-----+-----+					
[PageDown]:Page Down					
+-----+-----+-----+-----+-----+-----+					
+ System Date and Time					
Date and Time	yyyl	Display LPAR SEL Time	0	Adjust LPAR Time	
+-----+-----+-----+-----+-----+-----+					
+ Setting					
Import Config None					
TimeSync Disable					
+-----+-----+-----+-----+-----+-----+					
F6:Change System Date and Time F7:Change System Time Zone Esc:Menu					
+-----+-----+-----+-----+-----+-----+					

Figure 7-37 Date and Time sub-screen

- Place the cursor on Time Zone on the Date and Time screen and press **Enter** to display a sub-screen. Set a "Time Zone" and press **Enter**.

+ Logical Partition(LPAR) Date and Time ----- LPAR SEL Time +					
#	Name	Sta	Time Mode	Date and Time	Time Zone
1	LPAR1	Dea	Local-Time	yyyy/mm/dd hh:mm:ss	+ 9:00
2	LPAR2	Dea	Local-Time	yyyy/mm/dd hh:mm:ss	+ 9:00

Figure 7-38 Data and Time Screen

- Place the cursor on LPAR SEL Time on the Date and Time screen and press **Enter** to display a sub-screen. Select a "LPAR RTC" and press **Enter**.

```

+-----+-----+-----+-----+-----+
|+- Logical Partition(LPAR) Date and Time -----+ LPAR SEL Time -+|
|| # Name      Sta Time Mode   Date and Time      Time Zone      ||
|| 1 LPAR1     Dea Local-Time   yyyy/mm/dd hh:mm:ss  + 9:00      ||
|| 2 LPAR2     Dea Local-Time   yyyy/mm/dd hh:mm:ss  + 9:00      ||
|| 3                                                    ||
|| 4                                                    ||
|| 5                                                    ||
|| 6                                                    ||
|| 7                                                    ||
|| 8                                                    ||
|| 9                                                    ||
|| 10           |-----+-----+-----+-----+-----+-----+|
|-----+-----+-----+-----+-----+-----+-----+
| LPAR RTC                                             |
| LPAR SEL Time                                       |
| Last Activated                                     |
| Last Deactivated                                   |
| RTC Last Modified                                  | [PageDown]:Page Down
+-----+-----+-----+-----+-----+-----+-----+
|+- System Date and Time -----+-----+-----+-----+-----+|
|| Date and Time   yyyy| Display LPAR RTC          |0 Adjust LPAR Time |
|-----+-----+-----+-----+-----+-----+-----+
|+-Setting-----+-----+-----+-----+-----+-----+|
|| Import Config None                                                    ||
|| TimeSync        Disable                                              ||
|-----+-----+-----+-----+-----+-----+-----+
|
| F6:Change System Date and Time F7:Change System Time Zone Esc:Menu
+-----+-----+-----+-----+-----+-----+-----+

```

Figure 7-39 Data and Time sub-screen

- Place the cursor on F7: Change System Time Zone on the Date and Time screen and press **Enter** to display a sub-screen. Set a "Time Zone" and press **Enter**.

```

+-----+-----+-----+-----+-----+-----+-----+
|+- System Date and Time -----+-----+-----+-----+-----+|
|| Date and Time   yyyy/mm/dd hh:mm:ss Time Zone  + 9:00 Adjust LPAR Time |
|-----+-----+-----+-----+-----+-----+-----+
|+-Setting-----+-----+-----+-----+-----+-----+|
|| Import Config None                                                    ||
|| TimeSync        Disable                                              ||
|-----+-----+-----+-----+-----+-----+-----+
|

```

Figure 7-40 Data and Time sub-screen

- Adjust the time of LPAR using Adjust LPAR Time on the Date and Time screen.

```

+-----+-----+-----+-----+-----+-----+-----+
|+- System Date and Time -----+-----+-----+-----+-----+|
|| Date and Time   yyyy/mm/dd hh:mm:ss Time Zone  + 9:00 Adjust LPAR Time |
|-----+-----+-----+-----+-----+-----+-----+
|+-Setting-----+-----+-----+-----+-----+-----+|
|| Import Config None                                                    ||
|| TimeSync        Disable                                              ||
|-----+-----+-----+-----+-----+-----+-----+
|

```

Figure 7-41 Data and Time sub-screen

- Save the configuration using **F9**: Save Configuration on the LPAR manager Menu screen.

```

| |
|+-----+-----+-----+-----+-----+-----+-----+|
| LP configuration is saved successfully |
|-----+-----+-----+-----+-----+-----+-----+|
|

```

Figure 7-42 the LPAR manager Menu Screen

How to change the NTP configuration display

Place the cursor on Setting or NTP at the lower left side and press **Enter** to display a sub-screen for selecting the NTP configuration. Place the cursor on the item to display and press **Enter**.

How to import the NTP configuration



Note:

- Check that there are no problems with Automatic Time Synchronization to be imported before importing from the management module or BMC.
- When import source of NTP configuration is set to the management module, only the setting value of NTP server 1 and 2 are imported to the LPAR manager. (The setting value of NTP server 2 and 3 are ignored.)
- Only Hour part of TimeZone which was imported from the NTP server is valid on the LPAR manager. (Minutes part is ignored on the LPAR manager)
- Not supporting summer time configuration.

Date and time screen is displayed below after the LPAR manager imported NTP configuration from the management module.

Table 7-33 Date and Time Screen Information

Item			Date and Time screen			
			Import Config	Time Sync	NTP Server 1	NTP Server 2
Management module time setting	Automatic Time Synchronization	Enable	SVP	NTP	NTP Server 0	NTP Server 1
		Disable	SVP	Disable	NTP Server 0	NTP Server 1
BMC time setting	Time Synchronization Method	Synchronize time with the Management-Modules by using NTP.	BMC	SVP	None	None
		Synchronize time with the Management-Modules by command or manual.	BMC	Disable	None	None

- Place the cursor on Import Config at the lower left side and press **Enter** to display a sub-screen. Place the cursor on the item to import and press **Enter**.


```

|| 7
|| 8
|| 9
|| 10
+-----+
| Select Time Setting Import |
+-----+
| None
| SVP
| BMC
| / [PageDown]:Page Down
+-----+
+-- System Date and Time +-----+
| Date and Time   yyyy/mm/dd hh:mm:ss   Time Zone   + 9:00   Adjust LPAR Time |
+-----+
+-- Setting +-----+
| Import Config  None
| TimeSync      Disable
+-----+

```

Figure 7-43 Setting of the Import Config

- Save the configuration using **F9**: Save Configuration on the LPAR manager Menu screen.

```

||
+-----+
| LP configuration is saved successfully |
+-----+

```

Figure 7-44 the LPAR manager Menu Screen

How to use NTP on LPAR manager

Case1: Time synchronization with a management module. [recommended]

- Shut down all OSs.
- On the Date and Time screen, place the cursor on LPAR RTC and press **Enter** to open the sub-screen. Select LPAR SEL Time and press **Enter**.

```

+-----+
|+- Logical Partition(LPAR) Date and Time ----- LPAR RTC -+|
|| # Name      Sta Time Mode   Date and Time   Time Zone   ||
|| 1 LPAR1     Dea -----   yyyy/mm/dd hh:mm:ss ----- ||
|| 2 LPAR2     Dea -----   yyyy/mm/dd hh:mm:ss ----- ||
|| 3           ||
|| 4           ||
|| 5           ||
|| 6           ||
|| 7           ||
|| 8           ||
|| 9           ||
|| 10          ||
+-----+
| Select Display Time |
+-----+
| LPAR RTC
| LPAR SEL Time
| Last Activated
| Last Deactivated
| RTC Last Modified
| [PageDown]:Page Down
+-----+
+-- System Date and Tim+-----+
| Date and Time   yyy| Display LPAR SEL Time   |0   Adjust LPAR Time |
+-----+
+-- Setting +-----+
| Import Config  None
| TimeSync      Disable
+-----+
+-----+
| F6:Change System Date and Time   F7:Change System Time Zone   Esc:Menu |
+-----+

```

Figure 7-45 Setting of the NTP Config

- Place the cursor on Time Zone on the Date and Time screen and press **Enter** to display a sub-screen. Set a "Time Zone" and press **Enter**.


```

+-- System Date and Time -----+
|| Date and Time   yyyy/mm/dd hh:mm:ss   Time Zone  + 9:00   Adjust LPAR Time ||
+--Setting-----+
|| Import Config None ||
|| TimeSync      Disable ||
+-----+

```

Figure 7-49 Change of the Time zone

- Place the cursor on Setting on the Date and Time screen and press **Enter** to display a sub-screen. Select "Setting" and press **Enter**.

```

|| 7 ||
|| 8 ||
|| 9 ||
|| 10 ||
+-----+
|| Select Setting Display ||
|| Setting ||
|| NTP ||
+-----+
|| p / [PageDown]:Page Down ||
+-- System Date and Time -----+
|| Date and Time   yyyy/mm/dd hh:mm:ss   Time Zone  + 9:00   Adjust LPAR Time ||
+--Setting-----+
|| Import Config None ||
|| TimeSync      Disable ||
+-----+

```

Figure 7-50 Setting the NTP Config

- Place the cursor on TimeSynch on the Date and Time screen and press **Enter** to display a sub-screen. Select "SVP" and press **Enter**.

```

|| 7 ||
|| 8 ||
|| 9 ||
|| 10 ||
+-----+
|| Select NTP Server ||
|| Disable ||
|| NTP ||
|| SVP ||
+-----+
|| e Up / [PageDown]:Page Down ||
+-- System Date and Time -----+
|| Date and Time   yyyy/mm/dd hh:mm:ss   Time Zone  + 9:00   Adjust LPAR Time ||
+--Setting-----+
|| Import Config None ||
|| TimeSync      Disable ||
+-----+

```

Figure 7-51 Setting of the SVP

- Check that NTP is set to SYNC on the System Service State screen.

```

+-- System Service-----+-- Virtual LAN Segment State-----+
|| SVP Access   : RUN || PORT#/NIC# : V 1 2 3 4 5 6 7 8 ||
|| BSM Access   : RUN || a : D A D ||
|| HA Monitor   : RUN || b : D A D ||
|| NTP          : SYNC || c : D ||
||              || d : D ||
||              || e : ||
||              || f : ||
||              || g : ||
|| Force Recovery || h : ||
+-----+

```

Figure 7-52 Checking the System Service State

- Adjust the time of LPAR using Adjust LPAR Time on the Date and Time screen.

Logical Partition(LPAR) Date and Time					LPAR SEL Time
#	Name	Sta Time Mode	Date and Time	Time Zone	
1	LPAR1	Dea Local-Time	yyyy/mm/dd hh:mm:ss	+ 9:00	
2	LPAR2	Dea Local-Time	yyyy/mm/dd hh:mm:ss	+ 9:00	

Figure 7-56 Setting of the time-zone

- Place the cursor on LPAR SEL Time on the Date and Time screen and press **Enter** to display a sub-screen. Select LPAR RTC and press **Enter**.

Logical Partition(LPAR) Date and Time					LPAR SEL Time
#	Name	Sta Time Mode	Date and Time	Time Zone	
1	LPAR1	Dea Local-Time	yyyy/mm/dd hh:mm:ss	+ 9:00	
2	LPAR2	Dea Local-Time	yyyy/mm/dd hh:mm:ss	+ 9:00	
3					
4					
5					
6					
7					
8					
9					
10					
Select Display Time					
LPAR RTC					
LPAR SEL Time					
Last Activated					
Last Deactivated					
RTC Last Modified					
					[PageDown]:Page Down
System Date and Time					
Date and Time	yyy	Display LPAR RTC	0	Adjust LPAR Time	
Setting					
Import Config None					
TimeSync Disable					
F6:Change System Date and Time F7:Change System Time Zone					Esc:Menu

Figure 7-57 Selection of the LPAR RTC

- Place the cursor on TimeSync on the Date and Time screen and press **Enter** to display a sub-screen. Select Disable and press **Enter**. NTP Connection should be Disabled, otherwise the time zone cannot be changed.

7					
8					
9					
10					
Select NTP Server					
Disable					
NTP					
SVP					
					Up / [PageDown]:Page Down
System Date and Time					
Date and Time	yyyy/mm/dd hh:mm:ss	Time Zone	+ 9:00	Adjust LPAR Time	
Setting					
Import Config None					
TimeSync Disable					

Figure 7-58 Changing TimeSync to Disable

- Press **F7**: Change System Time Zone on the Date and Time screen to display a sub-screen. Set a time zone and press **Enter**.

```

|+- System Date and Time -----+|
|| Date and Time   yyyy/mm/dd hh:mm:ss Time Zone  + 9:00  Adjust LPAR Time ||
|+Setting-----+|
|| Import Config None                                     ||
|| TimeSync       Disable                                ||
|+-----+|

```

Figure 7-59 Setting of the time zone

- Place the cursor on Setting on the Date and Time screen and press **Enter** to display a sub-screen. Select "NTP" and press **Enter**.

```

|| 7                                     +-----+|
|| 8                                     | Select Setting Display |
|| 9                                     +-----+|
|| 10                                    | Setting              |
|+-----+|                            | NTP                    |
|                                     +-----+|
|                                     |p / [PageDown]:Page Down|
|+-----+|
|+- System Date and Time -----+|
|| Date and Time   yyyy/mm/dd hh:mm:ss Time Zone  + 9:00  Adjust LPAR Time ||
|+Setting-----+|
|| Import Config None                                     ||
|| TimeSync       Disable                                ||
|+-----+|

```

Figure 7-60 Selecting of the NTP

- Set an IP address of NTP servers on the Date and Time screen

```

|+- System Date and Time -----+|
|| Date and Time   yyyy/mm/dd hh:mm:ss Time Zone  + 9:00  Adjust LPAR Time ||
|+NTP(Disable)-----+|
|| NTP Server 1   XXX. XXX. XXX. XXX                                     ||
|| NTP Server 2   XXX. XXX. XXX. XXX                                     ||
|+-----+|

```

Figure 7-61 Setting the IP Address of NTP Server

- Place the cursor on NTP on the Date and Time screen and press **Enter** to display a sub-screen. Select "Setting" and press **Enter**.

```

|| 7                                     +-----+|
|| 8                                     | Select Setting Display |
|| 9                                     +-----+|
|| 10                                    | Setting              |
|+-----+|                            | NTP                    |
|                                     +-----+|
|                                     |p / [PageDown]:Page Down|
|+-----+|
|+- System Date and Time -----+|
|| Date and Time   yyyy/mm/dd hh:mm:ss Time Zone  + 9:00  Adjust LPAR Time ||
|+NTP(Disable)-----+|
|| NTP Server 1   XXX. XXX. XXX. XXX                                     ||
|| NTP Server 2   XXX. XXX. XXX. XXX                                     ||
|+-----+|

```

Figure 7-62 Selecting of the setting

- Place the cursor on TimeSync on the Date and Time screen and press **Enter** to display a sub-screen. Select "NTP" and press **Enter**.

```

|| 7
|| 8
|| 9
|| 10
+-----+
| Select NTP Server |
|
| Disable
| NTP
| SVP
+-----+
| e Up / [PageDown]:Page Down
+-----+
+- System Date and Time -----+
| Date and Time   yyyy/mm/dd hh:mm:ss Time Zone + 9:00 Adjust LPAR Time |
+-Setting-----+
| Import Config None
| TimeSync       Disable
+-----+

```

Figure 7-63 Selecting of the" NTP"

- Check that NTP is set to SYNC on the System Service State screen.

```

+- System Service -----+ Virtual LAN Segment State +-----+
| SVP Access : RUN      | PORT#/NIC# : V 1 2 3 4 5 6 7 8 |
| BSM Access : RUN      | a : D A D |
| HA Monitor : RUN      | b : D A D |
| NTP : SYNC            | c : D |
|                   | d : D |
|                   | e : |
|                   | f : |
|                   | g : |
| Force Recovery | h : |
+-----+

```

Figure 7-64 Checking the System Service Screen

- Adjust the time of LPAR using Adjust LPAR Time on the Date and Time screen.

```

+- System Date and Time -----+
| Date and Time   yyyy/mm/dd hh:mm:ss Time Zone + 9:00 Adjust LPAR Time |
+-Setting-----+
| Import Config None
| TimeSync       SVP
+-----+

```

Figure 7-65 Selecting of the "ALL LPAR"

- Save the configuration using **F9**: Save Configuration on the LPAR manager Menu screen.

```

||
+-----+
| LP configuration is saved successfully |
+-----+

```

Figure 7-66 Saving of the LPAR manager Config

How not to use NTP

- Place the cursor on TimeSyn on the Date and Time screen and press **Enter** to display a sub-screen. Select Disable and press **Enter**.

How to change the LPAR manager system time zone

Enter new system time zone on the sub-screen which is displayed on the Date and Time screen by pressing **F7** key.



Note:

- LPAR SEL time zone has to be equal to LPAR manager system time zone. If they are not equal, a wrong time is displayed on LPAR SEL time. The correct time cannot be recognized if a failure has occurred.
- Shutdown all the guest OS.
- Place the cursor on LPAR RTC on the Date and Time screen and press **Enter** to display a sub-screen. Select LPAR SEL Time and press **Enter**.

Logical Partition(LPAR) Date and Time					LPAR RTC
#	Name	Sta	Time Mode	Date and Time	Time Zone
1	LPAR1	Dea		yyyy/mm/dd hh:mm:ss	
2	LPAR2	Dea		yyyy/mm/dd hh:mm:ss	
3					
4					
5					
6					
7					
8					
9					
10					
Select Display Time					
LPAR RTC					
LPAR SEL Time					
Last Activated					
Last Deactivated					
RTC Last Modified					
[PageDown]:Page Down					
System Date and Time					
Date and Time	yyy			Display LPAR SEL Time	0 Adjust LPAR Time
Setting					
Import Config None					
TimeSync Disable					
F6:Change System Date and Time F7:Change System Time Zone Esc:Menu					

Figure 7-69 Changing the LPAR manager System Time-zone

- Place the cursor on Time Zone on the Date and Time screen and press **Enter** to display a sub-screen. Set a "Time Zone" and press **Enter**.

Logical Partition(LPAR) Date and Time					LPAR SEL Time
#	Name	Sta	Time Mode	Date and Time	Time Zone
1	LPAR1	Dea	Local-Time	yyyy/mm/dd hh:mm:ss	+ 9:00
2	LPAR2	Dea	Local-Time	yyyy/mm/dd hh:mm:ss	+ 9:00

Figure 7-70 Setting of the Time-zone

- Place the cursor on Setting on the Date and Time screen and press **Enter** to display a sub-screen. Select LPAR RTC and press **Enter**.

```

+-----+
|+- Logical Partition(LPAR) Date and Time -----+ LPAR SEL Time -+|
|| # Name      Sta Time Mode   Date and Time   Time Zone   ||
|| 1 LPAR1     Dea Local-Time   yyyy/mm/dd hh:mm:ss + 9:00  ||
|| 2 LPAR2     Dea Local-Time   yyyy/mm/dd hh:mm:ss + 9:00  ||
|| 3           ||
|| 4           ||
|| 5           ||
|| 6           ||
|| 7           ||
|| 8           ||
|| 9           ||
|| 10          ||
+-----+
|                               +-----+
|                               | Select Display Time |
|                               +-----+
|                               | LPAR RTC           |
|                               | LPAR SEL Time       |
|                               | Last Activated       |
|                               | Last Deactivated     |
|                               | RTC Last Modified    |
|                               +-----+
|+- System Date and Time -----+
|| Date and Time   yyyy| Display LPAR RTC           | 0 Adjust LPAR Time ||
+-----+
|+-Setting-----+
|| Import Config None
|| TimeSync       Disable
+-----+
|
+-----+
| F6:Change System Date and Time F7:Change System Time Zone Esc:Menu |
+-----+

```

Figure 7-71 Selecting of the" LPAR RTC"

- Press **F7**: Change System Time Zone on the Date and Time screen to display a sub-screen. Set a time zone and press **Enter**.

```

+-----+
|+- System Date and Time -----+
|| Date and Time   yyyy/mm/dd hh:mm:ss Time Zone + 9:00 Adjust LPAR Time ||
+-----+
|+-Setting-----+
|| Import Config None
|| TimeSync       Disable
+-----+

```

Figure 7-72 Setting of the Time-zone

- Adjust the time of LPAR using Adjust LPAR Time on the Date and Time screen.

```

+-----+
|+- System Date and Time -----+
|| Date and Time   yyyy/mm/dd hh:mm:ss Time Zone + 9:00 Adjust LPAR Time ||
+-----+
|+-Setting-----+
|| Import Config None
|| TimeSync       Disable
+-----+

```

Figure 7-73 Selecting of the "ALL LPAR"

- Save the configuration using **F9**: Save Configuration on the LPAR manager Menu screen.

```

| |
+-----+
| LP configuration is saved successfully |
+-----+

```

Figure 7-74 Saving of the LPAR manager Config

LP Options

The following functions are available in the LP Options screen. Example of LP Options screen is below.

```
+-----+
| +- Options -----+
| +- System Control -----+ LP Dump Operation -----+
| (1) Pre-State Auto Activation      No(11)Take LP Dump      Execute |
| (2) LP Auto Shutdown              No +-----+          |
| (3) Shutdown State                Ready +- Confirmation -----+
| (4) LP ErrorWatching               Yes(12)Activation        Yes |
| (5) PhyCPU C-State (>= C3)       Enable(13)Deactivation and Reactivation Yes |
| (6) USB Auto Allocation to LPAR   Enable +-----+          |
| (7) Save Changed Config Format     Disable +- Screen Switching Character -----+
| (8) LP TimerCounter Base           TSC(14)LPAR --> LP          [Ctl]+ | |
| (9) Save Time Config              Disable +-----+          |
| (10) Safe Mode                    ON +- NVRAM Operation -----(16)-----+
|                                     -(15)Clear NVRAM         LPAR1    |
|                                     (17)Copy NVRAM From      LPAR1 To   LPAR2 |
|                                     +------(18)------(19)+-----+
|
|
|
|
|
|
|
|
|
|
|
+-----+
|
+-----+
|
+-----+
|
```

Esc:Menu

Figure 7-75 LP Options Status Screen

The following table describes each item on this screen.

Table 7-34 Details of the LP Options Status Screen

No.	Item	Description	Default Value	Supported LPAR manager Version
(1)	Pre-State Auto Activation	Specifies whether or not to return the LPARs to their status before rebooting when LPAR manager is rebooted without shutting down the LPAR manager system. Yes: Restores the LPAR to the status it had before the LPAR manager system reboots. No: Does not restore the LPAR to the status it had before the LPAR manager system reboots.	No	01-0X~
(2)	LP Auto Shutdown	Specifies whether or not shut down the LPAR manager system if all LPARs have become deactivated. Yes: Shuts down the LPAR manager system. No: Does not shutdown the LPAR manager system.	No	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
		When turning off the power of the system with UPS, set LP Auto Shutdown to "Yes". When LPAR migration is performed, LP Auto Shutdown is disabled, the same as when the value is "No".		
(3)	Shutdown State	Displays the LP System Shutdown status. Ready: The LPAR manager system is running. InProgress: The LPAR manager system is shutting down. When the LPAR manager system is shut down using the power control schedule of ServerConductor / Blade Server Manager, the shutdown state becomes InProgress when the shutdown time arrives. In this case, it is possible to cancel the shutdown then.	-	01-0X~
(4)	LP ErrorWatching	Sets whether or not to detect the hang-up of LPAR manager itself. Yes: Detects an LPAR manager hang-up. When detecting an LPAR manager hung-up, collects an LPAR manager dump automatically and reboots an LPAR manager. No: Does not detect an LPAR manager hang-up.	Yes	01-0X~
(5)	PhyCPU C-State (>= C3)	Sets Power Saving Function. Enable: Enabling Power Saving Function. Disable: Disabling Power Saving Function. For CB 520H B2 model, Power Saving Function is not supported. Power saving effect is not obtained when Power Saving Function is enabled.	Enable	01-0X~
(6)	USB Auto Allocation to LPAR	Specifies whether USB Auto Attach is enabled or disabled. Enable: A USB device is automatically attached when the LPAR is activated / reactivated. Disable: A USB device is automatically attached only to specified LPARs.	Enable	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
(7)	Save Changed Config Format	Specifies whether the configuration is automatically saved after the configuration format is changed when the LPAR manager boots. - After a format for an LPAR manager configuration is changed automatically when the LPAR manager boots. - When an LPAR manager configuration is not saved and you shut down the LPAR manager. Enable: An LPAR manager configuration is saved automatically. Disable: An LPAR manager configuration is not saved automatically.	Disable	01-0X~
(8)	LP TimerCounter Base	Sets a value for timer counter calculation. TSC: Based on TSC (default). Cpu Frequency: Based on CPU frequency. LP TimerCounter Base is displayed when the timer precision of "TSC" is lower during operation, you can select "TSC" or "Cpu Frequency". Select the smaller one for time-lag. LP TimerCounter Base is not displayed when the timer precision of "TSC" is higher, "TSC" is operated.	TSC	01-3X~
(9)	Save Time Config	Sets whether or not to automatically save adjusted time configuration of LPAR manager system time and LPAR time in physical RTC and LPAR manager configuration information. Enable: Enables the Save Time Config. Disable: Disables the Save Time Config.	Disable	01-6X~
(10)	Safe Mode	Displays whether the safe mode is on. Cancels safe mode. ON: Safe mode OFF: Normal state This item is not displayed in the firmware combination. For the firmware combination details, see "Firmware combinations". Note that this item is displayed for 02-56 or higher of LPAR manager	OFF	02-2X~

No.	Item	Description	Default Value	Supported LPAR manager Version
		regardless of the combination of firmware versions.		
(11)	Take LP Dump	Collects the LPAR manager dump. The LPAR manager dump collected with this operation is used to analyze failures when they occur. In normal operation, there is no need to collect the LPAR manager dump. If a problem appears in the equipment, it may become necessary to collect the LPAR manager dump.	Execute	01-0X~
(12)	Activation	Specifies the display of a confirmation prompt sub-screen when activating an LPAR from the LPAR manager screen. Yes: Displays the confirmation prompt sub-screen. No: Does not display the confirmation prompt screen.	Yes	01-0X~
(13)	Deactivation and Reactivation	Specifies the display of a confirmation prompt sub-screen when deactivating or reactivating an LPAR from the LPAR manager screen. Yes: Displays the confirmation prompt sub-screen. No: Does not display the confirmation prompt screen.	Yes	01-0X~
(14)	Screen Switching Character	Sets the character used to switch from a guest screen to the LPAR manager screen. "l" (the lower case "L") is set as the default. You can use all lower case letters except for b, h, i, j, m, g, s and z.	-	01-0X~
(15)	Clear NVRAM	Initializes the NVRAM of the LPAR specified by (16). This operation cannot be performed if "Select" is displayed in (16). (The cursor cannot move over this column.) "Clear NVRAM" initializes the boot order settings, but does not initialize the EFI driver settings.	-	01-0X~
(16)	-	Displays the LPAR on which the NVRAM is to be initialized. You can specify only a deactivated LPAR. "Select" will be displayed if no LPARs have been defined, or if LPARs had been defined, but all LPARs have been activated.	-	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
		If the specified LPAR has been activated, this column will automatically change to an LPAR that has been deactivated.		
(17)	Copy NVRAM	Copies the contents of the NVRAM of the LPAR specified by (18) to the LPAR specified by (19) This operation cannot be performed if "Select" is displayed in (18) or (19). (The cursor cannot move over this column.) "Copy NVRAM" copies the boot order settings, but does not copy the EFI driver settings.	-	01-0X~
(18)	-	Displays the LPAR from which the NVRAM will be copied. "Select" will be displayed if no LPARs have been defined.	-	01-0X~
(19)	-	Displays the LPAR to which the NVRAM will be copied. You can specify only a deactivated LPAR. "Select" will be displayed if no LPARs have been defined, or if LPARs had been defined, but all LPARs have been activated. If the specified LPAR has been activated, this column will automatically change to an LPAR that has been deactivated.	-	01-0X~

- What is Pre-State Auto Activation?

Pre-State Auto Activation ascertains and saves the activated / deactivated status of LPARs so that, in the event of an LPAR manager reboot following a power supply failure or forced shutdown of the server blade, the LPARs can be automatically activated to the same status they were in before the LPAR manager reboot.

When the LPAR manager system is normally shut down, even if Pre-State Auto Activation is set to 'Yes', it will not automatically activate LPARs.

When Auto Activation is performed due to Pre-State Auto Activation, the Auto Activation Order setting is ignored. In this Auto Activation, the LPARs are automatically activated starting from the smallest LPAR number.

However, if a memory node number is specified for an LPAR in MN (memory node) on the Logical Partition Configuration screen, or if the guest NUMA is enabled for an LPAR, the Pre-State Auto Activation priorities change.

- a. The LPAR for which a memory node number is specified in MN (memory node) on the Logical Partition Configuration screen, and the LPAR for which the guest NUMA is enabled and the method for configuring logical processors for the guest NUMA is physical processor binding
- b. The LPAR for which the guest NUMA is enabled and the method for configuring logical processors for the guest NUMA is physical NUMA node binding
- c. Other LPARs

After the LPARs in **a** are activated in the ascending order of the LPAR numbers, the LPARs in **b** are activated in the ascending order of the LPAR numbers, and finally the LPARs in **c** are activated in the ascending order of the LPAR numbers.

If for any reason (such as a failure to obtain the allocated memory) the Auto Activation of any LPAR fails, the subsequent LPARs will not be Auto Activated.

For 15 seconds before the Auto Activation starts, the system will accept cancellation of the processing. To cancel the Auto Activation, press **Ctrl + c**. Once the Auto Activation has started, it cannot be canceled.

How to change Pre-State Auto Activation

Place the cursor on Pre-State Auto Activation under System Control and press **Enter** to display a sub-screen. Use the **↑** and **↓** keys to select Yes or No, and press **Enter**.

How to change LP Auto Shutdown

Place the cursor on LP Auto Shutdown under System Control and press **Enter** to display a sub-screen. Use the **↑** and **↓** keys to move the cursor to select Yes or No, and press **Enter**.



Note:

- If using Power Off Function of UPS, set LP Auto Shutdown to Yes
 - When LPAR migration is performed, LP Auto Shutdown is disabled, the same as when the value is No.
-

How to cancel shutdown processing due to the power control schedule

When the LPAR manager system is shut down using the power control schedule of ServerConductor / Blade Server Manager, the shutdown state changes from Ready to In Progress when the shutdown time arrives, and shutdown processing begins.

At this time, operations to activate LPARs are suppressed. To cancel this shutdown processing, follow the steps below.

Place the cursor on Shutdown State under System Control and press **Enter** to display a sub-screen. Use the **↑** and **↓** keys to select Yes, and press **Enter**.

If all the LPARs are not deactivated within 30 minutes from the start of shutdown processing, the shutdown processing is canceled and the shutdown status returns to Ready. This also removes the suppression of LPAR activation.

How to set LPAR manager hang-up detection

Position the cursor on LP ErrorWatching of System Control and press **Enter** to display a sub-screen. Move the cursor with the ↑ and ↓ keys to select Yes or No and press **Enter**.

How to change the Power Saving Function

All LPARs have to be deactivated when changing Power Saving Function.

Place the cursor on PhyCPU C-State (>= C3), and press **Enter** to display a sub-screen. Place the cursor on Enable or Disable, and press **Enter**.



Note: Difference between Guest OS system time (also LPAR SEL time) and LPAR manager system time increases if all the following conditions are applied.

- "Windows Server 2008" or later version is applied as Guest OS.
- Application (ex. Media Player) which uses multimedia timer function is being executed on the Guest OS.

How to change USB auto attachment function

Place the cursor on USB Auto Allocation to LPAR and press **Enter** to display a sub-screen. Select Enable/Disable and click **Enter**.

See [PCI Device Assignment on page 7-39](#) for USB auto attachment setting.

How to change the Automatic Configuration save function

When changes the configuration format in booting LPAR manager or the configuration has not been saved at the LPAR manager shutdown, the configuration is saved automatically.

The automatic configuration save function is not a periodical.

If you convert the configuration information format when LPAR manager is activated, LPAR manager operates as follows, depending on the setting of the configuration information auto save functionality.

No.	Configuration information auto save functionality		Supported version
	Disable	Enable	
(1)	Sends an alert notification about conversion of the configuration information format after LPAR manager has been initialized.		01-0X or later
(2)	Outputs the following message and suppresses the operation	Automatically saves the configuration information.	01-0X or later

No.	Configuration information auto save functionality		Supported version
	Disable	Enable	
	until the configuration information is saved: "Because the Configuration format was updated, saving the Configuration is necessary. Please press the F9 key."		
(3)	Sends an alert notification about saving of the configuration information by pressing F9 when F9 is pressed.		01-0X or later

If you move the cursor to Save Changed Config Format, and then press **Enter**, a sub-screen appears. Select Enable or Disable, and then press **Enter**.

How to change the "LP Timercounter Base" and raise the accuracy of LPAR manager system time (when not using NTP)

[LPAR manager firmware version 01-3X or later]



Tip:

- LP TimerCounter Base is displayed when the timer precision of TSC is lower during operation, you can select TSC or Cpu Frequency. Select the smaller one for time-lag. LP TimerCounter Base is not displayed when the timer precision of TSC is higher, TSC is operated.

It is necessary to deactivate all LPARs for changing "LP Timercounter Base".

- Place the cursor on LP Timercounter Base, and press **Enter**.

Options			
System Control		LP Dump Operation	
Pre-State Auto Activation	No	Take LP Dump	Execute
LP Auto Shutdown	No		
Shutdown State	Ready	Confirmation	
LP ErrorWatching	Yes	Activation	Yes
PhyCPU C-State (>= C3)	Enable	Deactivation and Reactivation	Yes
USB Auto Allocation to LPAR	Enable		
Save			
LP	Save LP configuration and reboot LP system. Do You Continue?		Y] + I
	Yes		
	No		
LPAR2			
Esc:Menu			

Figure 7-78 Confirmation screen to save configuration

- LPAR manager is rebooted following the configuration saving.

Options			
System Control		LP Dump Operation	
Pre-State Auto Activation	No	Take LP Dump	Execute
LP Auto Shutdown	No		
Shutdown State	Ready	Confirmation	
LP ErrorWatching	Yes	Activation	Yes
PhyCPU C-State (>= C3)	Enable	Deactivation and Reactivation	Yes
USB Auto Allocation to LPAR	Enable		
Save Changed Config Format	Disable	Screen Switching Character	
LP Timercounter Base	CpuFreq	LPAR --> LP	[CtI] + I
LP System Restarted. Please Wait...			
LPAR1			
Copy NVRAM From LPAR1 To LPAR2			
Esc:Menu			

Figure 7-79 Saving "LP Timercounter Base" and reboot screen

How to change the setting for Save Time Config

[LPAR manager firmware version 01-6X or later]



Note:

- With LPAR manager firmware version 01-6X or later, enabling Save Time Config is recommended. If you reboot LPAR manager after operating it for a long time with Save Time Config disabled, or if a system failure in LPAR manager or failover with N+M cold standby unexpectedly occurs, a time lag occurs in the guest OS.
- You can change settings for Save Time Config while LPAR manager is running.
- If changing LPAR manager configuration or LPAR configuration with Save Time Config enabled, make sure to save LPAR manager configuration at the end of the setting change. Although LPAR manager configuration is saved at time adjustment with Save Time Config enabled, the timing cannot be specified.
- When LPAR manager configuration is saved at time adjustment, LPAR manager screen appears; system event logs are collected; the alert is notified. Those operations can be prevented by disabling Save Time Config.

LPAR manager screen

```

||-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
|+-----+ Saving LP configuration ... |-----+
|-----+

```

System event log

```

|+ LP System Logs ----- All level --+
|| Level Date      Time      Event
|| Info. yyyy/mm/dd hh:mm:ss LP saved configuration.

```

Alert

```

ID: 0x1531
Message: LP configuration was saved. (RC=6)

```

- Using NTP
 - Check LPAR manager system time on the Date and Time screen. If the LPAR manager system time is not synchronized, adjust the LPAR manager system time by restoring the NTP server network state.
 - Adjust deactivated LPAR time using Adjust LPAR Time for LP System Time, Specified Zone, and UTC, on the Date and Time screen. For activated LPARs, adjust the time by using the guest OS or NTP time synchronization for the guest OS.

```

|+ System Date and Time -----+
|| Date and Time  yyyy/mm/dd hh:mm:ss Time Zone + 9:00 Adjust LPAR Time |
|+Setting-----+
|| Import Config None
|| TimeSync      SVP
|+-----+

```

- Enable the Save Time Config on the Options screen.

USB Auto Allocation	Save Time Configuration Setting	ing Character
Save Changed Config		[Ctl]+
LP TimerCounter Ba	Enable	
Save Time Config	Disable	
		LPAR1
		LPAR1 To LPAR1

– On the LPAR manager Menu screen, press **F9**: Save Configuration to save the configuration.

LP configuration is saved successfully

- Not using NTP
 - Check LPAR manager system time on the Date and Time screen. If it is not the expected one, set the LPAR manager system time zone using **F7**: Change System Time Zone.
 - Check LPAR manager system time on the Date and Time screen. If the LPAR manager system time is not synchronized, adjust the LPAR manager system time by **F6**: Change System Date and Time.
 - Adjust deactivated LPAR time using Adjust LP Time for LP System Time, Specified Zone, and UTC, on the Date and Time screen. For activated LPARs, adjust the time by using the guest OS or NTP time synchronization for the guest OS.
 - Enable the Save Time Config on the Options screen.
 - Save the configuration on the LPAR manager Menu screen using **F9**: Save Configuration.

How to release the safe mode

[LPAR manager firmware version 02-2X or later]

Place the cursor on Safe Mode and press **Enter** to display the subscreen. Select Yes and then press **Enter**.

Do you turn off safe mode?
Yes
No

How to collect the LPAR manager dump

Place the cursor on Execute of Take LP Dump, and press **Enter** to open a sub-screen. Enter the new character on the sub-screen, and press **Enter**. To display the confirmation prompt sub-screen, select Yes. Details of them see [LPAR manager Dump Collection](#).

```

+-----+
| If there was LP Dump file, it will be overwritten. |
| Do you want to continue? |
|
| Yes |
| No  |
|
+-----+
| Take LP Dump |
+-----+

```

Figure 7-80 Confirmation Screen for "Take LP Dump"

How to skip the confirmation prompt sub-screen when activating an LPAR

Place the cursor on Activation below Confirmation, and press **Enter** to display a sub-screen. Place the cursor on No, and press **Enter**. To display the confirmation prompt sub-screen, select Yes.

You can also stop displaying the confirmation prompt sub-screen by activating the LPAR, selecting Continue: Don't show this message on the confirmation prompt sub-screen and pressing **Enter**.

```

+-----+
| LPAR1 [LPAR1] |
| Activation means power-on. |
| Do you continue? |
|
| Continue |
| Cancel   |
| Continue (Don't show this message) |
+-----+

```

Figure 7-81 LPAR Activation Confirmation Screen

How to skip the confirmation prompt sub-screen when deactivating or reactivating an LPAR Display the LP Options screen.

Place the cursor on Deactivation and Reactivation below Confirmation, and press **Enter**. Place the cursor on No, and press **Enter**. To display the confirmation prompt sub-screen, select Yes. You can also stop displaying the confirmation prompt sub-screen by deactivating the LPAR, selecting "Yes: Don't ask anymore" on the confirmation prompt sub-screen, and pressing **Enter**.

```

+-----+
| LPAR1 [LPAR1] |
| Deactivation means power-off. |
| Do you continue? |
|
| Yes |
| No  |
| Yes (Don't ask anymore) |
+-----+

```

Figure 7-82 LPAR Deactivation Confirmation Screen

```
+-----+
|                                     |
|               LPAR1[LPAR1]        |
|             Reactivation means reset. |
|              Do you continue?       |
|                                     |
|                Yes                  |
|                 No                   |
|             Yes(Don't ask anymore)  |
+-----+
```

How to change Screen Switching Character

LPAR Usage

Example of LPAR Usage screen is below.

(13)				(14)				(15)			
LPAR Usage		(Sampling time 5)			Proc(D: 2(2), S: 14(14))				Grp(All)		
#	Name	Scd	Pro	Grp	SrvRatio	Srv(%)	Srv(ms)	Dsp(ms)	Busy(%)	Dsp(%)	PC
1	LPAR1	S	2	0	---	---	2000*	12	0.6	---	N
2	LPAR2	D	2	0	---	---	2000	977	48.8	---	*
3	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
4											
5											
6											
7											
8											
9											
10											
(16) Ded LPAR Total					---	---	2000	977	48.8		
(17) Shr LPAR Total					---	---	2000*	12	0.6		
(18) LPAR Total								989	6.1		
(19) SYS1								281	1.7		
(20) SYS2								178	1.1		
(21) System Total							16000	1448	9.0		
[PageUp]:Page Up / [PageDown]:Page Down											
Esc:Menu											

The following table describes each item on this screen.

Table 7-35 Details of the LPAR Usage Screen

No.	Item	Description	Default Value	Supported LPAR manager Version
(1)	#	Displays the LPAR numbers.	-	01-0X~
(2)	Name	Displays the LPAR name.	NO_NAME	01-0X~
(3)	Scd	Displays a scheduling mode. S: Shared mode D: Dedicated mode	D	01-0X~
(4)	Pro	Displays the number of logical processors.	-	01-0X~
(5)	Grp	Displays a processor group number.	-	01-0X~
(6)	SrvRatio	Displays the service ratio of the LPAR when the LPAR is in the shared mode. The values in the field are set with Service Ratio (Srv) on the LPAR Configuration screen. Grp (ALL): "---" is displayed	---	01-0X~
		Displays "---" when the LPAR is in the dedicated mode.		
(7)	Srv(%)	Displays the proportions of the LPAR's service time to the service time of physical processors running properly that are assigned to the shared mode LPAR. If the Service Percentage calculated inside LPAR manager does not match the specified Service Ratio, "*" is displayed on the right side. If it does match, "*" is not displayed. Grp (ALL): "---" is displayed	---	01-0X~
		Displays "---" when the LPAR is in the dedicated mode.		
(8)	Srv(ms)	Displays the total service time of the LPAR in milliseconds.	---	01-0X~
		If the LPAR is in the dedicated mode, this value is obtained by the following formula. $Srv(ms) = \text{the number of physical processors running properly on the LPAR} \times 1000ms$		
		If the LPAR is in the shared mode, this value is obtained by the following formula. $Srv(ms) = \text{the number of shared physical processors running properly} \times Srv(\%) \text{ of the LPAR} \times 1000ms$ If the LPAR is in the shared mode and Srv(%) is displayed with "*", "*" will be also displayed in the right side of this field.		

No.	Item	Description	Default Value	Supported LPAR manager Version
(9)	Dsp(ms)	Displays the execution time of the LPAR in milliseconds. This value is the total execution time of the logical processors on the LPAR. If either of the following is met, the value is the same as Srv(ms) because logical processors are always being dispatched to physical processors. • N is selected for ID on the Logical Partition Configuration screen. • MWAIT is selected for Guest Idle Mode.	---	01-0X~
(10)	Busy(%)	Displays the busy ratio of the LPAR. This value is the proportion of execution time to the LPAR's service time, and is obtained by the following formula. Busy (%) = the LPAR's Dsp(ms) ÷ the LPAR's Srv (ms) x 100 The value of this field is used as the yardstick for resource changes. If this value exceeds 100%, it means that the LPAR has insufficient resources. If Processor Capping becomes enabled, the LPAR Busy ratio is controlled so as not to exceed 100%. Therefore this value cannot be used as a yardstick for changing resources anymore. (Note) Even if the processor capping function is on, the LPAR manager allocation rate control allows a tolerance of 1% for each unit of processor-time. A shared mode LPAR is allocated a maximum processor-time that is 1% greater than the total service time of the physical processors assigned to it, and this value may exceed 100%.	---	01-0X~
(11)	Dsp(%)	Displays the proportion of the LPAR's service time to the total service time of all shared mode physical processors when the LPAR is in shared mode. This value is obtained by the following formula. Dsp(%) = the LPAR's run time ÷ service time of all shared physical processors running properly x 100 Grp (ALL): "---" is displayed	---	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
		Displays "---" when the LPAR is in the dedicated mode.		
(12)	PC	Displays the enabled/disabled status of the Processor Capping function as configured in the LPAR Configuration screen. Y: Processor Capping is enabled in shared mode. N: Processor Capping is disabled in shared mode. *: Processor Capping is ignored in dedicated mode. -: The LPAR has not been activated.	-	01-0X~
(13)	Sampling time	Sets the refresh rate of the screen in units of seconds. The default setting is 5 seconds, but this can be changed to anything between 1 and 60.	5	01-0X~
(14)	Proc	Displays the number of physical processors assigned to the dedicated mode and the shared mode. D: The number of physical processors assigned to the LPAR in the dedicated mode. Format is n or m. n: Total number of physical processors assigned to the LPAR running properly in the dedicated mode m: Total number of all processors assigned to LPAR in the dedicated mode. S: The number of physical processors assigned to the LPAR in the shared mode. Format is n or m. n: Total number of physical processors assigned to the LPAR running properly in the shared mode m: Total number of all processors assigned to LPAR in the shared mode. (S: = total number of physical processors – total number of physical processors assigned to the dedicated mode LPARs)	---	01-0X~
(15)	Grp	Selects processor groups to display. All: Displays the entire system The number of a processor group: Displays specified	All	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
		processor groups Note: When a processor group number is specified, information only on the group is displayed.		
(16)	Ded LPAR Total	Displays various totals of LPARs in the dedicated mode.	---	01-0X~
		"---" is displayed for SrvRatio and Srv(%).		
		Srv(ms) displays the total service time of LPARs in the dedicated mode.		
		Dsp(ms) displays the total execution time of LPARs in dedicated mode.		
		Busy(%) displays the busy ratio of all LPARs in the dedicated mode. this value is obtained by the following formula. Busy(%) = All execution time of LPARs in the dedicated mode ÷ All service time of LPARs in the dedicated mode x 100		
(17)	Shr LPAR Total	Displays various totals of LPARs in the shared mode.	---	01-0X~
		SrvRatio displays SrvRatio totals of LPARs in the shared mode.		
		Srv(%) displays Srv(%) total value of LPARs in the shared mode. If the displayed values include Srv(ms) with '*' in LPARs in the shared mode, this value has '*'.		
		Srv(ms) displays the total service time of LPARs in shared mode. when SRV(%) with * is included, * is displayed in that value.		
		Dsp(ms) displays the total execution time of LPARs in shared mode.		
(18)	LPAR Total	Displays various totals of all LPARs.	---	01-0X~
		Dsp(ms) displays the total execution time of LPARs		
		Busy(%) displays the total busy ratio value of all LPARs. Busy(%) = total execution time of all LPARs ÷ system service time x 100		

No.	Item	Description	Default Value	Supported LPAR manager Version
(19)	SYS1	Displays the execution time and the busy ratio of the LPAR manager System1. LPAR manager System1 see the processing by the kernel of the LPAR manager. (Note) The busy ratio and execution time of the faulty processor isolated are contained in SYS1.	---	01-0X~
		Dsp(ms) displays the execution time of the LPAR manager System1.		
		Busy(%) displays the busy ratio of the LPAR manager System1. This value is obtained by the following formula. $\text{Busy(\%)} = \text{execution time of the LPAR manager System1} \div \text{system service time} \times 100$		
(20)	SYS2	Displays the execution time and the busy ratio of the LPAR manager System2. LPAR manager System2 see the processes for the LPAR manager's communication and service control.	---	01-0X~
		Dsp(ms) displays the execution time of the LPAR manager System2.		
		Busy(%) displays the busy ratio of the LPAR manager System2. This value is obtained by the following formula. $\text{Busy(\%)} = \text{execution time of the LPAR manager System2} \div \text{system service time} \times 100$		
(21)	System Total	Displays the system service time, the system busy time and the system busy ratio of the LPAR manager system.	---	01-0X~
		Srv(ms) displays the system service time. This value is the total service time that the physical processors running properly have in the LPAR manager system, and is obtained by the following formula. $\text{Srv(ms)} = \text{the number of physical processors running properly} \times 1000\text{ms}$		
		Dsp(ms) displays the system busy time. The system busy time is the sum of the		

No.	Item	Description	Default Value	Supported LPAR manager Version
		execution time of all LPARs, SYS1, and SYS2.		
		Busy(%) displays the system busy ratio. This value is the total busy ratio in the LPAR manager system, and is obtained by the following formula. Busy(%) = system busy time ÷ system service time x 100		

How to change Sampling time

Since the cursor is already placed on the Sampling time, just press **Enter** to display a sub-screen. Enter the new number on the sub-screen, and press **Enter**.

How to display specified processor groups

Place the cursor on Grp on the upper right, and press **Enter** to display a sub-screen. Select the number of a processor group shown on the sub-screen, and press **Enter**.

Front Panel

The following actions are possible in the Front Panel screen. Example of Front Panel screen is below.

```

+- Logical Partition(LPAR) Front Panel -----+
| | # Name      Sta Liquid Crystal Display      Dump CLD CLE Ver
| | 1 LPAR1     Act S0001                      Dump Dsp Ers VV-RR
| | 2 LPAR2     Dea B0002                      System Power-off Void Dsp Ers x
| | 3 (2)       (3) (4)                        (5) (6) (7) (8)
| | 4
| | 5
| | 6
| | 7
| | 8
| | 9
| | 10
+- (1) -----+

|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
```

Figure 7-85 LPAR Front Panel Status Screen

The following table describes each item on this screen.

Table 7-36 Details of the LPAR Front Panel Status Screen

No.	Item	Description	Default Value	Supported LPAR manager Version
(1)	#	Displays the LPAR numbers.	-	01-0X~
(2)	Name	Displays the LPAR name.	NO_NAME	01-0X~
(3)	Sta	Displays the LPAR power status. Act (Activate): The LPAR is powered on. Dea (Deactivate): The LPAR is powered off. Fai (Failure): The LPAR cannot be used due to an unrecoverable failure. Reboot the system when this happens. If rebooting the system cannot solve the problem, contact your reseller or maintenance personnel.	Dea	01-0X~
(4)	Liquid Crystal Display	Displays the LPAR's system status and error information. Active: The power is on. System power-off: The power is off. Ignite dump: Dump was taken. MigrationFailed: LPAR migration stops, which requires LPAR recovery.	-	01-0X~
(5)	Dump	Commands a guest OS to collect dump.	Void/Dump	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
		This can be used only when the LPAR is activated.		
(6)	CLD	Displays the selected LPAR's guest screen data (console log data).	Dsp	01-0X~
(7)	CLE	Deletes the selected LPAR's guest screen data (console log data) from the buffer in LPAR manager.	Ers	01-0X~
(8)	Ver	[LPAR manager firmware version 02-28 or later] Displays the LPAR manager firmware version. -: Indicates that the LPAR is deactivated. VV-RR: Displays the LPAR manager firmware version in which the LPAR is working. - Displays the oldest LPAR manager firmware version on the LPAR manager that executes concurrent maintenance if the LPAR is migrated through concurrent maintenance. - Displays the current LPAR manager firmware version in which the LPAR is working if the LPAR is restarted after it is migrated through concurrent maintenance. x: - Indicates an LPAR for which concurrent maintenance has been executed via an LPAR manager whose firmware version is 02-27 or earlier. - If an LPAR for which an "x" is displayed is re-activated, the firmware version of the current LPAR manager is displayed.	-	02-28~

Conditions to change items in the Front Panel screen.

Table 7-37 LPAR Status on the Front Panel Status Screen

Item	LPAR Status			Remark	Supported LPAR manager Version
	Activate	Deactivate	Failure		
Name	N	N	N	Display Only	01-0X~
Sta	N	N	N	Display Only	01-0X~

Item	LPAR Status			Remark	Supported LPAR manager Version
	Activate	Deactivate	Failure		
Liquid Crystal Display	N	N	N	Display Only	01-0X~
Dump	Y	N	N	-	01-0X~
CLD	Y	Y	Y	-	01-0X~
CLE	Y	Y	Y	-	01-0X~
Ver	N	N	N	Display Only	02-28~
Legend: Y: can be changed N: cannot be changed					

How to check LPAR system status

Check the remark displayed in the Liquid Crystal Display column in the LPAR row whose system status you want to check.

How to collect guest OS dump

Place the cursor on the Dump column in the LPAR row whose dump you want to collect. Press **Enter** to display the sub-screen to execute a dump. Place the cursor on Yes and press **Enter**. A sub-screen that re-confirms the dump execution will be displayed. Place the cursor on Yes again and press **Enter**. Dump collection is possible only when the relevant LPAR is activated.



Note:

- To check the guest OS status before collecting a dump, before collecting the guest OS dump, collect console log data and capture a logical VGA snapshot.

You could not be too careful when collecting dumps because that collecting dumps may damage the guest OS.

What is Console log data?

Console log data is the screen data displayed when the guest OS on an LPAR is running. LPAR manager stores especially character data among the screen data in the internal buffer (up to 1,500 lines). If the console log data exceeds the number of lines in the buffer, it is overwritten sequentially from the oldest data.

How to collect console log data

Place the cursor on the CLD column in the LPAR row whose console log data you would like to display. Press **Enter** to open a sub-screen. Use the ↑ and ↓ keys to select 'Yes' on the sub-screen, and press **Enter**.

It will take two to three minutes for the log to be completely displayed on the terminal screen. During the period, you will be unable to perform operations on LPAR manager.

With displaying console log data on the screen by this operation, you can collect and/or view the complete guest screen data as the Tera Term scroll buffer data.

If the LPAR's guest screen is updated while the console log is being displayed, such new content may not be included in the console log.

How to delete console log data

Place the cursor on the CLE column in the LPAR row whose console log data you want to delete. Press **Enter** to display a sub-screen. Use the ↑ and ↓ keys to select 'Yes' on the sub-screen and press **Enter**.

This will delete the LPAR's console log data from the buffer in LPAR manager.

How to recover Migration Failed LPAR

Recover an LPAR with Migration Failed, if any. See the *Hitachi Command Suite Compute Systems Manager User Guide*, and the *Hitachi Compute Blade HVM Navigator User's Guide - Migration* for the procedure of recovery operation.

LP system logs

The following functions are available in the LP system logs screen. There are three levels of LP system logs, as shown in the table below. The levels are Information, Warning, and Error, in rising order of threat level. LPAR manager stores the latest 256 LP system logs. If the number of LP system logs exceeds 256, logs are overwritten in sequence, starting at the oldest log. To display the detailed information, place the cursor on the LP System Logs and press **Enter**.

Sample of LP system logs screen is below.

LP System Logs				(1) All level
Level	Date	Time	Event	(2) 1/2
Info.	yyyy/mm/dd	hh:mm:ss	LP detected Shared FC Link is Available at expa	
(3)	(4)	(5)	(6)	
[PageUp]:Page Up / [PageDown]:Page Down Esc:Menu				

Figure 7-86 LP system logs Screen

The following table describes each item on this screen.

Table 7-38 Details of the LP system logs Screen

No.	Item	Description	Default Value	Supported LPAR manager Version
(1)	Select Level	Specifies the level of the LP System Logs to display. The initial setting is for all levels (All level) to be displayed. Error: displays errors. If you select this item, "Error only" will be displayed. Error/Warn: Displays warnings and more serious problems. If you select this item, "Over warning" will be displayed. Error/Warn/Info: displays all logs. If you select this item, "All level" will be displayed.	All level	01-0X~
(2)	Pages	Displays the system log page information. Numerator: Displays the page number of the system log currently displayed. Denominator: Displays the total number of pages of the system logs. This item is displayed when the system log of two pages or more is retained.	-	01-0X~
(3)	Level	Displays the level of the LP System Logs. Error: Indicates an error.	-	01-0X~

Firmware Version Information

The following functions are available on the Firmware Version Information screen.

```
|+- Firmware Version Information -----+
||+- System F/W -----(6) Hitachi Fibre Channel F/W ----+
|||
|||(1) LP F/W      : VV-RR(TT-KK) [XX.XX.XX]   Slot#E12 : XXXXXX
|||
|||(2) BIOS       : VV-RR
|||(3) BMC        : VV-RR
|||
|||
|||
|||
|||
||+ LP License Information -----+
|||
|||(4) LP Model    : Advanced
|||(5) LP Serial#  : XXXXXXXX
|||(7) Valid Thru  : YYYY/MM/DD
|||
|||
|||-----+
|+-----+
|-----+
|
|Esc:Menu
```

Figure 7-88 Firmware Version Information Screen

The following table describes each item on this screen.

Table 7-39 Details of the Firmware Version Information Screen

No.	Item	Description	Default Value	Supported LPAR manager Version
(1)	LP F/W	Displays the LPAR manager firmware version and LPAR manager firmware internal version. Displays the LPAR manager firmware version of the alternative LPAR manager.	-	01-0X~
(2)	BIOS	Displays the EFI firmware version.	-	01-0X~
(3)	BMC	Displays the BMC firmware version.	-	01-0X~
(4)	LP Model	Displays the LP model. Essential: Essential model Advanced: Advanced model Enterprise: Enterprise model	-	01-0X~
(5)	LP Serial#	Displays the LP Serial number.	-	01-0X~
(6)	Hitachi Fibre	Displays the FC adapter firmware version of the slot number.	-	01-0X~

No.	Item	Description	Default Value	Supported LPAR manager Version
	Channel F/W			
(7)	Valid Thru	For LPAR manager licenses with a validity period, displays the year, month, and date of expiration. This item is displayed only for the server blades and LPAR manager firmware versions that support a temporary LP license. YYYY/MM/DD: Indicates the expiration date. Permanent: Indicates that there is no expiration date.	-	02-27~

LPAR manager Dump Collection

This chapter explains the over view of LPAR manager at this chapter.

- ☐ [Check the LPAR manager Dump](#)
- ☐ [Collects the LPAR manager Dump](#)
- ☐ [Exports LPAR manager Dump](#)

Check the LPAR manager Dump



Note:

- The LPAR manager Dump is saved in non-volatile storage of the Management Module. If a failure occurs, the dump may be automatically collected. LPAR manager dump which has been automatically collected will be overwritten by the LPAR manager dump manual operation. Check first whether the LPAR manager dump has been automatically collected, before the manual operation.
It is unnecessary to reboot LPAR manager after collecting the LPAR manager dump.

Check the LPAR manager dump files by operations as follows.

1. Display the **LP system logs** screen.
2. Set the level selection to **All level**.
3. Check the LP System Logs which contains an Event of "LP dump generation succeeded".

[illegible]

Figure 8-1 LP system logs Screen (LPAR manager Dump Exist)

If there is an LP System Logs entry saying "LPAR manager dump generation succeeded", contact maintenance personnel. If that kind of LP System Logs entry has not been obtained, follow the instructions below.

Collects the LPAR manager Dump

1. Display the **LP Options** screen.
2. Place the cursor on the **Execute** field under of **Take LP Dump** and press **Enter** to display a sub-screen. Then select **Yes** on the sub-screen and press **Enter**.

[illegible]

Figure 8-4 LP system logs Screen (LPAR manager Dump Collected)



Note:

- The "LPAR manager dump transfer succeeded" LP System Logs entry is normally obtained in about 10 and 20 seconds after the LPAR manager dump collection operation is performed. If you do not get this log entry, press **Esc** to display the LPAR manager Menu screen and then redisplay the LP system logs screen. (That is because the LP system logs screen does not automatically update)

If you do not get the two "LPAR manager dump transfer succeeded" LP System Logs entries after 10 minutes or more, or if you get the "LPAR manager dump transfer failed" log entry, another failure may have occurred. So call maintenance personnel or reseller.

Exports LPAR manager Dump

1. Select **Dump log** from Menu tree.

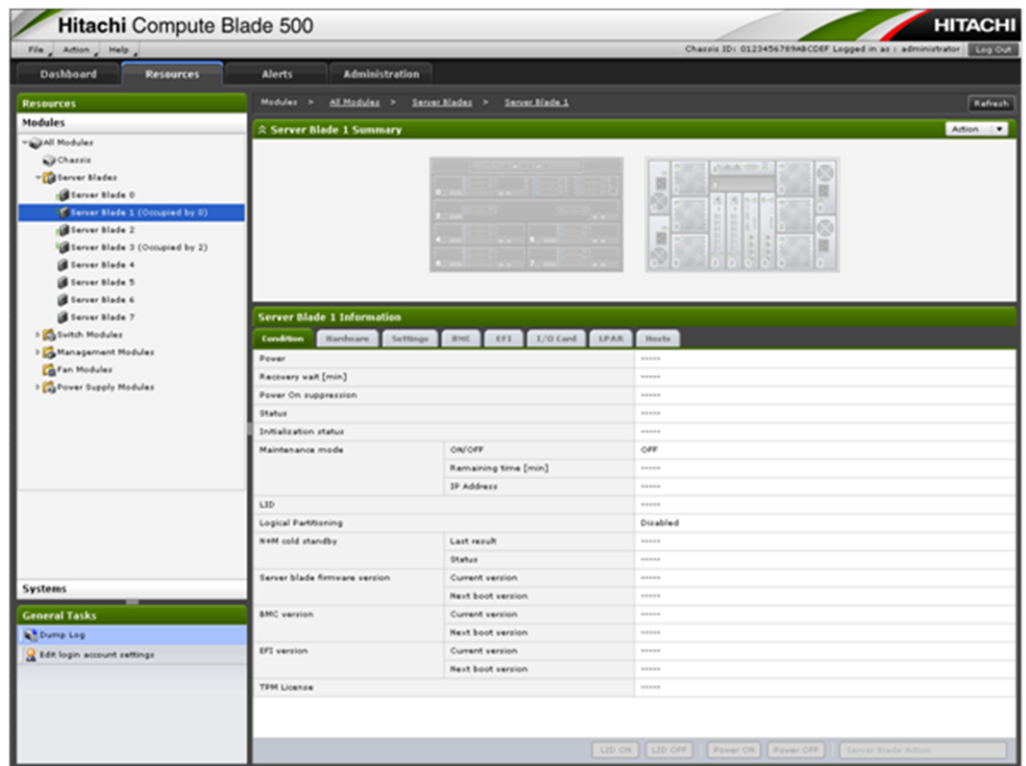


Figure 8-5 Web Console Alerts Window

2. Press **Download** button, then save the dump log.

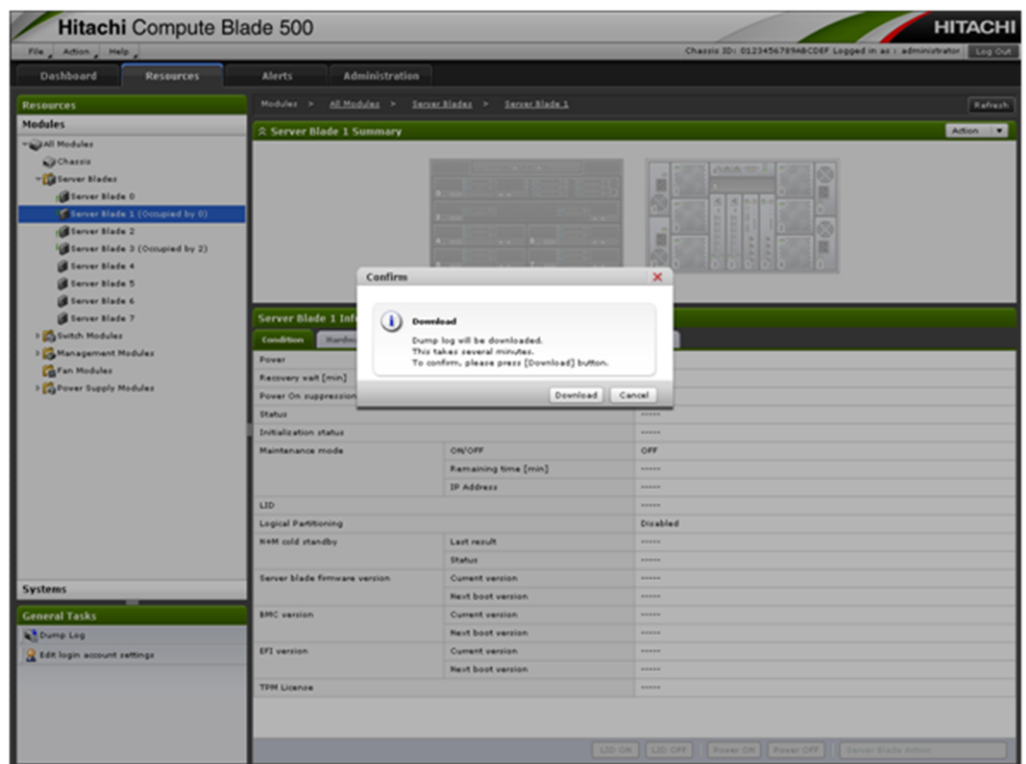


Figure 8-6 LPAR manager Dump Collection Complete Message

Messages

This chapter describes the Displaying Message.

- ☐ [LPAR manager Boot Messages](#)
- ☐ [LPAR manager Screen messages](#)
- ☐ [LP system logs Screen Messages](#)
- ☐ [Audit log messages](#)
- ☐ [HCSM Alert Messages](#)

LPAR manager Boot Messages

Followings are the LPAR manager messages that appear at LPAR manager boot.

Message Content	4-SMP with this blade is unsupported. So, the LP can't boot. Reconfigure the server partition.
Explanation	4-SMP with this blade is unsupported. So, the LPAR manager boot is suppressed.
What to do	Set the supported SMP configuration, and boot the LPAR manager.

Message Content	Capacity on demand is unsupported.
Explanation	Capacity on demand is not supported.
What to do	Do not use LP mode because the capacity on demand is not supported.

Message Content	Connection to SVP is tried again. retryCount=X, statusCode=0XXXXX XXXX:EFI Status code
Explanation	The LPAR manager loader retried a failed attempt to connect to SVP.
What to do	No action is required because the connection is established as a result of the retry operation. If this LP system log is collected each time LPAR manager starts, contact the reseller from which you purchased this equipment, or consult maintenance personnel.

Message Content	Error: Could not allocate memory, error code:[0XXXXX]. XXXX:Memory Allocate Error Code
Explanation	Allocating memory failed.
What to do	Confirm whether memory is recognized correctly on the Web console. When the memory is not recognized correctly or this message appears in spite of the correct recognition, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	Error: Could not find IPMI Device Information (Type38) in SMBIOS, error code:[0XXXXX]. XXXX:EFI Status Code
Explanation	There is no IPMI table at SMBIOS.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	Error: Could not find loader image in Management Module, error code:[0xXXXX]. XXXX:EFI Status Code
Explanation	There is no LPAR manager loader image file in management module.
What to do	Check whether LPAR manager firmware is installed in management module. If there is no problem in installation, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	Error: Could not find network controller, error code: [0xXXXX]. XXXX:EFI Status Code
Explanation	Detection of NIC for communication failed.
What to do	Check whether there are any problems in the management path configuration and NIC and port settings. If this message appears even when you cannot find any problems, contact your reseller or maintenance personnel.

Message Content	Error: Could not get ip address from BMC, error code: [0xXXXX]. XXXX:EFI Status Code
Explanation	Acquisition of IP Address from BMC failed.
What to do	Check whether the IP address is set correctly in the LPAR manager setting screen on Web console. When it is not correct, set the correct IP address. If this message appears in spite of correct settings, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	Error: Could not get loader image size from Management Module, error code:[0xXXXX]. Please check network connection with management module and network XXXX:EFI Status Code
Explanation	Acquisition of the image size of a LPAR manager loader failed.
What to do	Check there are not any problems in a setup of a network, a LAN switch and a connection. If it is satisfactory after a check, Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	Error: Could not load loader image from Management Module, error code:[0XXXXX]. Please check network connection with management module and network XXXX:EFI Status Code
Explanation	Reading the LPAR manager loader failed.
What to do	Check there are not any problems in a setup of a network, a LAN switch and a connection. If it is satisfactory after a check, Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	Error: Could not set VLAN ID[0XXXXX],Port[0xYY],error code:[0xZZZZ]. XXXX:VLAN ID YY:Port NO. ZZZZ:EFI Status Code
Explanation	Assignment of Tag of VLAN ID failed.
What to do	Check VLAN ID is set as a value 0 to 4094. If it is satisfactory after a check, Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	Error: Could not start loader.(XXXX)[0xYYYY] XXXX:cause LoadImage Error (The error of the program image deployed on the memory) Handle protocol Error (EFI inside error) Start Image Error (LP-Loader Executing Error) YYYY:EFI Status Code
Explanation	Booting the LPAR manager loader failed.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	Error: Ipmi driver initialization failed, error code:[0XXXXX]. XXXX:EFI Status Code
Explanation	An error was detected before IPMI command issue.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	Error: Network error occurred,retry after a few seconds. (PortX,Cmd:[0XXXXX],detected code[0XXXXX],error code[0XXXXX])
Explanation	Because a network error occurred, communication with the management path will be retried at communication port PortX (MgmtX).

Message Content	Error: Network error occurred,retry after a few seconds. (PortX,Cmd:[0XXXXX],detected code[0XXXXX],error code[0XXXXX])
What to do	Check there are not any problems in a setup of a network, a LAN switch and a connection.

Message Content	Error: Network error occurred,retry using the other port. (Port0->Port1,Cmd:[0XXXXX],detected code[0XXXXX],error code[0XXXXX])
Explanation	Because a network error occurred, the communication port will be switched from Port0 (Mgmt0) to Port1 (Mgmt1), and then communication will be retried.
What to do	Check there are not any problems in a setup of a network, a LAN switch and a connection.

Message Content	Error: Notification to BMC failed.(Step:[0XXXXX],SubStep: [0XXXXX],status:[0XXXXX],code:[0XXXXX])
Explanation	Failed a noticing of an operation status to management module.
What to do	Failed to access to BMC. If this message appears as often as LPAR manager boot, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP-Loader could not find any network controller.
Explanation	Communication NIC detection failed.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP-Loader could not find HyperArea.
Explanation	LP-Loader could not allocate the data area for LPAR manager (case2).
What to do	Confirm that "MM Config Base" is "2GB" in the EFI-setup menu. When it is not "2 GB", set it to "2GB", turn off a power supply once, and reboot the LPAR manager. For details, see the <i>Hitachi Compute Blade 500 series EFI User's Guide</i> .

Message Content	LP-Loader could not find VfcSeed.dat in management module.
Explanation	VfcSeed.dat file, having the Vfc seed information, cannot be found in management module when the N+M was performed.

Message Content	LP-Loader could not find VfcSeed.dat in management module.
What to do	The switching N+M t might be failed, check the BSM error. When there is no error, Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP-Loader could not update OEM FRU.
Explanation	Updating the Vfc seed information to FRU failed when the N+M was performed.
What to do	There is a possibility that the BMC error occurred or FRU data is damaged. Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP-Loader detected a value of Emulex NIC(Bus:0xXX) Personality unsupported for this LP. Please reset Emulex NIC Personality to a value supported for the LP. XX: Bus number
Explanation	LPAR manager cannot start because a value not supported by LPAR manager is set for the Personality for Emulex NIC.
What to do	Set a value supported by LPAR manager for the Personality. For details about setting the value, see the <i>Hitachi Compute Blade Emulex Adapter User's Guide for Hardware</i> . Note that this value cannot be changed in LP mode. If necessary, change the value in Basic mode.

Message Content	LP-Loader detected configuration error in management path portX, [Code:X SlotType:XX BladeNo:XX SlotNo:XX PortNo:XX].
Explanation	A configuration error in the management path was detected.
What to do	Check whether there are any problems in the management path configuration and settings. Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP-Loader detected an unsupported NIC. (Bus:0xXX, Dev: 0xYY, Fnc:0xZZ) Please Power Off Partition. XX: Bus number YY: Device number ZZ: Function Number
Explanation	An unsupported NIC is detected. So, the LPAR manager boot is suppressed.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP-Loader detected Emulex Multi Channel mode (Bus:0xXX, Dev:0xYY, Fnc:0xZZ), which is not supported. Please disable Emulex Multi Channel mode. XX: Bus number YY: Device number ZZ: Function Number
Explanation	LPAR manager cannot boot due to the Enabled multiple channel support of Emulex NIC.
What to do	Set "Multichannel Support" as <Disabled>. See the <i>Hitachi Compute Blade Emulex Adapter User's Guide for Hardware</i> for setting it. However, it cannot be changed in LP mode. If necessary, change it in Basic mode.

Message Content	LP-Loader detected invalid configuration files.[version is unmatched] (ErrorCode:XXXXXXXXXXXXXXXXXX AdditionalCode:XXXXXXXXXXXXXXXXXX) Please Power Off Partition.
Explanation	LPAR manager cannot boot due to the file with incorrect configuration information.
What to do	Restore a file with a correct configuration information.

Message Content	LP-Loader detected invalid Virtualization Technology setting in this system. MSR INFO [0xXXXXXXXXXXXXXXXXXX] Please set Virtualization Technology setting to enable.
Explanation	LPAR manager cannot boot due to the Disabled Virtualization Technology Setting.
What to do	Set Enable in Virtualization Technology Setting using the EFI setup menu. For details about the setup method, see the <i>Hitachi Compute Blade 500 series EFI User's Guide</i> .

Message Content	LP-Loader detected OEM FRU was unsupported version. (ver:XXXX)
Explanation	Unsupported FRU version was detected.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP-Loader detected VfcSeed.dat format error.(Error Info: 0xXXXX)
Explanation	The incorrect format is detected on VfcSeed.dat file, having the Vfc seed information, and the N+M cannot be performed. XXXX: cause

Message Content	LP-Loader detected VfcSeed.dat format error.(Error Info: 0xXXXX)
	0x0001: The file size is 0 byte. 0x0002: There is no key for the serial number of ChassisSeed. 0x0003: The data size of LP Serial number is 0 byte.(no data) 0x0004: Character string is included in the data of the LP Serial number.
What to do	The VfcSeed.dat file on the standby server blade may have the format error. Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP-Loader recovery communication to SVP.
Explanation	Communication failure is detected between LPAR manager and Management module, therefore execute a recovery of communication failure.
What to do	When this LP System Logs is taken at every LPAR manager boots, Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP-Loader switched NIC port0 to port1.
Explanation	Communication failure between LPAR manager and a management module was not recovered by Port1 (MGMT1), therefore communications processing is carried out by Port0 (MGMT0).
What to do	When LP System Logs is taken at every LPAR manager boots, Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP-Loader updated LP Serial Number in OEM FRU.
Explanation	FRU is updated when detecting N+M. (You can check that N+M failover occurs from this message)
What to do	None

Message Content	LP-Loader updated VfcSeed.dat in management module.
Explanation	This message is displayed when moving the server blade or adding the server blade into the slot of the server-chassis which operated LPAR manager in the past. Synchronized the FRU information and the "Vfc seed information" which is managed in management module.
What to do	None.

Message Content	set variable error occurred [valname:XXXX] [ErrorCode:8000000000000009]
Explanation	LPAR manager cannot start due to shortage of NVRAM resources.
What to do	Remove an unnecessary boot order from the EFI setup menu. For details about how to remove a boot order, see the manual <i>Hitachi Compute Blade 500 Series EFI User's Guide</i> .

Message Content	Stop LP initializing.(LP License is disabled.) Please set LP license setting to enable.
Explanation	The LP license is invalid.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	The value of MM Config Base is invalid. Change the value to 2GB.
Explanation	The value of MM Config Base is invalid. Change the value to 2 GB.
What to do	In the EFI setup menu, set MM Config Base to [2GB], and then restart LPAR manager. For details about the setup method, see the <i>Hitachi Compute Blade 500 Series EFI User's Guide</i> .

Message Content	The value of MM Config Base is invalid. Change the value to 3GB.
Explanation	The value of MM Config Base is invalid. Change the value to 3 GB.
What to do	In the EFI setup menu, set MM Config Base to [3GB], and then restart LPAR manager. For details about the setup method, see the <i>Hitachi Compute Blade 500 Series EFI User's Guide</i> .

Message Content	This LP F/W is not supported for this blade(Compute Blade XXXXXX). Please install another LP F/W supported for this blade. XXXX : Server Blade Model
Explanation	This LPAR manager firmware is not supported for this server blade.
What to do	Please install another LPAR manager firmware supported for this server blade.

If any message other than described above, contact the reseller form which you purchased the product or consult maintenance personnel.

LPAR manager Screen messages

Followings are the LPAR manager messages that appear on the console screen when the processing for a screen operation has not concluded normally.

Message Content	A NUMA configuration error has occurred. Set the scheduling mode of processor to a value of dedicated mode.
Explanation	The guest NUMA configuration is invalid. Make sure the scheduling mode of the processor is set to dedicated mode.
LPAR manager operation	Aborts the specified process.
What to do	Make sure the scheduling mode of the processor is set to dedicated mode.

Message Content	A user with the administrators role is required in the system.
Explanation	At least one user with the administrators role assigned is required in the system.
LPAR manager operation	Aborts the specified process.
What to do	To execute this processing, assign the administrators role to a different user.

Message Content	Active LPAR Exist
Explanation	The LPAR for which you tried to make a setting is active, so you cannot make any settings now.
LPAR manager operation	Aborts the specified process.
What to do	Make the setting again after the LPAR has been deactivated.

Message Content	All groups are already added.
Explanation	No group can be added.
LPAR manager operation	Aborts the specified process.
What to do	Review the specified process.

Message Content	All LPARs are already defined.
Explanation	There is no LPAR left to be defined.
LPAR manager operation	Aborts the specified process.

Message Content	All LPARs are already defined.
What to do	Review the process.

Message Content	Auto activation for LPARx results in error.
Explanation	Auto activation for LPARx failed.
LPAR manager operation	Aborts the specified process.
What to do	Follow the instructions in subsequent messages.

Message Content	Can not change LP System Time due to NTP enabled.
Explanation	LPAR manager system time cannot be changed due to NTP enabled.
LPAR manager operation	Aborts the specified process.
What to do	Deactivate the NTP, Change the LPAR manager system time.

Message Content	Can not change timezone of LP System Time due to NTP enabled.
Explanation	LPAR manager System time zone cannot changed due to NTP enabled
LPAR manager operation	Aborts the specified process.
What to do	Deactivate the NTP, Change the LPAR manager system time zone.

Message Content	Cannot remove the last user.
Explanation	You cannot remove the last user.
LPAR manager operation	Aborts the specified process.
What to do	Review the specified process.

Message Content	Change LP IP Address
Explanation	The LP IP Address needs to be changed (to something other than 0).
LPAR manager operation	Waits for the LP IP Address to be changed.
What to do	Change the LP IP Address.

Message Content	Change VNIC System No
Explanation	The virtual NIC System Number needs to be changed (to something other than 0).

Message Content	Change VNIC System No
LPAR manager operation	Waits for the virtual NIC System Number to be changed.
What to do	Change the virtual NIC System Number.

Message Content	Count Over Shared NIC Config.
Explanation	The scheduling mode cannot be changed to shared mode, due to exceeding the upper limit of shared NIC.
LPAR manager operation	Aborts the specified process.
What to do	Reconsider the specified process.

Message Content	Device Assign error.
Explanation	LPAR activation fails. Or device connection/disconnection fails.
LPAR manager operation	If activating the LPAR, stops activation. If changing the device target, stops connecting or disconnecting the device.
What to do	Deactivate the relevant LPAR, reassign the device that has been assigned to the LPAR, and then reactivate the LPAR. Or check that a device that not supported in dedicated mode is assigned.

Message Content	Device Schedule Mode is not Exclusive Shared.
Explanation	The schedule mode of the target PCI device is not exclusively shared.
LPAR manager operation	Aborts the specified process.
What to do	Select a PCI device with the exclusively shared mode (Schd:E).

Message Content	Error Character
Explanation	An error in the characters you typed caused the setting process to fail.
LPAR manager operation	Aborts character setting.
What to do	Revise the entry restrictions.

Message Content	Failed to save LP configuration
Explanation	The process of saving the configuration failed.
LPAR manager operation	Aborts the specified process.

Message Content	Failed to save LP configuration
What to do	Check the Internal Path State on the system service state screen. If Link is shown as No or Connect as Fail, check the internal LAN switch settings.

Message Content	Go to Shared FC Assign on Type=F & Schd=S.
Explanation	The device is a shared FC, so you need to change it on the Shared FC Assignment screen.
LPAR manager operation	Aborts the specified process.
What to do	Make the setting on the Shared FC Assignment screen.

Message Content	Go to VNIC Assign on Type=N & Schd=S.
Explanation	The device is a shared NIC, so you need to change it on the Virtual NIC Assignment screen.
LPAR manager operation	Aborts the specified process.
What to do	Make the setting on the Virtual NIC Assignment screen.

Message Content	Guest operating system may not remove USB device(s) safely. Force to detach.
Explanation	Indicates that connecting or disconnecting the device has failed.
LPAR manager operation	If activating the LPAR, stops activation. If changing the device target, stops connecting or disconnecting the device.
What to do	Assign the USB device to the LPAR again.

Message Content	LP cannot activate LPAR due to safe mode.
Explanation	The LPAR cannot be activated because the safe mode is on.
LPAR manager operation	Aborts the specified process.
What to do	Release the safe mode and then perform the operation again.

Message Content	LP cannot save configuration due to safe mode.
Explanation	The configuration information cannot be saved because the safe mode is on.
LPAR manager operation	Aborts the specified process.
What to do	Release the safe mode and then perform the operation again.

Message Content	LP could not import Time Setting of SVP.
Explanation	Import of time from the management module failed.
LPAR manager operation	Aborts the specified process.
What to do	Check if the version of management module consist with a cooperation NTP version.

Message Content	LP IPv4 address is needed for specified connection method of the virtual COM.
Explanation	To use the connection method of the specified virtual COM console, set a LP IPv4 address.
LPAR manager operation	Aborts the specified process.
What to do	Set a LP IPv4 address and try the operation again.

Message Content	LP is busy with another LPAR(X) activation process.
Explanation	During LPAR Activation processing, activation failed except for the securing of resources.
LPAR manager operation	Aborts the specified process.
What to do	Wait a moment and then retry the specified process.

Message Content	LP is executing LPAR migration, Please try again after it is finished.
Explanation	Operation is not allowed due to the LPAR migration in progress.
LPAR manager operation	Aborts the specified process.
What to do	Retry the specified process after the LPAR migration is completed.

Message Content	LP is executing LPAR migration, LP System Shutdown was canceled.
Explanation	Aborts the LPAR manager Shutdown due to the LPAR migration in progress.
LPAR manager operation	Aborts the LPAR manager Shut down.
What to do	Retry the specified process after the LPAR migration is completed.

Message Content	LP is not executable condition for this request. Please wait.
Explanation	The LPAR manager system is not in the condition to execute the requested processing.

Message Content	LP is not executable condition for this request. Please wait.
LPAR manager operation	Aborts the specified process.
What to do	Wait a moment and then retry the specified process.

Message Content	LP is not ready for the operation
Explanation	The configuration information could not be saved.
LPAR manager operation	Aborts the specified process.
What to do	Perform Force Recovery in the System Service State screen.

Message Content	LP is recovering specified LPAR from failed-migration state. This operation prevents some operations from performing.
Explanation	Not allows you to operate screens because the failed LPAR in LPAR migration is currently being recovered.
LPAR manager operation	The LPAR failed in LPAR migration is being recovered.
What to do	None.

Message Content	Inhibit ICV request for the operation
Explanation	The configuration information could not be saved.
LPAR manager operation	Aborts the specified process.
What to do	Wait a while and try again.

Message Content	Insufficient Processor resource
Explanation	When you tried to set the number of dedicated logical processors, a sufficient number of physical processors could not be secured. When an LPAR is activated, the physical processors assigned to the LPAR cannot be secured.
LPAR manager operation	Aborts LPAR activation.
What to do	Reduce the number of processors allocated or try again to activate the LPAR after you have deactivated a currently active LPAR. Alternatively, check the Logical Processor Configuration screen.

Message Content	Internal error (Cannot get lock).
Explanation	The LPAR manager logical firmware detected an internal error.
LPAR manager operation	Aborts the specified process.

Message Content	Internal error (Cannot get lock).
What to do	Contact your reseller or maintenance personnel.

Message Content	Invalid hour data.
Explanation	The numeric value you specified for the LPAR manager System Date and Time change is invalid.
LPAR manager operation	Aborts the specified process.
What to do	Correct the value and retry.

Message Content	Invalid in the scheduling mode.
Explanation	This operation is invalid in the scheduling mode of target device.
LPAR manager operation	Aborts the specified process.
What to do	Reconsider the specified process.

Message Content	Invalid Input Data.
Explanation	The new data you tried to set is invalid and cannot set.
LPAR manager operation	Aborts the setting process.
What to do	Set different data.

Message Content	Invalid minute data.
Explanation	The numeric value you specified for the LPAR manager System Date and Time change is invalid.
LPAR manager operation	Aborts the specified process.
What to do	Correct the value and retry.

Message Content	Invalid month data.
Explanation	The numeric value you specified for the LPAR manager System Date and Time change is invalid.
LPAR manager operation	Aborts the specified process.
What to do	Correct the value and retry.

Message Content	Invalid second data.
Explanation	The numeric value you specified for the LPAR manager System Date and Time change is invalid.

Message Content	Invalid second data.
LPAR manager operation	Aborts the specified process.
What to do	Correct the value and retry.

Message Content	Invalid separator.
Explanation	The numeric value you specified for the LPAR manager System Date and Time change is invalid.
LPAR manager operation	Aborts the specified process.
What to do	Correct the value and retry.

Message Content	Invalid year data.
Explanation	The numeric value you specified for the LPAR manager System Date and Time change is invalid.
LPAR manager operation	Aborts the specified process.
What to do	Correct the value and retry.

Message Content	IP address of NTP server is needed.
Explanation	NTP server setting needs IP address.
LPAR manager operation	Stop a time-getting of NTP server
What to do	Set the IP address of a NTP server to NTP Server 1 or NTP server 2.

Message Content	LPAR activation failed.
Explanation	The LPAR cannot be activated.
LPAR manager operation	Aborts LPAR activation.
What to do	Check that LP system logs showing failure are collected or not. If this action takes no effect, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LPAR activation failed(Insufficient LPAR memory(System Used:xxMB))
Explanation	LPAR run out of memory size that can be used (the allocated memory size for the LPAR – the used memory size for the system unit).
LPAR manager operation	Aborts LPAR activation.

Message Content	LPAR activation failed(Insufficient LPAR memory(System Used:xxMB))
What to do	Increase the allocated memory size for LPAR and then activate the LPAR increase memory size.

Message Content	LPAR corrupted in a LPAR Migration exist, Please try again after recovering the LPAR.
Explanation	Since there is a LPAR which has failed due to LPAR migration, it cannot be operated.
LPAR manager operation	Aborts the specified process.
What to do	Retry the specified operation to the LPAR after recovering the LPAR Migration.

Message Content	LPAR deactivation failed.
Explanation	The LPAR cannot be deactivated.
LPAR manager operation	Aborts LPAR deactivation.
What to do	Check that LP system logs showing failure are collected or not. If this action takes no effect, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LPAR start failed.
Explanation	The target LPAR failed to restart.
LPAR manager operation	Aborts the specified process.
What to do	Retry the process.

Message Content	Maximum number of users exceeded.
Explanation	The maximum number of users has already been registered.
LPAR manager operation	Aborts the specified process.
What to do	Delete unnecessary users, and then try adding a user again.

Message Content	Memory allocation failed (Fragmentation).
Explanation	When you activated an LPAR, the memory capacity you specified could not be secured.
LPAR manager operation	Aborts LPAR activation.

Message Content	Memory allocation failed (Fragmentation).
What to do	The memory could not be secured due to fragmentation. Reduce the memory allocation or try again to activate the LPAR after you have deactivated a currently active LPAR.

Message Content	Memory allocation failed (Insufficient).
Explanation	When you activated an LPAR, the memory capacity you specified could not be secured.
LPAR manager operation	Aborts LPAR activation.
What to do	Reduce the memory allocation or try again to activate the LPAR after you have deactivated a currently active LPAR. When memory node is specified, execute either of following procedure. - Reduce the amount of the memory allocated to LPAR so that it may become within the amount of the free memory in the node. - Activate the LPAR required after deactivating the LPAR which is using the memory in the Node.

Message Content	Memory size is zero.
Explanation	Because the memory size is zero, the LPAR cannot be activated.
LPAR manager operation	Aborts LPAR activation.
What to do	Set a memory size and active the LPAR.

Message Content	No groups can be removed.
Explanation	No group can be deleted.
LPAR manager operation	Aborts the specified process.
What to do	Review the specified process.

Message Content	Not Changed!! Select Device is Management Path.
Explanation	When you tried to change the NIC schedule mode, it was not changed because the selected NIC was specified as the management path.
LPAR manager operation	Aborts the specified process.
What to do	Reconsider the specified processing.

Message Content	NTP server is not set.
Explanation	There is no NTP server setting.

Message Content	NTP server is not set.
LPAR manager operation	Stop a time-getting of NTP server
What to do	Set the IP address of a NTP server to NTP Server 1 or NTP server 2.

Message Content	NUMA configuration error. Set processor scheduling mode to dedicated and bind logical processor to physical processor manually.
Explanation	The guest NUMA configuration is invalid. Set the scheduling mode of the processor to dedicated mode, and then allocate a physical processor to the logical processor.
LPAR manager operation	Aborts the specified process.
What to do	Set the scheduling mode of the processor to dedicated mode, and then allocate a physical processor to the logical processor.

Message Content	Operation failed because system configuration is being updating.
Explanation	The operation was not accepted because the LPAR manager configuration information is now being saved.
LPAR manager operation	Aborts the specified process.
What to do	Wait a while, and then retry the specified process.

Message Content	Over Max VLAN ID count (16).
Explanation	The number of the specified VLANID exceeds 16.
LPAR manager operation	Either automatically modifies the number of specified VLANID to be less than 16, or keeps the message sub-screen on the terminal display until ESC key is pressed.
What to do	Change the number of VLANID to be less than 16, or cancel the VLANID setting operation by pressing ESC key.

Message Content	Over the maximum number of activated LPARs (X).
Explanation	The LPAR cannot be activated because it is beyond the max number (X) of LPARs to activate with Essential model, Advanced model, and Enterprise model.
LPAR manager operation	Aborts the LPAR activation.
What to do	Deactivate an LPAR currently activated, and then activate the LPAR again.

Message Content	Password mismatch.
Explanation	The password you entered did not match.
LPAR manager operation	Aborts the specified process.
What to do	Try setting the password again.

Message Content	Port number for virtual console is out of range for specified connection mode.
Explanation	The specified port number is outside the range of values that can be used for the current connection mode for the virtual COM console.
LPAR manager operation	Aborts the specified process.
What to do	Check the connection mode and port number for the virtual COM console, and then retry the process.

Message Content	Press any key first. Then press F10 key next.
Explanation	To make the changed setting effective, you need to press F10 .
LPAR manager operation	Waits for the F10 key to be pressed.
What to do	Press any key, wait for the output message to disappear, and then press the F10 key.

Message Content	Resource lock failure.
Explanation	Locking resources failed when you updated configuration information. Locking resources failed when you performed a system or LPAR operation. Locking resources failed when you updated the RAR of a NIC.
LPAR manager operation	Aborts the specified process.
What to do	Retry the specified process.

Message Content	Sampling time Error
Explanation	Sampling time setting failed in LPAR Usage screen.
LPAR manager operation	Aborts the sampling time setting.
What to do	Set a number between 1 and 60.

Message Content	Save Configuration request(F9 Key) is already accepted. Please wait.
Explanation	The Save configuration request has already been accepted. Wait a moment.
LPAR manager operation	Aborts the specified process.
What to do	Wait until the configuration begins to be saved.

Message Content	Select Device is Single Port NIC. Can not change Management Path.
Explanation	The NIC you selected in the management path setting is 1 port.
LPAR manager operation	Aborts the specified process.
What to do	Reconsider the specified process.

Message Content	Service Ratio must be 1-999
Explanation	The service ratio you tried to set was not in the range from 1 to 999 so it could not be set.
LPAR manager operation	Aborts the service ratio setting.
What to do	Set a service ratio between 1 and 999.

Message Content	Specified user is not registered.
Explanation	The specified user is not registered.
LPAR manager operation	Aborts the specified process.
What to do	Check the user name, and then retry the process.

Message Content	Specified user is reserved.
Explanation	The specified user name is reserved by LPAR manager.
LPAR manager operation	Aborts the specified process.
What to do	Use another user name to retry user registration.

Message Content	Target Device is in invalid type
Explanation	This operation is invalid in the target device.
LPAR manager operation	Aborts the specified process.
What to do	Reconsider the specified process.

Message Content	Target LPAR is active.
Explanation	The LPAR for which you tried to make a setting is active, so you cannot make any settings now.
LPAR manager operation	Aborts the specified process.
What to do	Make the setting again after the LPAR has been deactivated.

Message Content	Target LPAR is coming to foreground.
Explanation	Now switching to the LPAR guest screen.
LPAR manager operation	Continues the specified processing.
What to do	Wait for a while.

Message Content	Target LPAR is deactivate.
Explanation	The LPAR you tried to deactivate is already deactivated.
LPAR manager operation	Aborts the service ratio setting.
What to do	Try again after activating the LPAR.

Message Content	Target LPAR is Executing Migration.
Explanation	Operation to the LPAR you tried to operate is not allowed due to LPAR migration in progress.
LPAR manager operation	Aborts the specified process Cancel the specified operating.
What to do	Retry the specified process until the LPAR migration is completed.

Message Content	Target LPAR is Executing Rollback.
Explanation	Operation to the LPAR you tried to operate is not allowed due to the roll back by LPAR migration in progress.
LPAR manager operation	Aborts the specified process.
What to do	Retry the specified process until the LPAR migration is completed.

Message Content	Target LPAR is undefined.
Explanation	The LPAR you tried to manipulate is undefined. When you tried to change the configuration information of a virtual NIC, you tried to change an undefined LPAR.
LPAR manager operation	Aborts the specified process.
What to do	Retry the specified process.

Message Content	Target LPAR must be shared mode.
Explanation	The LPAR for which you tried to make a setting is in dedicated mode, so you cannot make any settings now.
LPAR manager operation	Aborts the specified process.
What to do	Make the setting again after changing the scheduling mode of the LPAR to shared mode.

Message Content	The input value exceeds the assignable memory size.
Explanation	The memory size that can be allocated to the LPAR is exceeded.
LPAR manager operation	Aborts the specified process.
What to do	Review the memory size.

Message Content	The LP license expired. LP cannot activate LPAR.
Explanation	You are not able to activate the LPARs because the LPAR manager license has expired.
LPAR manager operation	Cancels LPAR activation.
What to do	Purchase an LP license, or use the LPAR manager as an Essential model by performing the following steps: 1. Stop the LPAR manager. 2. Back up the LPAR manager configuration. 3. Update the LP license by using the management module firmware A0270. 4. Start the LPAR manager. For details about updating an LPAR manager license, see Upgrading LPAR manager model in the manual <i>Hitachi Compute Blade 500 Series Management Module Setup Guide</i>.

Message Content	The LPAR Migration is in progress. This LPAR Migration prevents some operations such as activation, deactivation and LPAR-reconfiguration from performing.
Explanation	Operation with screen is not allowed due to LPAR migration in progress.
LPAR manager operation	LPAR migration is being performed.
What to do	Wait for a while until the LPAR migration is completed.

Message Content	The name is used for other group.
Explanation	When you try to name a group, the name is already used by another group.

Message Content	The name is used for other group.
LPAR manager operation	Aborts change in the group name.
What to do	Give another name to the group.

Message Content	The name is used for other LPAR.
Explanation	An LPAR with the name you set already exists.
LPAR manager operation	Aborts LPAR name change process.
What to do	Change the name.

Message Content	The specified LPAR has corrupted in an LPAR Migration, please try to recover the LPAR.
Explanation	Since the LPAR has failed due to LPAR migration, it cannot be operated.
LPAR manager operation	Not allows operation due to the failed LPAR in LPAR migration.
What to do	Recover the LPAR for LPAR migration.

Message Content	The VF is already assigned the maximum assignable times to LPARs.
Explanation	Device connection/disconnection fails.
LPAR manager operation	Stops LPAR activation. Or stops device connection/disconnection.
What to do	Assign the device that is assigned the LPAR again, and perform LPAR activation again.

Message Content	There is no permission to execute the operation.
Explanation	The management module user does not have the access permissions required to execute this processing.
LPAR manager operation	Cancels the specified process.
What to do	Assign a role with access permissions for this processing, to the management module user.

Message Content	This request has been cancelled. The logical processor topology setting mode for the guest NUMA is set to the Physical NUMA Node Binding Mode.
Explanation	For LPARs for which physical NUMA node binding is set, physical processors cannot be allocated to logical processors.

Message Content	This request has been cancelled. The logical processor topology setting mode for the guest NUMA is set to the Physical NUMA Node Binding Mode.
LPAR manager operation	Cancels the specified process.
What to do	To specify a physical processor number, make sure that the method for configuring logical processors for the guest NUMA is physical processor binding.

Message Content	This request through the LP screen is not supported. The logical processor topology setting mode for the guest NUMA is set to the Physical NUMA Node Binding Mode.
Explanation	For LPARs for which physical NUMA node binding is set, the number of logical processors cannot be set.
LPAR manager operation	Cancels the specified process.
What to do	For LPARs for which physical NUMA node binding is set, set the number of logical processors for each node from HvmSh.

Message Content	Updating LP firmware, Please try again after it is finished.
Explanation	LPAR manager shutdown or the F10 key cannot be executed because LPAR manager firmware is updating.
LPAR manager operation	Cancels the specified process.
What to do	Execute the process again when LPAR manager firmware update is completed.

Message Content	Updating LP firmware, Please wait until it is finished.
Explanation	LPAR manager shutdown is waiting for execution during updating LPAR manager firmware.
LPAR manager operation	Stops activating LPAR.
What to do	Wait for a while until LPAR manager firmware updating is completed.

Message Content	Virtual console authentication mode cannot be changed when virtual console connection mode is SSH.
Explanation	You cannot change the authentication mode if the virtual COM console connection mode is SSH.
LPAR manager operation	Aborts the specified process.
What to do	Review the specified process.

Message Content	VLAN ID is not set.
Explanation	No VLAN ID is set in the LPAR manager system. No information can be displayed.
LPAR manager operation	Aborts the specified process.
What to do	Verify the setting of the network segment identifier, which is specified to display.

If an error message other than those described above, contact your reseller or consult maintenance personnel.

LP system logs Screen Messages

The following lists the LP system logs screen messages displayed on the LP system logs screen.

Level	Explanation
Error	Indicates Error Messages. Failure occurred on the LPAR manager.
Warn	Indicates Warning Messages. It's not a failure. However it should be taken care.
Info	Indicates Information Messages. It's not a noticeable phenomenon.

Error Level

Message Content	An abnormal time difference was detected.
Explanation	Synchronization was terminated due to abnormal time difference detection during periodic synchronization for the time using NTP.
What to do	Take action as follows: - Check the status of the NTP server. - If there is no problem with the NTP server, disable time synchronization in the Date and Time screen, and set the original values to restart time synchronization. - Check the LPAR manager system time and OS system time. Then, if necessary, use an OS command or Adjust LPAR Time to set the logical RTC time of the LPAR.

Message Content	An error-level event occurred on the LP.
Explanation	An error-level event occurred on the LPAR manager.
What to do	See the adjacent LPAR manager system log, which is described in the details of this event.

Message Content	Dmar Fault occurred.
Explanation	Dmar fault occurred.
What to do	Contact your reseller or maintenance personnel.

Message Content	Guest, Watchdog timer has expired.
Explanation	A guest watchdog timer timeout was detected.
What to do	Take action while referring to other fault-indicating LP system logs. If the action you take does not take effect, contact inquiries listed in this manual.

Message Content	H/W Corrected MCK logging was suppressed.
Explanation	The numbers of times of corrected machine check event logging exceeded the threshold. The error logging was suppressed.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	H/W Corrected MCK occurred.
Explanation	The corrected machine check occurred.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	H/W Fatal MCK occurred.
Explanation	A fatal machine check event occurred.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	Hardware Component BMC access error occurred.
Explanation	A fault occurred in accessing the physical BMC.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP Assist damage occurred.
Explanation	An LPAR manager fault (LPAR manager Assist fault) occurred.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP Assist damage occurred. (due to H/W error)
Explanation	An LPAR manager fault (LPAR manager fault) resulting from a hardware fault occurred.

Message Content	LP Assist damage occurred. (due to H/W error)
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP could not detect PCI device.
Explanation	LPAR manager detected reduction of the number of PCI devices.
What to do	Back up the LPAR manager configuration and exit safe mode. Check whether PCI devices are isolated. If you cannot resolve the problem, contact your reseller or maintenance personnel.

Message Content	LP Loader detected format error in the initial parameter.
Explanation	The failure of the initial parameter file was detected. Incorrect form file that is zero byte of file size or There is no essential data in a file.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP damage occurred.
Explanation	An LPAR manager fault occurred.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP damage occurred. (due to H/W error)
Explanation	An LPAR manager fault resulting from a hardware fault occurred.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected a failure of retrying the setting of TxRate configuration.
Explanation	The retry to set the TxRate configuration failed.
What to do	There is a possibility that a network failure has occurred. Confirm the status of the networks to which this device is connected. Contact the reseller from which you purchased this equipment or consult maintenance personnel, when there is no network problem.

Message Content	LP detected a network communication error on the active port.
Explanation	A communication failure in the active path occurred on the LPAR manager management NIC.
What to do	Check the network connection and the settings between LPAR manager and the management module. If this does not resolve the problem, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected Activation error for Shared NIC at expansion card.
Explanation	A failure in validating shared NIC was detected.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected Activation error for Shared NIC at Onboard.
Explanation	A failure in validating shared NIC was detected.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected Activation error for Shared NIC.
Explanation	A failure in validating shared NIC was detected.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected different version of firmware on the NIC device.
Explanation	A combination fault for NIC device firmware version was detected.
What to do	Check the all NIC firmware versions on the server blade are same. If this action takes no effect, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected error of network communication at management path.
Explanation	A fault in the management path was detected. Internal LAN segment overlaps with the management LAN segment.
What to do	Review the LP IP Address setting.

Message Content	LP detected error of network communication for SVP access.
Explanation	A communication fault occurred between LPAR manager and the switch and management module.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected Hardware error for Shared FC at expansion card.
Explanation	A fatal fault in shared FC was detected.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected Hardware error for Shared FC.
Explanation	A fatal fault in shared FC was detected.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected Initialization error for Shared NIC at expansion card.
Explanation	A failure in initializing shared NIC was detected.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected Initialization error for Shared NIC at Onboard.
Explanation	A failure in initializing shared NIC was detected.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected Initialization error for Shared NIC.
Explanation	A failure in initializing shared NIC was detected.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected Link Down error for Shared FC at expansion card.
Explanation	Shared FC link down was detected.
What to do	Check the connection to shared FC. If this action takes no effect, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected Link Down error for Shared FC.
Explanation	Shared FC link down was detected.
What to do	Check the connection to shared FC. If this action takes no effect, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected Link Down error for Shared NIC at expansion card.
Explanation	Shared NIC link down was detected.
What to do	Check the connection to shared NIC. If this action takes no effect, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected Link Down error for Shared NIC at Onboard.
Explanation	Shared NIC link down was detected.
What to do	Check the connection to shared NIC. If this action takes no effect, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected Link Down error for Shared NIC.
Explanation	Shared NIC link down was detected.
What to do	Check the connection to shared NIC. If this action takes no effect, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected MCKINT for Shared FC at expansion card.
Explanation	A temporary fault in shared FC was detected.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected MCKINT for Shared FC.
Explanation	A temporary fault in shared FC was detected.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected network communication error at SC Manager access.
Explanation	A communication error occurred between LPAR manager and SC/BSM.
What to do	Check the connection between LPAR manager and SC/BSM. If you cannot remove this error, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected PCI bus error for Shared FC at expansion card.
Explanation	A PCI bus fault in shared FC was detected.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected reduction of CPUs.
Explanation	LPAR manager detected reduction of the number of physical processors.
What to do	Back up the LPAR manager configuration and exit safe mode. Check whether physical processors are isolated. If you cannot resolve the problem, contact your reseller or maintenance personnel.

Message Content	LP detected reduction of memory.
Explanation	LPAR manager detected reduction of the memory size.
What to do	Back up the LPAR manager configuration and exit safe mode. Check whether memory is isolated. If you cannot resolve the problem, contact your reseller or maintenance personnel.

Message Content	LP detected uninitialized Shared device.
Explanation	A shared I/O device that has not been initialized was detected.
What to do	Contact your reseller or maintenance personnel.

Message Content	LP detected unsupported version of firmware on a NIC device.
Explanation	Unsupported firmware version was detected on a NIC device.
What to do	Check the NIC firmware version is supported or not. If this action takes no effect, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP failed to get Personality and Multichannel Mode on a NIC device.
Explanation	LPAR manager failed to obtain the Personality setting and Multichannel mode from the NIC device.
What to do	Reboot the LPAR manager. If this LP system log is collected after rebooting, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP failed to get the firmware version on a NIC device.
Explanation	Retrieving the firmware version from a NIC device failed.

Message Content	LP failed to get the firmware version on a NIC device.
What to do	Reboot the LPAR manager. If this LP system log is collected after rebooting, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP failed to have SR-IOV device enabled.
Explanation	Detects different SR-IOV settings (enable/disable) for two ports of the same controller of PCI device.
What to do	Check the SR-IOV settings of PCI device, or confirm that "Personality" is set to NIC mode. See the <i>Hitachi Compute Blade Emulex Adapter User's Guide for Hardware</i> for setting it. However, it cannot be changed in LP mode. If necessary, change it in Basic mode.

Message Content	LP Loader could not update LP Serial Number in OEM FRU.
Explanation	Updating the FRU in LPAR manager boot failed, when the N+M was performed.
What to do	There is a possibility that the BMC error occurred or FRU data is damaged. Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP-LFW detected internal error.
Explanation	LPAR manager logical firmware detected an internal error.
What to do	Contact your reseller or maintenance personnel.

Message Content	LPAR damage occurred.
Explanation	An LPAR manager fault (LPAR fault) occurred.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LPAR damage occurred. (due to H/W error)
Explanation	An LPAR manager fault (LPAR fault) resulting from a hardware fault occurred.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	Network configuration error for Shared FC at expansion card.
Explanation	A shared FC interface fault occurred.

Message Content	Network configuration error for Shared FC at expansion card.
What to do	Check the connection to shared NIC. If this action takes no effect, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	Network configuration error for Shared FC.
Explanation	A shared FC interface fault occurred.
What to do	Check the connection to shared NIC. If this action takes no effect, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	Network Segment damage occurred.
Explanation	A fault occurred in the network segment used for inter-LPAR communication or for NIC sharing.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	PCI device error was detected.
Explanation	An error was detected into the PCI device.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	Physical Processor Isolation.
Explanation	The physical Processor was degraded.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	Shadow Command is rejected.
Explanation	A request to LPAR manager Assist was discarded.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	SR-IOV device of LPAR was damaged and isolated.
Explanation	VF NIC was isolated from LPAR forcibly due to the failure of the PCI device specifying SR-IOV.
What to do	Shut-down promptly the guest-OSs which are assigning the isolated PCI device. When the state of a PCI device is not recovered automatically, perform the ForceRecovery operation to recover the isolated state.

Message Content	SR-IOV device of LPAR was damaged and isolated.
	Start the guest OS after the PCI device recovery, and the PCI device can be used again.

Message Content	SVGA Initialization failed.
Explanation	Physical SVGA initialization failed.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	System Service request command failed.
Explanation	Command request to the system service failed.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	The LPAR migration functionality is unavailable owing to an error.
Explanation	The LPAR migration functionality has stopped functioning because the LPAR manager cannot access the LPAR manager configuration file.
What to do	Check the network connection between the LPAR manager and the management module, and its setting. Then, perform the Force Recovery operation to recover the LPAR manager from isolation. If you cannot solve the problem, contact your seller or maintenance personnel.

Message Content	The virtual COM consoles are unavailable owing to port duplication.
Explanation	The virtual COM consoles stopped functioning because some of the ports used by LPs and the ports used by the virtual COM consoles overlapped.
What to do	Check for ports that are not used by LPAR managers, and then change the port settings for virtual COM consoles.

Message Content	There are not enough H/W resources for SR-IOV feature.
Explanation	Shortage of H/W resources for SR-IOV feature was detected.
What to do	Confirm whether the firmware combinations are proper, as the version supporting the SR-IOV function. For details of combination, see the <i>Hitachi Compute Blade Emulex Adapter User's Guide for Hardware</i> .

Message Content	VNIC damage occurred.
Explanation	A virtual NIC fault occurred.

Message Content	VMNIC damage occurred.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	VMNIC damage on LP Assist occurred.
Explanation	A virtual NIC (LPAR manager Assist) fault occurred.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Warn Level

Message Content	A caution-level event occurred on the LP.
Explanation	A caution-level event occurred on the LPAR manager.
What to do	See the adjacent LPAR manager system log, which is described in the details of this event.

Message Content	An abnormal time difference was detected.
Explanation	An abnormal time difference was detected when the LP time had been synchronized automatically with NTP server.
What to do	Take action as follows: - Check the status of the NTP server. - If there is no problem with the NTP server, disable time synchronization in the Date and Time screen, and set the original values to restart time synchronization. - Check the LPAR manager system time and OS system time. Then, if necessary, use an OS command or Adjust LPAR Time to set the logical RTC time of the LPAR.

Message Content	Guest dump failed.
Explanation	Guest memory dump failed.
What to do	To get the information on the failure and its factors, execute the command "Get guest memory dump progress" of HVM management command (HvmSh command). Deal with the problem according to "Status Codes and Messages" displayed by this command.

Message Content	H/W Corrected MCK occurred.
Explanation	A corrected machine check event occurred.
What to do	None.

Message Content	LP changed Management Path and LPAR configuration was changed.
Explanation	A NIC set in the dedicated mode is specified as the management NIC; therefore, the scheduling mode of the NIC was changed from the dedicated mode to the shared mode. Dedicated allocation of the NIC to LPARs was released.
What to do	LPAR manager has shifted to the safe mode. Confirm the NIC allocation to LPARs, change the setting of allocation to LPARs if required, and then release the safe mode.

Message Content	LP changed NIC to dedicated mode and LPAR configuration was changed.
Explanation	A NIC exists for which the mode was changed into the dedicated mode because the number of shared NICs exceeded the maximum by changing the scheduling mode of the NIC specified as the management NIC to the shared mode. Shared allocation of the NIC to LPARs was released.
What to do	LPAR manager has shifted to the safe mode. Confirm the NIC allocation to LPARs, change the setting of allocation to LPARs if required, and then release the safe mode.

Message Content	LP could not import Time Setting of BMC.
Explanation	The time settings could not be imported from BMC.
What to do	Check the BMC version to see if NTP linkage is supported. Review the BMC time settings and then re-import the time settings from BMC.

Message Content	LP could not import Time Setting of SVP.
Explanation	Importing Time setting from management module failed.
What to do	Check if the version of management module consist with a cooperation NTP version. Re-import a time setup from a management module after correcting a time setup of a management module.

Message Content	LP could not retrieve Time Setting from SVP.
Explanation	The time settings could not be obtained from the management module.
What to do	Check the management module version to see if NTP linkage is supported. Review the time settings on the management module.

Message Content	LP detected a lack of I/O interrupt vectors.
Explanation	LPAR manager detected a lack of interrupt vectors.

Message Content	LP detected a lack of I/O interrupt vectors.
What to do	Check the PCI device configuration. If a PCI device not supported by the product exists, remove it from configuration. When only one dual-core processor is installed in the server blade CB 520H A1/B1/B2/B3/B4 model, set "Enable "to the Hyper-Threading. If this action takes no effect, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected a network communication error on the standby port.
Explanation	A communication failure in the standby path occurred on the LPAR manager management NIC.
What to do	Check the network connection and the settings between LPAR manager and the management module. If this does not resolve the problem, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected an invalid date and time.
Explanation	Date and Time was reset because an invalid system equipment time was detected when LPAR manager started.
What to do	Take action as follows: • Check the LPAR manager system time. Then, if necessary, set it again. • Check the OS system time. Then, if necessary, use an OS command or Adjust LPAR Time to set the logical RTC time of the LPAR. • Save the LPAR manager configuration information.

Message Content	LP detected AP initialization timeout.
Explanation	A timeout occurred in initializing the guest OS.
What to do	Review the service rate allocation to the LPAR.

Message Content	LP detected Driver Ver Error for Shared FC at expansion card.
Explanation	The FC driver not supporting shared FC was detected.
What to do	Upgrade the driver to the version supporting shared FC.

Message Content	LP detected Driver Ver Error for Shared FC.
Explanation	The FC driver not supporting shared FC was detected.
What to do	Upgrade the driver to the version supporting shared FC.

Message Content	LP detected failed SR-IOV device was assigned to LPAR.
Explanation	LPAR manager detected that the LPAR assigning the isolated PCI device was activated.
What to do	Since the PCI device is in an error condition, it cannot be used on LPAR. When the state of a PCI device is not recovered automatically, perform the ForceRecovery operation to recover the isolated state. Start the guest OS after the PCI device recovery, and the PCI device can be used again.

Message Content	LP detected initial parameter error.
Explanation	Incorrect data of the initial parameter file was detected.
What to do	Check the settings on the System Configuration screen.

Message Content	LP detected PCI bus error for Shared FC.
Explanation	A PCI bus fault in shared FC was detected.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected PCI dev assign error.
Explanation	LPAR manager detected invalid PCI device assignment.
What to do	Re-allocate the PCI device on the PCI Device Assign screen. If this LP System Logs is re-obtained, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP detected too many physical CPUs, some CPUs are ignored.
Explanation	Ignoring some Processors due to those Processors installed beyond the maximum number of them LPAR manager can recognize.
What to do	Contact your reseller or maintenance personnel.

Message Content	LP detected unsupported H/W configuration.
Explanation	A hardware configuration that is not supported was detected.
What to do	A PCI device might be installed on the I/O adapter slot on a PCI expansion blade. You cannot use such a PCI device because the PCI expansion blade is not supported.

Message Content	LP detected unsupported settings in the configuration.
Explanation	An invalid value is specified in the configuration information.

Message Content	LP detected unsupported settings in the configuration.
What to do	Check the detailed message in the LP system log, and then check values specified in the configuration information.

Message Content	LP dump generation failed.
Explanation	The LPAR manager dump failed to be obtained.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP dump is lost.
Explanation	The LPAR manager dump was lost.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP dump management file access error occurred.
Explanation	File access error of LPAR manager dump management occurred.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP dump transfer failed.
Explanation	Transfer of the LPAR manager dump to the management module failed.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP failed deletion of the initial parameter file.
Explanation	Deleting the initial parameter file failed.
What to do	If this LP System Logs is often collected, contact your reseller or consult maintenance personnel.

Message Content	LP failed in network time synchronization by NTP.
Explanation	Synchronization the LPAR manager system time by NTP failed.
What to do	Check the followings. Whether specified IP Address is correct. Whether NTP Server is operating. Whether LAN route is connecting to NTP Server.

Message Content	LP Loader deleted the initial parameter.
Explanation	LPAR manager detected the initial parameter file (InitParam.dat) and deleted it.
What to do	The initial parameter file is deleted due to the following reasons, which are divided by LP System Logs detailed messages. - Restore is performed with Web console, CLI console. - Initialization is performed with Web console, CLI console. - Cloning is performed with BSM. - N+M cold standby is performed. - Discrepancy between blade serial numbers.

Message Content	LP Loader detected load error and recovered.
Explanation	Configuration information failed to be read; however, this error was corrected.
What to do	If this LP System Logs is obtained each time LPAR manager starts, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP started retrying the setting of TxRate configuration.
Explanation	LPAR manager starts to retry the setting of TxRate configuration, due to the setting failure.
What to do	Wait for a while.

Message Content	LP System Shutdown Failed.
Explanation	Failed to shutdown the LPAR manager system.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	LP-LFW detected failure of getting boot device.
Explanation	LPAR manager logical firmware detected a failure to get boot device.
What to do	Contact your reseller or maintenance personnel.

Message Content	LP-LFW detected failure of setting boot order.
Explanation	LPAR manager logical firmware detected a failure to set a boot order.
What to do	Check and fix the boot order setting file. If it does not work, contact your reseller or maintenance personnel.

Message Content	LP-LFW detected internal error.
Explanation	LPAR manager logical firmware detected an internal error but it recovered.
What to do	If this LP System Logs is often collected, contact your reseller or maintenance personnel.

Message Content	LP-LFW detected tftp error.
Explanation	LPAR manager logical firmware detected the network failure at the time of network boot.
What to do	Reset a network load situation and execute network boot again. If the system log is still taken after executing again. Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	Lock timeout was recovered.
Explanation	A lock timeout occurred.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	Logical CPU slowdown due to too many logical CPUs.
Explanation	Detected a performance decrease by an excess of LPAR numbers and logical CPU numbers.
What to do	Reset the LPAR number and Logical CPU number. Although this event may be displayed in the shutdown of OS, or the Deactivate status of LPAR, it is no problem when "Logical CPU performance returns to normal" is outputted within several minutes.

Message Content	LPAR Migration failed.
Explanation	Failed to LPAR migration
What to do	For details about the action to be taken, see the <i>Hitachi Command Suite Compute Systems Manager User Guide</i> , the <i>Hitachi Compute Blade HVM Navigator User's Guide - Migration</i> , or the <i>Hitachi Compute Blade LPAR Migration Guide</i> .

Message Content	NTP server settings contain invalid characters.
Explanation	The incorrect character is contained in the NTP server setup.
What to do	Set the IP address of a NTP server to NTP Server 1 or NTP server 2.

Message Content	RTC time synchronization has failed.
Explanation	Synchronizing RTC with an NTP server failed.

Message Content	RTC time synchronization has failed.
What to do	Check the NTP setting.

Message Content	RTC time wasn't successfully synchronized last time.
Explanation	Synchronizing RTC with an NTP server failed due to some temporary factor.
What to do	When RTC time synchronization cannot succeed more than a day after this log message is collected, save the configuration and then synchronize RTC time. If RTC time synchronization system log is not collected even though you have saved the configuration, consult your reseller to call for maintenance personnel.

Message Content	SVP access initialization failed.
Explanation	Initializing the access to the management module failed.
What to do	Contact your reseller or maintenance personnel.

Message Content	The Essential model is applied to this LP.
Explanation	The LPAR manager started as an Essential model, because the temporary LP license has expired.
What to do	Continue to use the LPAR manager as an Essential model or purchase a LP license.

Message Content	The temporary LP license expiration date is getting closer.
Explanation	The temporary LP license will expire soon. After the temporary license expires, the following operations will be suppressed: • Operation to activate LPARs • OS startup after reactivating LPARs • OS startup after restarting OSs • Operations that include the operation to activate LPARs (such as boot order configuration and boot device acquisition)
What to do	Purchase an LP license, or use the LPAR manager as an Essential model by performing the following steps: 1. Stop the LPAR manager. 2. Back up the LPAR manager configuration. 3. Update the LP license by using the management module firmware A0270. 4. Start the LPAR manager. For details about updating an LPAR manager license, see Upgrading LPAR manager model in the manual <i>Hitachi Compute Blade 500 Series Management Module Setup Guide</i> .

Message Content	The temporary LP license has expired.
Explanation	The temporary LP license has expired. The following operations are suppressed. • Operation to activate LPARs • OS startup after reactivating LPARs • OS startup after restarting OSs • Operations that include the operation to activate LPARs (such as boot order configuration and boot device acquisition)
What to do	Purchase an LP license, or use the LPAR manager as an Essential model by performing the following steps: 1. Stop the LPAR manager. 2. Back up the LPAR manager configuration. 3. Update the LP license by using the management module firmware A0270. 4. Start the LPAR manager. For details about updating an LPAR manager license, see Upgrading LPAR manager model in the manual <i>Hitachi Compute Blade 500 Series Management Module Setup Guide</i>.

Message Content	Thermal error occurred.
Explanation	A temperature rise warning event occurred.
What to do	Remove the dust of the air vent of the system device to improve ventilation. If this LPAR manager event log is collected although ventilation is improved, contact the reseller from which you purchased this equipment or consult maintenance personnel.

Message Content	Unknown event occurred.
Explanation	An unknown event was obtained.
What to do	Contact the reseller from which you purchased this equipment or consult maintenance personnel.

Info Level

Message Content	An information-level event occurred on the LP
Explanation	An information-level event occurred on the LPAR manager.
What to do	No particular action required. For more detail, see the adjacent LPAR manager system log, which is described in the details of this event.

Message Content	Configuration will not be saved during safe mode.
Explanation	Configuration information cannot be saved while LPAR manager is running in safe mode.

Message Content	Configuration will not be saved during safe mode.
What to do	Exit safe mode and, if necessary, save configuration information.

Message Content	Found the machine type mismatch LP initialized the configuration files.
Explanation	The configuration information and server blade configuration do not match.
What to do	Check the configuration information and server blade configuration.

Message Content	Guest dump completed.
Explanation	Guest memory dump was completed.
What to do	None.

Message Content	Guest dump started.
Explanation	Guest memory dump started by the start operation of guest memory dump.
What to do	None.

Message Content	Guest dump was cancelled.
Explanation	Guest memory dump was cancelled by the canceling operation of guest memory dump.
What to do	None.

Message Content	Guest, Double Fault (#DF) occurred.
Explanation	A guest double fault occurred.
What to do	Check the guest OS operation status.

Message Content	Guest, INIT occurred.
Explanation	A guest INIT interrupt occurred.
What to do	Check the guest OS operation status.

Message Content	Guest, NMI occurred.
Explanation	A guest NMI interrupt occurred.
What to do	Check the guest OS operation status.

Message Content	Guest, Triple Fault occurred.
Explanation	A guest triple fault occurred.

Message Content	Guest, Triple Fault occurred.
What to do	Check the guest OS operation status.

Message Content	H/W Corrected MCK cumulative count was logged.
Explanation	The cumulative number of corrected machine check events is registered.
What to do	None.

Message Content	Hardware Component BMC access error was recovered.
Explanation	A fault in accessing the physical BMC was removed.
What to do	None.

Message Content	LP activates LPAR in auto activation process.
Explanation	LPAR was activated with Auto Activate.
What to do	None.

Message Content	LP auto activation process is cancelled.
Explanation	The Auto Activate operation was cancelled.
What to do	None.

Message Content	LP auto activation process is ended.
Explanation	The Auto Activate operation is complete.
What to do	None.

Message Content	LP auto activation process is started.
Explanation	The Auto Activate operation is started.
What to do	None.

Message Content	LP booted with copied configuration files.
Explanation	LPAR manager was started with the configuration information subjected to cloning.
What to do	None.

Message Content	LP booted with initial parameter file.
Explanation	LPAR manager was started with the initial parameter file.
What to do	None.

Message Content	LP changed Management Path.
Explanation	The management NIC was changed.
What to do	None.

Message Content	LP changed NIC to dedicated mode.
Explanation	A NIC exists for which the mode was changed into the dedicated mode because the number of shared NICs exceeded the maximum by changing the scheduling mode of the NIC specified as the management NIC to the shared mode.
What to do	None.

Message Content	LP completed deletion of the initial parameter file.
Explanation	The initial parameter file was completely deleted.
What to do	None.

Message Content	LP detected a network communication recovery on the active port.
Explanation	A communication failure in the active path was corrected on the LPAR manager management NIC.
What to do	None.

Message Content	LP detected a network communication recovery on the standby port.
Explanation	A communication failure in the standby path was corrected on the LPAR manager management NIC.
What to do	None.

Message Content	LP detected Driver request MCK for Shared FC.
Explanation	The failure recovery request from the guest OS has been accepted in the shared FC.
What to do	None.

Message Content	LP detected failed SR-IOV feature was recovered.
Explanation	LPAR manager detected that the isolated PCI device recovered.
What to do	PCI device recovered. Start the guest OS, then the PCI device can be used again.

Message Content	LP detected Link Up recovery at Shared NIC at expansion card.
Explanation	Shared NIC link up recovery was detected.
What to do	None.

Message Content	LP detected Link Up recovery at Shared NIC at Onboard.
Explanation	Shared NIC link up recovery was detected.
What to do	None.

Message Content	LP detected Link Up recovery at Shared NIC.
Explanation	Shared NIC link up recovery was detected.
What to do	None.

Message Content	LP detected MCK recovery for Shared FC at expansion card.
Explanation	A fault recovery occurred in shared FC.
What to do	None.

Message Content	LP detected MCK recovery for Shared FC.
Explanation	A fault recovery occurred in shared FC.
What to do	None.

Message Content	LP detected PCI Configuration unmatched and recovered.
Explanation	The configuration information indicates unmatched hardware configuration. So, the PCI device mode was changed to the shared mode.
What to do	Check the configuration information and hardware configuration.

Message Content	LP detected PCI Configuration unmatched.
Explanation	The configuration information and PCI device configuration do not match.
What to do	Check the configuration information and hardware configuration.

Message Content	LP detected recovery of network communication at SVP access.
Explanation	A communication fault between the LPAR manager and switch and management module was removed.
What to do	None.

Message Content	LP detected Shared FC Link is Available at expansion card.
Explanation	Shared FC Link is available.
What to do	None.

Message Content	LP detected Shared FC Link is Available.
Explanation	Shared FC Link is available.
What to do	None.

Message Content	LP detected the success of retrying the setting of TxRate configuration.
Explanation	LPAR manager succeeded retrying the setting of TxRate configuration.
What to do	None.

Message Content	LP detected CSTEP of Core for Shared FC at expansion card.
Explanation	An error occurred in the shared FC.
What to do	None.

Message Content	LP detected CSTEP of Core for Shared FC.
Explanation	An error occurred in the shared FC.
What to do	None.

Message Content	LP dump generation succeeded.
Explanation	The LPAR manager dump was obtained successfully.
What to do	None.

Message Content	LP dump transfer retries.
Explanation	The LPAR manager dump was re-transferred to the management module.
What to do	None.

Message Content	LP dump transfer succeeded.
Explanation	The LPAR manager dump was transferred to the management module.
What to do	None.

Message Content	LP has successfully imported Time Setting of BMC.
Explanation	The time settings have been successfully imported from BMC.
What to do	None.

Message Content	LP has successfully imported Time Setting of SVP.
Explanation	LPAR manager succeeded the importing of Time setting from SVP.
What to do	None.

Message Content	LP has successfully retrieved Time Setting from SVP.
Explanation	LPAR manager succeeded to getting of Time Setting from SVP.
What to do	None.

Message Content	LP has successfully synchronized RTC with NTP server.
Explanation	Succeeded the time synchronization of RTC by NTP.
What to do	None.

Message Content	LP has successfully synchronized the time with RTC.
Explanation	RTC has been synchronized.
What to do	None.

Message Content	LP informs the maximum number of assignable VFs per physical port.
Explanation	This message indicates the number of available VFs. For details about the number of available VFs, see the detailed information in this message.
What to do	You can use as many VFs as the number of VFs displayed in the detailed information area in this message.

Message Content	LP informs that no VFs per physical port can be assigned to LPARs.
Explanation	No VFs are available. For details, see the detailed information in this message.
What to do	The number of available VFs depends on the hardware configuration.

Message Content	LP Loader deleted the initial parameter.
Explanation	LPAR manager detected the initial parameter file (InitParam.dat) and deleted it.
What to do	None.

Message Content	LP Loader detected the initial parameter in SVP.
Explanation	The initial parameter file (InitParam.dat) was detected with the management module.
What to do	None.

Message Content	LP Loader initialized the configuration files.
Explanation	The configuration information files were initialized.
What to do	None.

Message Content	LP Loader loaded configuration files from SVP.
Explanation	The configuration information files were retrieved from SVP.
What to do	None.

Message Content	LP Loader updated LP Serial Number in OEM FRU.
Explanation	Updated FRU on LPAR manager boot, since N+M was performed.
What to do	None.

Message Content	LP Loader updated VfcSeed.dat in management module.
Explanation	Updated the VfcSeed.dat file, having the Vfc seed information in the management module. This message is displayed when moving the server blade or adding the server blade into the slot of the server-chassis which operated LPAR manager in the past. Synchronized the FRU information and the "Vfc seed information" which is managed in management module.
What to do	None.

Message Content	This LP F/W is not supported for this blade(Compute Blade XXXXXX). Please install another LP F/W supported for this blade. XXXX : Server Blade Model
Explanation	This LPAR manager firmware is not supported for this server blade.
What to do	Please install another LPAR manager firmware supported for this server blade.

Message Content	LP logged the EFI-Driver log for Shared FC at expansion card.
Explanation	The shared FC driver transferred the log to LPAR manager.
What to do	None.

Message Content	LP logged the EFI-Driver log for Shared FC.
Explanation	The shared FC driver transferred the log to LPAR manager.
What to do	None.

Message Content	LP recovered from NTP error status.
Explanation	The NTP time synchronous error status of LPAR manager system time recovered.
What to do	None.

Message Content	LP restarted a LPAR on the destination blade.
Explanation	Performed concurrent maintenance and LP restarted a LPAR on the destination blade.
What to do	None.

Message Content	LP restarted a LPAR on the source blade.
Explanation	Performed concurrent maintenance and LP restarted a LPAR on the source blade.
What to do	None.

Message Content	LP saved configuration.
Explanation	Saved the configuration information
What to do	None.

Message Content	LP Shutdown State Changed to In Progress.
Explanation	The shutdown status has changed to In Progress.
What to do	None.

Message Content	LP Shutdown State Changed to Ready.
Explanation	The shutdown status has changed to Ready.
What to do	None.

Message Content	LP skipped LPAR auto activation process.
Explanation	"Activate" LPAR was skipped with the auto activate operation.
What to do	None.

Message Content	LP started in safe mode.
Explanation	LPAR manager started in safe mode. The following operations are suppressed in safe mode:

Message Content	LP started in safe mode.
	Note that LPAR activation is enabled in safe mode caused by device isolation. • Saving configuration information • Activating the LPAR
What to do	Take one of the following solutions. • Revise the NIC and port settings specified for the management path, and then exit safe mode. • Back up the LPAR manager configuration and exit safe mode and check whether physical processors, memory, PCI devices are isolated.

Message Content	LP switched a port of the NIC for SVP access.
Explanation	Change the port of NIC that is for communication between LPAR manager and management module.
What to do	None.

Message Content	LP switched the active port.
Explanation	The active and standby paths of the LPAR manager management NIC were switched.
What to do	None.

Message Content	LP System Shutdown Started.
Explanation	LP System Shutdown has started.
What to do	None.

Message Content	LP system time has successfully synchronized with NTP server.
Explanation	LP system time has successfully synchronized with NTP server.
What to do	None

Message Content	LP took a checkpoint of the source LPAR.
Explanation	Performed the concurrent maintenance and LP stopped a LPAR on the source blade.
What to do	None.

Message Content	LP updated configuration format.
Explanation	Changed a format of the configuration information.
What to do	"Save Changed Config Format" of the LP Options screen is not set to Enabled when save a configuration information again.

Message Content	LP updated the configuration files with XXXXXXXX.
Explanation	The configuration files were automatically saved. XXXXXXXXXX stands for the following configuration file name: - InitParam.dat - CloneInf.dat
What to do	None.

Message Content	LP updated the configuration files.
Explanation	The configuration information with the previous version was updated to the new version.
What to do	None.

Message Content	LP-LFW detected tftp error and recovered.
Explanation	Although LPAR manager logical firmware detected the network failure at the time of network boot, it was recovered.
What to do	None.

Message Content	I/O interrupt vector mode was changed.
Explanation	I/O interrupt vector mode was changed.
What to do	None.

Message Content	Invalid State was recovered. (ptc.I)
Explanation	LPAR manager corrected the invalid status of the ptc.I instruction.
What to do	None.

Message Content	Logical CPU performance returns to normal.
Explanation	Recovered from performance decrease by an excess of LPAR numbers and logical CPU numbers.
What to do	None.

Message Content	LPAR Migration event occurred.
Explanation	LPAR migration has started or finished.
What to do	None.

Message Content	Physical SEL has been cleared.
Explanation	Physical SEL was cleared.
What to do	None.

Message Content	Safe mode was turned off.
Explanation	Safe mode was turned off. Save configuration information.
What to do	None.

Message Content	Shadow Command was retried.
Explanation	A request to LPAR manager Assist was retransmitted.
What to do	None.

Message Content	Shared FC MCK Log was logged in LPAR at expansion card.
Explanation	Shared FC fault information was stored in the LPAR.
What to do	None.

Message Content	Shared FC MCK Log was logged in LPAR.
Explanation	Shared FC fault information was stored in the LPAR.
What to do	None.

Message Content	The LPAR migration functionality has recovered from an error.
Explanation	The network connection between the LPAR manager and the management module recovered, and the LPAR manager functionality can now be used.
What to do	None.

Message Content	The port numbers for the virtual COM consoles were recovered from port duplication.
Explanation	Port duplication was eliminated, and the virtual COM console function can now be used.
What to do	None.

Message Content	Thermal error was restored.
Explanation	A temperature rise warning was released.
What to do	None.

Audit log messages

The following table shows audit log messages.

Notation used in audit log messages

Table 9-1 Notation used in audit log messages

Item	Description
xxx	- The parameter value is output. - If there is no applicable value, "*" is output.
LPARxxx	- The LPAR number and LPAR name are output, separated by a colon (:). (Example: "LPAR1:NO_NAME") - If there is no applicable LPAR, "LPAR*" is output.
ProcessorGroupxxx	- The processor group number and processor group name are output, separated by a colon (:). (Example: "ProcessorGroup0:NO_NAME") - If an undefined processor group number is specified, an asterisk is output instead of the processor group name. (Example: "ProcessorGroup10:*")
Rolexxx	- The role number and role name are output, separated by a colon (:). (Example: "Role0:Administrators") - If an undefined role number is specified, an asterisk is output instead of the role name. (Example: "Role5:*")

List of audit log messages

Table 9-2 List of audit log messages (Authentication)

ID	Message	Operation for which an audit log is collected
01001000	- When the Virtual COM console is used: "Logged in to the LPAR manager. Username:xxx Session ID:xxx Source IP address:xxx Method:xxx LPARxxx VC:xxx Destination port:xxx" - When the LP Web system or the HvmSh is used: "Logged in to the LPAR manager. Username:xxx Session ID:xxx Source IP address:xxx Method:xxx Destination port:xxx"	When the login to LPAR manager succeeds
01001001	"Failed to login to the LPAR manager. Username:xxx Source IP address:xxx Method:xxx"	When the login to LPAR manager fails
01001002	"Logged out from the LPAR manager.Username:xxx Session ID:xxx Source IP address:xxx Method:xxx"	When the logout from LPAR manager completes

Table 9-3 List of audit log messages (StartStop)

ID	Message	Operation for which an audit log is collected
01000000	"Requested to shut down the LPAR manager. Accept:xxx"	When HvmSh and so on is used to request stop (shutdown) of LPAR manager and the request is accepted
01000002	"Requested to shut down the LPAR manager."	When the LPAR manager screen is used to request stop (shutdown) of LPAR manager and the request succeeds
01000003	"Failed to request to shut down the LPAR manager."	When the LPAR manager screen is used to request stop (shutdown) of LPAR manager and the request fails
01000004	"Requested to perform the force recovery. Accept:xxx"	When HvmSh and so on is used to request recovery (Force Recovery) of the system service and the request is accepted
01000006	"Performed the force recovery."	When the LPAR manager screen is used to request recovery (Force Recovery) of the system service and the request succeeds
01000007	"Failed to perform the force recovery."	When the LPAR manager screen is used to request recovery (Force Recovery) of the system service and the request fails
01000008	"Requested to restart the LPAR manager. Accept:xxx"	When HvmSh and so on is used to request restart of LPAR manager and the request is accepted
0100000A	"Requested to restart the LPAR manager."	When the LPAR manager screen is used to request restart of LPAR manager and the request succeeds
0100000B	"Failed to request to restart the LPAR manager."	When the LPAR manager screen is used to request restart of LPAR manager and the request fails
0100000C	"Requested to activate the LPAR. Accept:xxx LPARxxx"	When HvmSh and so on is used to request activation (turning on) of an LPAR and the request is accepted
0100000E	"Activated the LPAR. LPARxxx"	When the LPAR manager screen is used to request activation (turning on) of an LPAR and the request succeeds
0100000F	"Failed to activate the LPAR. LPARxxx"	When the LPAR manager screen is used to request activation (turning on) of an LPAR and the request fails
01000010	"Requested to activate the LPAR with GetBootDevice option. Accept:xxx LPARxxx"	"When HvmSh and so on is used to request, with the GetBootDevice option, the activation (turning on) of an LPAR and the request is accepted"
01000012	"Requested to activate the LPAR with SetBootOrder option. Accept:xxx LPARxxx"	"When HvmSh and so on is used to request, with the SetBootOrder option, the activation (turning on) of an LPAR and the request is accepted"

ID	Message	Operation for which an audit log is collected
01000014	"Requested to deactivate the LPAR. Accept:XXX LPARXXX"	When HvmSh and so on is used to request deactivation (turning off) of an LPAR and the request is accepted
01000016	"Deactivated the LPAR. LPARXXX"	When the LPAR manager screen is used to request deactivation (turning off) of an LPAR and the request succeeds
01000017	"Failed to deactivate the LPAR. LPARXXX"	When the LPAR manager screen is used to request deactivation (turning off) of an LPAR and the request fails
01000018	"Requested to reactivate the LPAR. Accept:XXX LPARXXX"	When HvmSh and so on is used to request reactivation (restart) of an LPAR and the request is accepted
0100001A	"Reactivated the LPAR. LPARXXX"	When the LPAR manager screen is used to request reactivation (restart) of an LPAR and the request succeeds
0100001B	"Failed to reactivate the LPAR. LPARXXX"	When the LPAR manager screen is used to request reactivation (restart) of an LPAR and the request fails
0100001C	"Canceled the auto activation."	When the LPAR manager screen is used to request cancellation of the automatic activation of an LPAR and the request succeeds
0100001D	"Failed to cancel the auto activation."	When the LPAR manager screen is used to request cancellation of the automatic activation of an LPAR and the request fails
0100001E	"Started retrieval of the guest memory dump. LPARXXX FTP_IP_address:XXX User:XXX Directory:XXX"	When HvmSh and so on is used to request start of guest memory dump collection for an LPAR and the request immediately succeeds
01000020	"Canceled retrieval of the guest memory dump. LPARXXX"	When HvmSh and so on is used to request start of guest memory dump collection for an LPAR and the request immediately succeeds
01000024	"Requested to activate the LPAR. LPARXXX"	When HvmSh and so on is used to request activation (turning on) of an LPAR and the request succeeds
01000025	"Failed to request to activate the LPAR. LPARXXX"	When HvmSh and so on is used to request activation (turning on) of an LPAR and the request fails
01000026	"Requested to shut down the LPAR manager."	When HvmSh and so on is used to request stop (shutdown) of LPAR manager and the request succeeds
01000027	"Failed to request to shut down the LPAR manager."	When HvmSh and so on is used to request stop (shutdown) of LPAR manager and the request fails
01010000	"Completed the request. Accept:XXX"	When a user performs an operation for setting Audit event type to StartStop asynchronously and the operation succeeds

ID	Message	Operation for which an audit log is collected
01010001	"Failed to complete the request. Accept:XXX"	When a user performs an operation for setting Audit event type to StartStop asynchronously and the operation fails

Table 9-4 List of audit log messages (ConfigurationAccess)

ID	Message	Operation for which an audit log is collected
01003000	"Requested to set the scheduling mode of the PCI device. Accept:XXX Slot#:XXX Port#:XXX PCI#:XXX Value:XXX"	When HvmSh and so on is used to request change of the scheduling mode of an PCI device and the request is accepted
01003002	"Set the scheduling mode of the PCI device. Slot#:XXX Port#:XXX PCI#:XXX Value:XXX"	When the LPAR manager screen is used to request change of the scheduling mode of an PCI device and the request succeeds
01003003	"Failed to set the scheduling mode of the PCI device. Slot#:XXX Port#:XXX PCI#:XXX Value:XXX"	When the LPAR manager screen is used to request change of the scheduling mode of an PCI device and the request fails
01003004	"Set the LPAR manager system time. Value:XXX"	When HvmSh and so on is used to request change of the LPAR manager system time and the request immediately succeeds
01003006	"Set the LPAR manager system time. Value:XXX"	When the LPAR manager screen is used to request change of the LPAR manager system time and the request succeeds
01003007	"Failed to set the LPAR manager system time. Value:XXX"	When the LPAR manager screen is used to request change of the LPAR manager system time and the request fails
01003008	"Set the time zone of the LPAR manager. Value:XXX"	When HvmSh and so on is used to request change of the time zone of the LPAR manager and the request immediately succeeds
0100300A	"Set the time zone of the LPAR manager. Value:XXX"	When the LPAR manager screen is used to request change of the time zone of the LPAR manager and the request succeeds
0100300B	"Failed to set the time zone of the LPAR manager. Value:XXX"	When the LPAR manager screen is used to request change of the time zone of the LPAR manager and the request fails
0100300C	"Requested to set the LP ID. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the LP identifier (LP ID) and the request is accepted
0100300E	"Set the LP ID. Value:XXX"	When the LPAR manager screen is used to request change of the LP identifier (LP ID) and the request succeeds
0100300F	"Failed to set the LP ID. Value:XXX"	When the LPAR manager screen is used to request change of the LP identifier (LP ID) and the request fails

ID	Message	Operation for which an audit log is collected
01003010	"Requested to set the IP address of BSM1. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the BSM1 IP address and the request is accepted
01003012	"Set the IP address of BSM1. Value:XXX"	When the LPAR manager screen is used to request change of the BSM1 IP address and the request succeeds
01003013	"Failed to set the IP address of BSM1. Value:XXX"	When the LPAR manager screen is used to request change of the BSM1 IP address and the request fails
01003014	"Requested to set the IP address of BSM2. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the BSM2 IP address and the request is accepted
01003016	"Set the IP address of BSM2. Value:XXX"	When the LPAR manager screen is used to request change of the BSM2 IP address and the request succeeds
01003017	"Failed to set the IP address of BSM2. Value:XXX"	When the LPAR manager screen is used to request change of the BSM2 IP address and the request fails
01003018	"Requested to set the IP address of BSM3. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the BSM3 IP address and the request is accepted
0100301A	"Set the IP address of BSM3. Value:XXX"	When the LPAR manager screen is used to request change of the BSM3 IP address and the request succeeds
0100301B	"Failed to set the IP address of BSM3. Value:XXX"	When the LPAR manager screen is used to request change of the BSM3 IP address and the request fails
0100301C	"Requested to set the IP address of BSM4. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the BSM4 IP address and the request is accepted
0100301E	"Set the IP address of BSM4. Value:XXX"	When the LPAR manager screen is used to request change of the BSM4 IP address and the request succeeds
0100301F	"Failed to set the IP address of BSM4. Value:XXX"	When the LPAR manager screen is used to request change of the BSM4 IP address and the request fails
01003020	"Requested to set the BSM1 alert port. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the BSM1 alert port and the request is accepted
01003022	"Set the BSM1 alert port. Value:XXX"	When the LPAR manager screen is used to request change of the BSM1 alert port and the request succeeds
01003023	"Failed to set the BSM1 alert port. Value:XXX"	When the LPAR manager screen is used to request change of the BSM1 alert port and the request fails

ID	Message	Operation for which an audit log is collected
01003024	"Requested to set the BSM2 alert port. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the BSM2 alert port and the request is accepted
01003026	"Set the BSM2 alert port. Value:XXX"	When the LPAR manager screen is used to request change of the BSM2 alert port and the request succeeds
01003027	"Failed to set the BSM2 alert port. Value:XXX"	When the LPAR manager screen is used to request change of the BSM2 alert port and the request fails
01003028	"Requested to set the BSM3 alert port. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the BSM3 alert port and the request is accepted
0100302A	"Set the BSM3 alert port. Value:XXX"	When the LPAR manager screen is used to request change of the BSM3 alert port and the request succeeds
0100302B	"Failed to set the BSM3 alert port. Value:XXX"	When the LPAR manager screen is used to request change of the BSM3 alert port and the request fails
0100302C	"Requested to set the BSM4 alert port. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the BSM4 alert port and the request is accepted
0100302E	"Set the BSM4 alert port. Value:XXX"	When the LPAR manager screen is used to request change of the BSM4 alert port and the request succeeds
0100302F	"Failed to set the BSM4 alert port. Value:XXX"	When the LPAR manager screen is used to request change of the BSM4 alert port and the request fails
01003030	"Requested to set the IP address (IPv4) of CLI1. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the LP CLI1 IPv4 address and the request is accepted
01003032	"Set the IP address (IPv4) of CLI1. Value:XXX"	When the LPAR manager screen is used to request change of the LP CLI1 IPv4 address and the request succeeds
01003033	"Failed to set the IP address (IPv4) of CLI1. Value:XXX"	When the LPAR manager screen is used to request change of the LP CLI1 IPv4 address and the request fails
01003034	"Requested to set the IP address (IPv4) of CLI2. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the LP CLI2 IPv4 address and the request is accepted
01003036	"Set the IP address (IPv4) of CLI2. Value:XXX"	When the LPAR manager screen is used to request change of the LP CLI2 IPv4 address and the request succeeds
01003037	"Failed to set the IP address (IPv4) of CLI2. Value:XXX"	When the LPAR manager screen is used to request change of the LP CLI2 IPv4 address and the request fails

ID	Message	Operation for which an audit log is collected
01003038	"Requested to set the IP address (IPv4) of CLI3. Accept:xxx Value:xxx"	When HvmSh and so on is used to request change of the LP CLI3 IPv4 address and the request is accepted
0100303A	"Set the IP address (IPv4) of CLI3. Value:xxx"	When the LPAR manager screen is used to request change of the LP CLI3 IPv4 address and the request succeeds
0100303B	"Failed to set the IP address (IPv4) of CLI3. Value:xxx"	When the LPAR manager screen is used to request change of the LP CLI3 IPv4 address and the request fails
0100303C	"Requested to set the IP address (IPv4) of CLI4. Accept:xxx Value:xxx"	When HvmSh and so on is used to request change of the LP CLI4 IPv4 address and the request is accepted
0100303E	"Set the IP address (IPv4) of CLI4. Value:xxx"	When the LPAR manager screen is used to request change of the LP CLI4 IPv4 address and the request succeeds
0100303F	"Failed to set the IP address (IPv4) of CLI4. Value:xxx"	When the LPAR manager screen is used to request change of the LP CLI4 IPv4 address and the request fails
01003040	"Requested to set the IP address (IPv4) of CLI5. Accept:xxx Value:xxx"	When HvmSh and so on is used to request change of the LP CLI5 IPv4 address and the request is accepted
01003042	"Set the IP address (IPv4) of CLI5. Value:xxx"	When the LPAR manager screen is used to request change of the LP CLI5 IPv4 address and the request succeeds
01003043	"Failed to set the IP address (IPv4) of CLI5. Value:xxx"	When the LPAR manager screen is used to request change of the LP CLI5 IPv4 address and the request fails
01003044	"Requested to set the IP address (IPv4) of CLI6. Accept:xxx Value:xxx"	When HvmSh and so on is used to request change of the LP CLI6 IPv4 address and the request is accepted
01003046	"Set the IP address (IPv4) of CLI6. Value:xxx"	When the LPAR manager screen is used to request change of the LP CLI6 IPv4 address and the request succeeds
01003047	"Failed to set the IP address (IPv4) of CLI6. Value:xxx"	When the LPAR manager screen is used to request change of the LP CLI6 IPv4 address and the request fails
01003048	"Requested to set the IP address (IPv4) of CLI7. Accept:xxx Value:xxx"	When HvmSh and so on is used to request change of the LP CLI7 IPv4 address and the request is accepted
0100304A	"Set the IP address (IPv4) of CLI7. Value:xxx"	When the LPAR manager screen is used to request change of the LP CLI7 IPv4 address and the request succeeds
0100304B	"Failed to set the IP address (IPv4) of CLI7. Value:xxx"	When the LPAR manager screen is used to request change of the LP CLI7 IPv4 address and the request fails

ID	Message	Operation for which an audit log is collected
0100304C	"Requested to set the IP address (IPv4) of CLI8. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the LP CLI8 IPv4 address and the request is accepted
0100304E	"Set the IP address (IPv4) of CLI8. Value:XXX"	When the LPAR manager screen is used to request change of the LP CLI8 IPv4 address and the request succeeds
0100304F	"Failed to set the IP address (IPv4) of CLI8. Value:XXX"	When the LPAR manager screen is used to request change of the LP CLI8 IPv4 address and the request fails
01003050	"Requested to set the VNIC System No. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the VNIC system No. and the request is accepted
01003052	"Set the VNIC System No. Value:XXX"	When the LPAR manager screen is used to request change of the VNIC system No. and the request succeeds
01003053	"Failed to set the VNIC System No. Value:XXX"	When the LPAR manager screen is used to request change of the VNIC system No. and the request fails
01003054	"Requested to set the alert language. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the Alert Language and the request is accepted
01003056	"Set the alert language. Value:XXX"	When the LPAR manager screen is used to request change of the Alert Language and the request succeeds
01003057	"Failed to set the alert language. Value:XXX"	When the LPAR manager screen is used to request change of the Alert Language and the request fails
01003058	"Requested to set the virtual COM console port. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the TCP port number of a virtual COM console and the request is accepted
0100305A	"Set the virtual COM console port. Value:XXX"	When the LPAR manager screen is used to request change of the TCP port number of a virtual COM console and the request succeeds
0100305B	"Failed to set the virtual COM console port. Value:XXX"	When the LPAR manager screen is used to request change of the TCP port number of a virtual COM console and the request fails
0100305C	"Requested to set the maximum CPU resource usage of SYS2. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the maximum number of processors for SYS2 and the request is accepted.
0100305E	"Removed the LPAR. LPARXXX"	When HvmSh and so on is used to request deletion of an LPAR and the request immediately succeeds
01003060	"Removed the LPAR. LPARXXX"	When the LPAR manager screen is used to request deletion of an LPAR and the request succeeds

ID	Message	Operation for which an audit log is collected
01003061	"Failed to remove the LPAR. LPARXXX"	When the LPAR manager screen is used to request deletion of an LPAR and the request fails
01003062	"Added the LPAR. LPARXXX"	When HvmSh and so on is used to request addition of an LPAR and the request immediately succeeds
01003064	"Added the LPAR. LPARXXX"	When the LPAR manager screen is used to request addition of an LPAR and the request succeeds
01003065	"Failed to add the LPAR. LPARXXX"	When the LPAR manager screen is used to request addition of an LPAR and the request fails
01003066	"Set the name for the LPAR. LPAR#:XXX Value:XXX"	When HvmSh and so on is used to request change of the LPAR name and the request immediately succeeds
01003068	"Set the name for the LPAR. LPAR#:XXX Value:XXX"	When the LPAR manager screen is used to request change of the LPAR name and the request succeeds
01003069	"Failed to set the name for the LPAR. LPAR#:XXX Value:XXX"	When the LPAR manager screen is used to request change of the LPAR name and the request fails
0100306A	"Set the scheduling mode for the LPAR. LPARXXX Value:XXX"	When HvmSh and so on is used to request change of the scheduling mode of logical processors for an LPAR and the request immediately succeeds
0100306C	"Set the service ratio for the LPAR. LPARXXX Value:XXX"	When HvmSh and so on is used to request change of the service ratio of an LPAR and the request immediately succeeds
0100306E	"Set the service ratio for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request change of the service ratio of an LPAR and the request succeeds
0100306F	"Failed to set the service ratio for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request change of the service ratio of an LPAR and the request fails
01003070	"Set the memory size for the LPAR. LPARXXX Value:XXX"	When HvmSh and so on is used to request change of the memory size for an LPAR with its guest NUMA disabled and the request immediately succeeds
01003072	"Set the memory size for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request change of the memory size for an LPAR with its guest NUMA disabled and the request succeeds
01003073	"Failed to set the memory size for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request change of the memory size for an LPAR with its guest NUMA disabled and the request fails

ID	Message	Operation for which an audit log is collected
01003074	"Set the idle detection(ID) for the LPAR. LPARXXX Value:XXX"	When HvmSh and so on is used to request change of the Idle Detection functionality for an LPAR and the request immediately succeeds
01003076	"Set the idle detection(ID) for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request change of the Idle Detection functionality for an LPAR and the request succeeds
01003077	"Failed to set the idle detection(ID) for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request change of the Idle Detection functionality for an LPAR and the request fails
01003078	"Set the auto activation(AA) order for the LPAR. LPARXXX Value:XXX"	When HvmSh and so on is used to request change of the automatic activation functionality for an LPAR and the request immediately succeeds
0100307A	"Set the auto activation(AA) order for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request change of the automatic activation functionality for an LPAR and the request succeeds
0100307B	"Failed to set the auto activation(AA) order for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request change of the automatic activation functionality for an LPAR and the request fails
0100307C	"Set the auto clear(AC) for the LPAR. LPARXXX Value:XXX"	When HvmSh and so on is used to request change of the automatic clear of the logical SEL for an LPAR and the request immediately succeeds
0100307E	"Set the auto clear(AC) for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request change of the automatic clear of the logical SEL for an LPAR and the request succeeds
0100307F	"Failed to set the auto clear(AC) for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request change of the automatic clear of the logical SEL for an LPAR and the request fails
01003080	"Set the processor capping(PC) for the LPAR. LPARXXX Value:XXX"	When HvmSh and so on is used to request change of the processor capping functionality for an LPAR and the request immediately succeeds
01003082	"Set the processor capping(PC) for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request change of the processor capping functionality for an LPAR and the request succeeds
01003083	"Failed to set the processor capping(PC) for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request change of the processor capping functionality for an LPAR and the request fails
01003084	"Set the pre-boot(PB) firmware for the LPAR. LPARXXX Value:XXX"	When HvmSh and so on is used to request change of the Pre-boot firmware for an LPAR and the request immediately succeeds

ID	Message	Operation for which an audit log is collected
01003086	"Set the pre-boot(PB) firmware for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request change of the Pre-boot firmware for an LPAR and the request succeeds
01003087	"Failed to set the pre-boot(PB) firmware for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request change of the Pre-boot firmware for an LPAR and the request fails
01003088	"Assigned the physical processor to the logical processor for the LPAR. LPARXXX LCPU#:XXX Value:XXX"	When HvmSh and so on is used to request change of logical processor assignment for an LPAR and the request immediately succeeds
0100308A	"Assigned the physical processor to the logical processor for the LPAR. LPARXXX LCPU#:XXX Value:XXX"	When the LPAR manager screen is used to request change of logical processor assignment for an LPAR and the request succeeds
0100308B	"Failed to assign the physical processor to the logical processor for the LPAR. LPARXXX LCPU#:XXX Value:XXX"	When the LPAR manager screen is used to request change of logical processor assignment for an LPAR and the request fails
0100308C	"Set the number of logical processors for the LPAR. LPARXXX Value:XXX"	When HvmSh and so on is used to request change of the number of logical processors for an LPAR and the request immediately succeeds
0100308E	"Set the number of logical processors for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request change of the number of logical processors for an LPAR and the request succeeds
0100308F	"Failed to set the number of logical processors for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request change of the number of logical processors for an LPAR and the request fails
01003090	"Assigned the logical PCI device to the LPAR. LPARXXX Slot#:XXX Port#:XXX PCI#:XXX Value:XXX"	When HvmSh and so on is used to request change of PCI device assignment for an LPAR and the request immediately succeeds
01003092	"Assigned the logical PCI device to the LPAR. LPARXXX Slot#:XXX Port#:XXX PCI#:XXX Value:XXX"	When the LPAR manager screen is used to request change of PCI device assignment for an LPAR and the request succeeds
01003093	"Failed to assign the logical PCI device to the LPAR. LPARXXX Slot#:XXX Port#:XXX PCI#:XXX Value:XXX"	When the LPAR manager screen is used to request change of PCI device assignment for an LPAR and the request fails
01003094	"Enabled or disabled the USB Auto Attach settings to the LPAR. LPARXXX Slot#:XXX PCI#:XXX Value:XXX"	When HvmSh and so on is used to request change of USB Auto Attach functionality for an LPAR and the request immediately succeeds
01003096	"Enabled or disabled the USB Auto Attach settings to the LPAR. LPARXXX Slot#:XXX PCI#:XXX Value:XXX"	When the LPAR manager screen is used to request change of USB Auto Attach functionality for an LPAR and the request succeeds

ID	Message	Operation for which an audit log is collected
01003097	"Failed to enable or disable the USB Auto Attach settings to the LPAR. LPARXXX Slot#:XXX PCI#:XXX Value:XXX"	When the LPAR manager screen is used to request change of USB Auto Attach functionality for an LPAR and the request fails
01003098	"Assigned the network segment of the VNIC to the LPAR. LPARXXX VNIC#:XXX Value:XXX"	When HvmSh and so on is used to request change of a network segment to be assigned to a logical NIC port and the request immediately succeeds
0100309A	"Assigned the network segment of the VNIC to the LPAR. LPARXXX VNIC#:XXX Value:XXX"	When the LPAR manager screen is used to request change of a network segment to be assigned to a logical NIC port and the request succeeds
0100309B	"Failed to assign the network segment of the VNIC to the LPAR. LPARXXX VNIC#:XXX Value:XXX"	When the LPAR manager screen is used to request change of a network segment to be assigned to a logical NIC port and the request fails
0100309C	"Set the MAC address of the VNIC for the LPAR. LPARXXX VNIC#:XXX Value:XXX"	When HvmSh and so on is used to request change of a MAC address to be assigned to a logical NIC port and the request immediately succeeds
0100309E	"Set the MAC address of the VNIC for the LPAR. LPARXXX VNIC#:XXX Value:XXX"	When the LPAR manager screen is used to request change of a MAC address to be assigned to a logical NIC port and the request succeeds
0100309F	"Failed to set the MAC address of the VNIC for the LPAR. LPARXXX VNIC#:XXX Value:XXX"	When the LPAR manager screen is used to request change of a MAC address to be assigned to a logical NIC port and the request fails
010030A0	"Set the VLAN configuration of the VNIC for the LPAR. LPARXXX VNIC#:XXX Value:Undef"	When HvmSh and so on is used to request change of VLAN mode of a logical NIC port to Undef and the request immediately succeeds
010030A2	"Set the VLAN configuration of the VNIC for the LPAR. LPARXXX VNIC#:XXX Value:Undef"	When the LPAR manager screen is used to request change of VLAN mode of a logical NIC port to Undef and the request succeeds
010030A3	"Failed to set the VLAN configuration of the VNIC for the LPAR. LPARXXX VNIC#:XXX Value:Undef"	When the LPAR manager screen is used to request change of VLAN mode of a logical NIC port to Undef and the request fails
010030A4	"Set the VLAN configuration of the VNIC for the LPAR. LPARXXX VNIC#:XXX Value:Untagged(XXX) "	When HvmSh and so on is used to request change of VLAN mode of a logical NIC port to Untag and the request immediately succeeds
010030A6	"Set the VLAN configuration of the VNIC for the LPAR. LPARXXX VNIC#:XXX Value:Untagged(XXX) "	When the LPAR manager screen is used to request change of VLAN mode of a logical NIC port to Untag and the request succeeds
010030A7	"Failed to set the VLAN configuration of the VNIC for the LPAR. LPARXXX VNIC#:XXX Value:Untagged(XXX) "	When the LPAR manager screen is used to request change of VLAN mode of a logical NIC port to Untag and the request fails

ID	Message	Operation for which an audit log is collected
010030A8	"Set the VLAN configuration of the VNIC for the LPAR. LPARXXX VNIC#:XXX Value:Tagged(XXX) "	When HvmSh and so on is used to request change of VLAN mode of a logical NIC port to Tag and the request immediately succeeds
010030AA	"Set the VLAN configuration of the VNIC for the LPAR. LPARXXX VNIC#:XXX Value:Tagged(XXX) "	When the LPAR manager screen is used to request change of VLAN mode of a logical NIC port to Tag and the request succeeds
010030AB	"Failed to set the VLAN configuration of the VNIC for the LPAR. LPARXXX VNIC#:XXX Value:Tagged(XXX) "	When the LPAR manager screen is used to request change of VLAN mode of a logical NIC port to Tag and the request fails
010030AC	"Assigned the shared FC port to the LPAR. LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When HvmSh and so on is used to request change of a shared FC assignment for an LPAR and the request immediately succeeds
010030AE	"Assigned the shared FC port to the LPAR. LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When the LPAR manager screen is used to request change of a shared FC assignment for an LPAR and the request succeeds
010030AF	"Failed to assign the shared FC port to the LPAR. LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When the LPAR manager screen is used to request change of a shared FC assignment for an LPAR and the request fails
010030B0	"Set the date and time of logical SEL time for the LPAR. LPARXXX Value:XXX"	When HvmSh and so on is used to request change of the SEL time for an LPAR and the request immediately succeeds
010030B2	"Set the date and time of logical SEL time for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request change of the SEL time for an LPAR and the request succeeds
010030B3	"Failed to set the date and time of logical SEL time for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request change of the SEL time for an LPAR and the request fails
010030B4	"Set the time mode of logical SEL time for the LPAR. LPARXXX Value:XXX"	When HvmSh and so on is used to request change of the SEL time mode (TimeMode) for an LPAR and the request immediately succeeds
010030B6	"Set the time zone of logical SEL time for the LPAR. LPARXXX Value:XXX"	When HvmSh and so on is used to request change of the SEL time zone (TimeZone) for an LPAR and the request immediately succeeds
010030B8	"Set the inter-LPAR packet filtering mode for the network segment. Segment:XXX Value:XXX"	When HvmSh and so on is used to request setting change of inter-LPAR communication packet filtering and the request immediately succeeds
010030BA	"Set the inter-LPAR packet filtering mode for the network segment. Segment:XXX Value:XXX"	When the LPAR manager screen is used to request setting change of inter-LPAR communication packet filtering and the request succeeds
010030BB	"Failed to set the inter-LPAR packet filtering mode for the network segment. Segment:XXX Value:XXX"	When the LPAR manager screen is used to request setting change of inter-LPAR

ID	Message	Operation for which an audit log is collected
		communication packet filtering and the request fails
010030BC	"Set the virtual COM console functionality (and specified the VC number). LPARXXX Value:XXX"	When HvmSh and so on is used to request setting change of the virtual COM console functionality for an LPAR and the request immediately succeeds
010030BE	"Set the virtual COM console functionality (and specified the VC number). LPARXXX Value:XXX"	When the LPAR manager screen is used to request setting change of the virtual COM console functionality for an LPAR and the request succeeds
010030BF	"Failed to set the virtual COM console functionality (and specified the VC number). LPARXXX Value:XXX"	When the LPAR manager screen is used to request setting change of the virtual COM console functionality for an LPAR and the request fails
010030C0	"Set the time mode of logical SEL time for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request setting change of the SEL time mode for an LPAR and the request succeeds
010030C1	"Failed to set the time mode of logical SEL time for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request setting change of the SEL time mode for an LPAR and the request fails
010030C2	"Set the time zone of logical SEL time for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request setting change of the SEL time mode for an LPAR and the request succeeds
010030C3	"Failed to set the time zone of logical SEL time for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request setting change of the SEL time mode for an LPAR and the request fails
010030C4	"Connected to the guest screen for the LPAR. LPARXXX"	When the LPAR manager screen is used to request switch from the LPAR manager screen to the guest screen and the request succeeds
010030C5	"Failed to connect to the guest screen for the LPAR. LPARXXX"	When the LPAR manager screen is used to request switch from the LPAR manager screen to the guest screen and the request fails
010030C6	"Disconnected from the guest screen for the LPAR. LPARXXX"	When the LPAR manager screen is used to request switch from the LPAR manager screen to the guest screen and the request succeeds
010030C7	"Failed to disconnect from the guest screen for the LPAR. LPARXXX"	When the LPAR manager screen is used to request switch from the LPAR manager screen to the guest screen and the request fails
010030C8	"Requested to assign the processor group to the LPAR. Accept:XXX LPARXXX ProcessorGroupXXX"	When HvmSh and so on is used to request change of processor group for an LPAR and the request is accepted

ID	Message	Operation for which an audit log is collected
010030CA	"Assigned the processor group to the LPAR. LPARXXX ProcessorGroupXXX"	When the LPAR manager screen is used to request change of processor group for an LPAR and the request succeeds
010030CB	"Failed to assign the processor group to the LPAR. LPARXXX ProcessorGroupXXX"	When the LPAR manager screen is used to request change of processor group for an LPAR and the request fails
010030CC	"Set the promiscuous mode of the VNIC for the LPAR. LPARXXX VNIC#:XXX Value:XXX"	When HvmSh and so on is used to request change of the promiscuous mode for the logical NIC port and the request immediately succeeds
010030CE	"Set the promiscuous mode of the VNIC for the LPAR. LPARXXX VNIC#:XXX Value:XXX"	When the LPAR manager screen is used to request change of the promiscuous mode for the logical NIC port and the request succeeds
010030CF	"Failed to set the promiscuous mode of the VNIC for the LPAR. LPARXXX VNIC#:XXX Value:XXX"	When the LPAR manager screen is used to request change of the promiscuous mode for the logical NIC port and the request fails
010030D0	"Set the option of pre-state auto activation. Value:XXX"	When HvmSh and so on is used to request change of the Pre-State Auto Activation option and the request immediately succeeds
010030D2	"Set the option of pre-state auto activation. Value:XXX"	When the LPAR manager screen is used to request change of the Pre-State Auto Activation option and the request succeeds
010030D3	"Failed to set the option of pre-state auto activation. Value:XXX"	When the LPAR manager screen is used to request change of the Pre-State Auto Activation option and the request fails
010030D4	"Set the option of LPAR manager auto shutdown. Value:XXX"	When HvmSh and so on is used to request change of an LPAR manager Auto Shutdown option and the request immediately succeeds
010030D6	"Set the option of LPAR manager auto shutdown. Value:XXX"	When the LPAR manager screen is used to request change of an LPAR manager Auto Shutdown option and the request succeeds
010030D7	"Failed to set the option of LPAR manager auto shutdown. Value:XXX"	When the LPAR manager screen is used to request change of an LPAR manager Auto Shutdown option and the request fails
010030D8	"Reset the shutdown state of the LPAR manager."	When HvmSh and so on is used to request change of Shutdown State and the request immediately succeeds
010030DA	"Reset the shutdown state of the LPAR manager."	When the LPAR manager screen is used to request change of Shutdown State and the request succeeds
010030DB	"Failed to reset the shutdown state of the LPAR manager."	When the LPAR manager screen is used to request change of Shutdown State and the request fails
010030DC	"Set the option of LPAR manager error watching. Value:XXX"	When HvmSh and so on is used to request change of LPAR manager ErrorWatching option and the request immediately succeeds

ID	Message	Operation for which an audit log is collected
010030DE	"Set the option of LPAR manager error watching. Value:XXX"	When the LPAR manager screen is used to request change of LPAR manager ErrorWatching option and the request succeeds
010030DF	"Failed to set the option of LPAR manager error watching. Value:XXX"	When the LPAR manager screen is used to request change of LPAR manager ErrorWatching option and the request fails
010030E0	"Set the option to confirm activation. Value:XXX"	When HvmSh and so on is used to request change of the confirmation option for Activation and the request immediately succeeds
010030E2	"Set the option to confirm activation. Value:XXX"	When the LPAR manager screen is used to request change of the confirmation option for Activation and the request succeeds
010030E3	"Failed to set the option to confirm activation. Value:XXX"	When the LPAR manager screen is used to request change of the confirmation option for Activation and the request fails
010030E4	"Set the option to confirm deactivation and reactivation. Value:XXX"	When HvmSh and so on is used to request change of the confirmation option for Deactivation or Reactivation. and the request immediately succeeds
010030E6	"Set the option to confirm deactivation and reactivation. Value:XXX"	When the LPAR manager screen is used to request change of the confirmation option for Deactivation or Reactivation. and the request succeeds
010030E7	"Failed to set the option to confirm deactivation and reactivation. Value:XXX"	When the LPAR manager screen is used to request change of the confirmation option for Deactivation or Reactivation. and the request fails
010030E8	"Set the Screen Switching Character. Value:XXX"	When HvmSh and so on is used to request change of the Screen Switching Character option and the request immediately succeeds
010030EA	"Set the Screen Switching Character. Value:XXX"	When the LPAR manager screen is used to request change of the Screen Switching Character option and the request succeeds
010030EB	"Failed to set the Screen Switching Character. Value:XXX"	When the LPAR manager screen is used to request change of the Screen Switching Character option and the request fails
010030EC	"Enabled or disabled the power saving functionality for physical processors. Value:XXX"	When HvmSh and so on is used to request change of the PhyCPU C-State (>= C3) option. and the request immediately succeeds
010030EE	"Enabled or disabled the power saving functionality for physical processors. Value:XXX"	When the LPAR manager screen is used to request change of the PhyCPU C-State (>= C3) option. and the request succeeds

ID	Message	Operation for which an audit log is collected
010030EF	"Failed to enable or disable the power saving functionality for physical processors. Value:xxx"	When the LPAR manager screen is used to request change of the PhyCPU C-State ($\geq$ C3) option. and the request fails
010030F0	"Enabled or disabled the option of the USB Auto Allocation to LPAR. Value:xxx"	When HvmSh and so on is used to request change of the USB Auto Allocation to LPAR option and the request immediately succeeds
010030F2	"Enabled or disabled the option of the USB Auto Allocation to LPAR. Value:xxx"	When the LPAR manager screen is used to request change of the USB Auto Allocation to LPAR option and the request succeeds
010030F3	"Failed to enable or disable the option of the USB Auto Allocation to LPAR. Value:xxx"	When the LPAR manager screen is used to request change of the USB Auto Allocation to LPAR option and the request fails
010030F4	"Enabled or disabled the option of the Save Changed Config Format. Value:xxx"	When HvmSh and so on is used to request change of the Save Changed Config Format option and the request immediately succeeds
010030F6	"Enabled or disabled the option of the Save Changed Config Format. Value:xxx"	When the LPAR manager screen is used to request change of the Save Changed Config Format option and the request succeeds
010030F7	"Failed to enable or disable the option of the Save Changed Config Format. Value:xxx"	When the LPAR manager screen is used to request change of the Save Changed Config Format option and the request fails
010030F8	"Enabled or disabled the option of the Save Time Config. Value:xxx"	When HvmSh and so on is used to request change of the Save Time Config option and the request immediately succeeds
010030FA	"Enabled or disabled the option of the Save Time Config. Value:xxx"	When the LPAR manager screen is used to request change of the Save Time Config option and the request succeeds
010030FB	"Failed to enable or disable the option of the Save Time Config. Value:xxx"	When the LPAR manager screen is used to request change of the Save Time Config option and the request fails
010030FC	"Reset the safe mode of the LPAR manager."	When HvmSh and so on is used to request release from safe mode and the request immediately succeeds
010030FE	"Reset the safe mode of the LPAR manager."	When the LPAR manager screen is used to request release from safe mode and the request succeeds
010030FF	"Failed to reset the safe mode of the LPAR manager."	When the LPAR manager screen is used to request release from safe mode and the request fails
01003100	"Requested to save the configuration. Accept:xxx"	When HvmSh and so on is used to request saving of the LPAR manager configuration and the request is accepted
01003102	"Saved the configuration."	When the LPAR manager screen is used to request saving of the LPAR manager configuration and the request succeeds

ID	Message	Operation for which an audit log is collected
01003103	"Failed to save the configuration."	When the LPAR manager screen is used to request saving of the LPAR manager configuration and the request fails
01003104	"Requested to save the configuration for LPAR manager encryption communication. Accept:XXX"	When HvmSh and so on is used to request saving of the LPAR manager configuration of encrypted communication. and the request is accepted
01003106	"Set the IO connection mode of the FC HBA. Slot#:XXX Port#:XXX VFCID:XXX Value:XXX"	When HvmSh and so on is used to request change of the IO connection mode for a shared FC port and the request immediately succeeds
01003108	"Executed an unsupported command (set VfcWWN). RelSlot:XXX Port#:XXX VFCID:XXX Value:XXX"	When HvmSh and so on is used to request change of WWN for the shared FC port and the request immediately succeeds
0100310C	"Executed an unsupported command (set LPARRTcdiff). LPARXXX Value:XXX"	When HvmSh and so on is used to request change of time difference between the LPAR RTC time and the LPAR manager system time (for LPAR relocation) and the request immediately succeeds
0100310E	"Executed an unsupported command (set ActInhibit). LPARXXX Value:XXX"	When HvmSh and so on is used to request change of LPAR activation inhibit and the request immediately succeeds
01003110	"Executed an unsupported command (set AutoVnicMac). LPARXXX VnicSystemNo:XXX LPAR#:XXX"	When HvmSh and so on is used to request information that is used in automatic generation of a MAC address for a logical NIC port (for LPAR relocation) and the request immediately succeeds
01003112	"Executed an unsupported command (set VfcIdChangeInhibit). LPARXXX Value:XXX"	When HvmSh and so on is used to request setting of VFCID change inhibit (for LPAR relocation) and the request immediately succeeds
01003114	"Requested to add the processor group. Accept:XXX ProcessorGroup#:XXX"	When HvmSh and so on is used to request addition of a processor group and the request is accepted
01003116	"Added the processor group. ProcessorGroup#:XXX"	When the LPAR manager screen is used to request addition of a processor group and the request succeeds
01003117	"Failed to add the processor group. ProcessorGroup#:XXX"	When the LPAR manager screen is used to request addition of a processor group and the request fails
01003118	"Requested to remove the processor group. Accept:XXX ProcessorGroupXXX"	When HvmSh and so on is used to request deletion of a processor group and the request is accepted
0100311A	"Removed the processor group. ProcessorGroupXXX"	When the LPAR manager screen is used to request deletion of a processor group and the request succeeds

ID	Message	Operation for which an audit log is collected
0100311B	"Failed to remove the processor group. ProcessorGroupXXX"	When the LPAR manager screen is used to request deletion of a processor group and the request fails
0100311C	"Set the name of the processor group. ProcessorGroup#:XXX Value:XXX"	When HvmSh and so on is used to request change of the processor group name and the request immediately succeeds
0100311E	"Set the name of the processor group. ProcessorGroup#:XXX Value:XXX"	When the LPAR manager screen is used to request change of the processor group name and the request succeeds
0100311F	"Failed to set the name of the processor group. ProcessorGroup#:XXX Value:XXX"	When the LPAR manager screen is used to request change of the processor group name and the request fails
01003120	"Requested to assign the processor group to the physical processor. Accept:XXX PhysicalProcessor#:XXX ProcessorGroupXXX"	When HvmSh and so on is used to request change of the processor group to which the physical processor belongs and the request is accepted
01003122	"Assigned the processor group to the physical processor. PhysicalProcessor#:XXX ProcessorGroupXXX"	When the LPAR manager screen is used to request change of the processor group to which the physical processor belongs and the request succeeds
01003123	"Failed to assign the processor group to the physical processor. PhysicalProcessor#:XXX ProcessorGroupXXX"	When the LPAR manager screen is used to request change of the processor group to which the physical processor belongs and the request fails
01003124	"Requested to set the scheduling mode for the LPAR. Accept:XXX LPARXXX Value:XXX"	When HvmSh and so on is used to request the scheduling mode of logical processors for an LPAR and the request is accepted
01003126	"Set the scheduling mode for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request the scheduling mode of logical processors for an LPAR and the request succeeds
01003127	"Failed to set the scheduling mode for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request the scheduling mode of logical processors for an LPAR and the request fails
01003128	"Requested to set the physical processor core state. Accept:XXX PhysicalProcessor#:XXX Value:XXX"	When HvmSh and so on is used to request the statuses of processor cores (physical processors) and the request is accepted
0100312A	"Set the physical processor core state. PhysicalProcessor#:XXX Value:XXX"	When the LPAR manager screen is used to request the statuses of processor cores (physical processors) and the request succeeds
0100312B	"Failed to set the physical processor core state. PhysicalProcessor#:XXX Value:XXX"	When the LPAR manager screen is used to request the statuses of processor cores (physical processors) and the request fails
0100312C	"Requested to adjust the RTC time and the SEL time for the LPAR to the LPAR	When HvmSh and so on is used to request the process for synchronizing the LPAR RTC

ID	Message	Operation for which an audit log is collected
	manager system time or the UTC time. Accept:XXX LPARXXX TimeSource:XXX"	time and the LPAR SEL time with the LPAR manager system time or the UTC time. and the request is accepted
0100312E	"Adjusted the RTC time and the SEL time for the LPAR to the LPAR manager system time or the UTC time. LPARXXX TimeSource:XXX"	When the LPAR manager screen is used to request the process for synchronizing the LPAR RTC time and the LPAR SEL time with the LPAR manager system time or the UTC time. and the request succeeds
0100312F	"Failed to adjust the RTC time and the SEL time for the LPAR to the LPAR manager system time or the UTC time. LPARXXX TimeSource:XXX"	When the LPAR manager screen is used to request the process for synchronizing the LPAR RTC time and the LPAR SEL time with the LPAR manager system time or the UTC time. and the request fails
01003130	"Requested to adjust the RTC time and the SEL time for the LPAR to the LPAR manager system time in the specified time zone. Accept:XXX LPARXXX TimeZone:XXX"	When HvmSh and so on is used to request the process for synchronizing the LPAR RTC time and the LPAR SEL time with the LPAR manager system time and specifying the TimeZone and the request is accepted
01003132	"Adjusted the RTC time and the SEL time for the LPAR to the LPAR manager system time in the specified time zone. LPARXXX TimeZone:XXX"	When the LPAR manager screen is used to request the process for synchronizing the LPAR RTC time and the LPAR SEL time with the LPAR manager system time and specifying the TimeZone and the request succeeds
01003133	"Failed to adjust the RTC time and the SEL time for the LPAR to the LPAR manager system time in the specified time zone. LPARXXX TimeZone:XXX"	When the LPAR manager screen is used to request the process for synchronizing the LPAR RTC time and the LPAR SEL time with the LPAR manager system time and specifying the TimeZone and the request fails
01003134	"Requested to adjust the RTC time and the SEL time for all LPARs to the LPAR manager system time or the UTC time. Accept:XXX TimeSource:XXX"	When HvmSh and so on is used to request the process for synchronizing all of the LPAR RTC times and the LPAR SEL times with the LPAR manager system time or the UTC time and the request is accepted
01003136	"Adjusted the RTC time and the SEL time for all LPARs to the LPAR manager system time or the UTC time. TimeSource:XXX"	When the LPAR manager screen is used to request the process for synchronizing all of the LPAR RTC times and the LPAR SEL times with the LPAR manager system time or the UTC time and the request succeeds
01003137	"Failed to adjust the RTC time and the SEL time for all LPARs to the LPAR manager system time or the UTC time. TimeSource:XXX"	When the LPAR manager screen is used to request the process for synchronizing all of the LPAR RTC times and the LPAR SEL times with the LPAR manager system time or the UTC time and the request fails
01003138	"Requested to adjust the RTC time and the SEL time for all LPARs to the LPAR manager system time in the specified time zone. Accept:XXX TimeZone:XXX"	When HvmSh and so on is used to request process for synchronizing all of the LPAR RTC times and the LPAR SEL times with the LPAR manager system time and specifying the TimeZone and the request is accepted

ID	Message	Operation for which an audit log is collected
0100313A	"Adjusted the RTC time and the SEL time for all LPARs to the LPAR manager system time in the specified time zone. TimeZone:XXX"	When the LPAR manager screen is used to request the process for synchronizing all of the LPAR RTC times and the LPAR SEL times with the LPAR manager system time and specifying the TimeZone and the request succeeds
0100313B	"Failed to adjust the RTC time and the SEL time for all LPARs to the LPAR manager system time in the specified time zone. TimeZone:XXX"	When the LPAR manager screen is used to request the process for synchronizing all of the LPAR RTC times and the LPAR SEL times with the LPAR manager system time and specifying the TimeZone and the request fails
0100313C	"Requested to clear the NVRAM for the LPAR. Accept:XXX LPARXXX"	When HvmSh and so on is used to request clearing of NVRAM of an LPAR and the request is accepted
0100313E	"Cleared the NVRAM for the LPAR. LPARXXX"	When the LPAR manager screen is used to request clearing of NVRAM of an LPAR and the request succeeds
0100313F	"Failed to clear the NVRAM for the LPAR. LPARXXX"	When the LPAR manager screen is used to request clearing of NVRAM of an LPAR and the request fails
01003140	"Requested to copy the NVRAM for the LPAR. Accept:XXX SrcLPARXXX DstLPARXXX"	When HvmSh and so on is used to request copying of NVRAM of an LPAR and the request is accepted
01003142	"Copied the NVRAM for the LPAR. SrcLPARXXX DstLPARXXX"	When the LPAR manager screen is used to request copying of NVRAM of an LPAR and the request succeeds
01003143	"Failed to copy the NVRAM for the LPAR. SrcLPARXXX DstLPARXXX"	When the LPAR manager screen is used to request copying of NVRAM of an LPAR and the request fails
01003144	"Requested to erase console log data for the LPAR. Accept:XXX LPARXXX"	When HvmSh and so on is used to request deletion of the LPAR console log and the request is accepted
01003146	"Erased the console log data for the LPAR. LPARXXX"	When the LPAR manager screen is used to request deletion of the LPAR console log and the request succeeds
01003147	"Failed to erase the console log data for the LPAR. LPARXXX"	When the LPAR manager screen is used to request deletion of the LPAR console log and the request fails
01003174	"Requested to set the synchronization method of LPAR manager system time. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the time synchronization with NTP server (TimeSync) and the request is accepted
01003176	"Set the synchronization method of LPAR manager system time. Value:XXX"	When the LPAR manager screen is used to request change of the time synchronization with NTP server (TimeSync) and the request succeeds

ID	Message	Operation for which an audit log is collected
01003177	"Failed to set the synchronization method of LPAR manager system time. Value:XXX"	When the LPAR manager screen is used to request change of the time synchronization with NTP server (TimeSync) and the request fails
01003178	"Requested to set NTP server1 to synchronize the LPAR manager system time. Accept:XXX Value:XXX"	When HvmSh and so on is used to request setting change of NTP Server1 and the request is accepted
0100317A	"Set the NTP server1 to synchronize LPAR manager system time. Value:XXX"	When the LPAR manager screen is used to request setting change of NTP Server1 and the request succeeds
0100317B	"Failed to set the NTP server1 to synchronize LPAR manager system time. Value:XXX"	When the LPAR manager screen is used to request setting change of NTP Server1 and the request fails
0100317C	"Requested to set NTP server2 to synchronize LPAR manager system time. Accept:XXX Value:XXX"	When HvmSh and so on is used to request setting change of NTP Server2 and the request is accepted
0100317E	"Set NTP server2 to synchronize LPAR manager system time. Value:XXX"	When the LPAR manager screen is used to request setting change of NTP Server2 and the request succeeds
0100317F	"Failed to set NTP server2 to synchronize LPAR manager system time. Value:XXX"	When the LPAR manager screen is used to request setting change of NTP Server2 and the request fails
01003180	"Requested to import the NTP settings of the LPAR manager. Accept:XXX From:XXX"	When HvmSh and so on is used to request importing of NTP setting (Import Config) and the request is accepted
01003182	"Imported the NTP settings of the LPAR manager. From:XXX"	When the LPAR manager screen is used to request importing of NTP setting (Import Config) and the request succeeds
01003183	"Failed to import the NTP settings of the LPAR manager. From:XXX"	When the LPAR manager screen is used to request importing of NTP setting (Import Config) and the request fails
01003184	"Initialized all options of the FC HBA driver. LPARXXX Slot#:XXX Port#:XXX"	When HvmSh and so on is used to request clearing of the options of the FC HBA driver of the logical EFI and the request immediately succeeds
01003186	"Enabled or disabled the BootFunction of the FC HBA driver option. LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When HvmSh and so on is used to request change of the bootfunc option of the FC HBA driver of the logical EFI and the request immediately succeeds
01003188	"Set the ConnectionType of the FC HBA driver option. LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When HvmSh and so on is used to request change of the ConnectionType option of the FC HBA driver of the logical EFI and the request immediately succeeds
0100318A	"Enabled or disabled the MultiplePortID of the FC HBA driver	When HvmSh and so on is used to request change of the MultiplePortID option of the FC HBA driver of the logical EFI and the request immediately succeeds

ID	Message	Operation for which an audit log is collected
	option. LPARXXX Slot#:XXX Port#:XXX Value:XXX"	
0100318C	"Set the DataRate of the FC HBA driver option. LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When HvmSh and so on is used to request change of the DataRate option of the FC HBA driver of the logical EFI and the request immediately succeeds
0100318E	"Set the SpinupDelay of the FC HBA driver option. LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When HvmSh and so on is used to request change of the SpinUpDelay option of the FC HBA driver of the logical EFI and the request immediately succeeds
01003190	"Set the LoginDelayTime of the FC HBA driver option. LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When HvmSh and so on is used to request change of the LoginDelay option of the FC HBA driver of the logical EFI and the request immediately succeeds
01003192	"Enabled or disabled the PersistentBinding of the FC HBA driver option. LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When HvmSh and so on is used to request change of the PersistentBinding option of the FC HBA driver of the logical EFI and the request immediately succeeds
01003194	"Enabled or disabled the ForceDefaultParameter of the FC HBA driver option. LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When HvmSh and so on is used to request change of the ForceDefaultParameter option of the FC HBA driver of the logical EFI and the request immediately succeeds
01003196	"Enabled or disabled the SelectBootDevice of the FC HBA driver option. LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When HvmSh and so on is used to request change of the SelectBootDevice option of the FC HBA driver of the logical EFI and the request immediately succeeds
01003198	"Set the BootDeviceList entry of the FC HBA driver option. LPARXXX Slot#:XXX Port#:XXX Entry#:XXX WWN:XXX LU:XXX"	When HvmSh and so on is used to request change of a list of LU numbers and the storage WWNs of FC ports assigned to an LPAR and the request immediately succeeds
0100319A	"Enabled or disabled the LuidScanMode of the FC HBA driver option. LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When HvmSh and so on is used to request change of the LuidScanMode option of the FC HBA driver of the logical EFI and the request immediately succeeds
0100319C	"Requested to initialize all options of the FC HBA driver. Accept:XXX LPARXXX Slot#:XXX Port#:XXX"	When HvmSh and so on is used to request clearing of the options of the FC HBA driver of the logical EFI and the request is accepted
0100319E	"Requested to enable or disable the BootFunction of the FC HBA driver option. Accept:XXX LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When HvmSh and so on is used to request change of the bootfunc option of the FC HBA driver of the logical EFI and the request is accepted
010031A0	"Requested to set the ConnectionType of the FC HBA driver option. Accept:XXX LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When HvmSh and so on is used to request change of the ConnectionType option of the FC HBA driver of the logical EFI and the request is accepted
010031A2	"Requested to enable or disable the MultiplePortID of the FC HBA driver	When HvmSh and so on is used to request change of the MultiplePortID option of the FC

ID	Message	Operation for which an audit log is collected
	option. Accept:XXX LPARXXX Slot#:XXX Port#:XXX Value:XXX"	HBA driver of the logical EFI and the request is accepted
010031A4	"Requested to set the DataRate of the FC HBA driver option. Accept:XXX LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When HvmSh and so on is used to request change of the DataRate option of the FC HBA driver of the logical EFI and the request is accepted
010031A6	"Requested to set the SpinupDelay of the FC HBA driver option. Accept:XXX LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When HvmSh and so on is used to request change of the SpinUpDelay option of the FC HBA driver of the logical EFI and the request is accepted
010031A8	"Requested to set the LoginDelayTime of the FC HBA driver option. Accept:XXX LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When HvmSh and so on is used to request change of the LoginDelay option of the FC HBA driver of the logical EFI and the request is accepted
010031AA	"Requested to enable or disable the PersistentBinding of the FC HBA driver option. Accept:XXX LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When HvmSh and so on is used to request change of the PersistentBinding option of the FC HBA driver of the logical EFI and the request is accepted
010031AC	"Requested to enable or disable the ForceDefaultParameter of the FC HBA driver option. Accept:XXX LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When HvmSh and so on is used to request change of the ForceDefaultParameter option of the FC HBA driver of the logical EFI and the request is accepted
010031AE	"Requested to enable or disable the SelectBootDevice of the FC HBA driver option. Accept:XXX LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When HvmSh and so on is used to request change of the SelectBootDevice option of the FC HBA driver of the logical EFI and the request is accepted
010031B0	"Requested to set the BootDeviceList entry of the FC HBA driver option. Accept:XXX LPARXXX Slot#:XXX Port#:XXX Entry#:XXX WWN:XXX LU:XXX"	When HvmSh and so on is used to request change of a list of LU numbers and the storage WWNs of FC ports assigned to an LPAR and the request is accepted
010031B2	"Requested to enable or disable the LuidScanMode of the FC HBA driver option. Accept:XXX LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When HvmSh and so on is used to request change of the LuidScanMode option of the FC HBA driver of the logical EFI and the request is accepted
010031B4	"Pended to request to the ConnectionType of the FC HBA driver option. Accept:XXX LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When HvmSh and so on is used to request change of the ConnectionType option of the FC HBA driver of the logical EFI and the request is accepted
010031B6	"Pended to request to set the MultiplePortID of the FC HBA driver option. Accept:XXX LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When HvmSh and so on is used to request change of the MultiplePortID option of the FC HBA driver of the logical EFI and the request is accepted
010031B8	"Pended to request to set the DataRate of the FC HBA driver option. Accept:XXX LPARXXX Slot#:XXX Port#:XXX Value:XXX"	When HvmSh and so on is used to request suspension of changing the DataRate option of the FC HBA driver of the logical EFI and the request is accepted

ID	Message	Operation for which an audit log is collected
010031BA	"Requested to commit all pending requests to the FC HBA drivers. Accept:XXX"	When HvmSh and so on is used to request resuming of changing the options of the FC HBA driver of the logical EFI that has been suspended and the request is accepted
010031BC	"Requested to cancel all pending requests to the FC HBA drivers. Accept:XXX"	When HvmSh and so on is used to request cancellation of changing the options of the FC HBA driver of the logical EFI that has been suspended and the request is accepted
010031BE	"Set the entry of the boot order for the LPAR. LPARXXX Entry#:XXX Type:PXE BDF:XXX MACaddress:XXX BootName:XXX DevPath:XXX"	When HvmSh and so on is used to request registration of a PXE boot at the BootOrder of the logical EFI and the request immediately succeeds
010031C0	"Set the entry of the boot order for the LPAR. LPARXXX Entry#:XXX Type:FC BDF:XXX LU:XXX WWN:XXX BootName:XXX DevPath:XXX"	When HvmSh and so on is used to request registration of a LU boot (FC SAN boot) at the BootOrder of the logical EFI and the request immediately succeeds
010031C2	"Set the entry of the boot order for the LPAR. LPARXXX Entry#:XXX Type:iSCSI BDF:XXX LU:XXX MACaddress:XXX BootName:XXX DevPath:XXX"	When HvmSh and so on is used to request registration of an iSCSI boot of the BootOrder of the logical EFI and the request immediately succeeds
010031C4	"Set the entry of the boot order for the LPAR. LPARXXX Entry#:XXX Type:KVM BDF:XXX BootName:XXX DevPath:XXX"	When HvmSh and so on is used to request registration of a KVM-CD/DVD boot of the BootOrder of the logical EFI and the request immediately succeeds
010031C6	"Set the entry of the boot order for the LPAR. LPARXXX Entry#:XXX Type:USB BDF:XXX Port#:XXX BootName:XXX DevPath:XXX"	When HvmSh and so on is used to request registration of an Front-CD/DVD boot of the BootOrder of the logical EFI and the request immediately succeeds
010031CA	"Requested to enable or disable the multiple queue scheduling. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the forcible multiple-queue scheduling setting and the request is accepted
010031CE	"Requested to set the IP address (IPv6) of CLI1. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of LP CLI1 IPv6 address and the request is accepted
010031D0	"Set the IP address (IPv6) of CLI1. Value:XXX"	When the LPAR manager screen is used to request change of LP CLI1 IPv6 address and the request succeeds
010031D1	"Failed to set the IP address (IPv6) of CLI1. Value:XXX"	When the LPAR manager screen is used to request change of LP CLI1 IPv6 address and the request fails
010031D2	"Requested to set the IP address (IPv6) of CLI2. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of LP CLI2 IPv6 address and the request is accepted

ID	Message	Operation for which an audit log is collected
010031D4	"Set the IP address (IPv6) of CLI2. Value:xxx"	When the LPAR manager screen is used to request change of LP CLI2 IPv6 address and the request succeeds
010031D5	"Failed to set the IP address (IPv6) of CLI2. Value:xxx"	When the LPAR manager screen is used to request change of LP CLI2 IPv6 address and the request fails
010031D6	"Requested to set the IP address (IPv6) of CLI3. Accept:xxx Value:xxx"	When HvmSh and so on is used to request change of LP CLI3 IPv6 address and the request is accepted
010031D8	"Set the IP address (IPv6) of CLI3. Value:xxx"	When the LPAR manager screen is used to request change of LP CLI3 IPv6 address and the request succeeds
010031D9	"Failed to set the IP address (IPv6) of CLI3. Value:xxx"	When the LPAR manager screen is used to request change of LP CLI3 IPv6 address and the request fails
010031DA	"Requested to set the IP address (IPv6) of CLI4. Accept:xxx Value:xxx"	When HvmSh and so on is used to request change of LP CLI4 IPv6 address and the request is accepted
010031DC	"Set the IP address (IPv6) of CLI4. Value:xxx"	When the LPAR manager screen is used to request change of LP CLI4 IPv6 address and the request succeeds
010031DD	"Failed to set the IP address (IPv6) of CLI4. Value:xxx"	When the LPAR manager screen is used to request change of LP CLI4 IPv6 address and the request fails
010031DE	"Requested to set the IP address (IPv6) of CLI5. Accept:xxx Value:xxx"	When HvmSh and so on is used to request change of LP CLI5 IPv6 address and the request is accepted
010031E0	"Set the IP address (IPv6) of CLI5. Value:xxx"	When the LPAR manager screen is used to request change of LP CLI5 IPv6 address and the request succeeds
010031E1	"Failed to set the IP address (IPv6) of CLI5. Value:xxx"	When the LPAR manager screen is used to request change of LP CLI5 IPv6 address and the request fails
010031E2	"Requested to set the IP address (IPv6) of CLI6. Accept:xxx Value:xxx"	When HvmSh and so on is used to request change of LP CLI6 IPv6 address and the request is accepted
010031E4	"Set the IP address (IPv6) of CLI6. Value:xxx"	When the LPAR manager screen is used to request change of LP CLI6 IPv6 address and the request succeeds
010031E5	"Failed to set the IP address (IPv6) of CLI6. Value:xxx"	When the LPAR manager screen is used to request change of LP CLI6 IPv6 address and the request fails
010031E6	"Requested to set the IP address (IPv6) of CLI7. Accept:xxx Value:xxx"	When HvmSh and so on is used to request change of LP CLI7 IPv6 address and the request is accepted

ID	Message	Operation for which an audit log is collected
010031E8	"Set the IP address (IPv6) of CLI7. Value:xxx"	When the LPAR manager screen is used to request change of LP CLI7 IPv6 address and the request succeeds
010031E9	"Failed to set the IP address (IPv6) of CLI7. Value:xxx"	When the LPAR manager screen is used to request change of LP CLI7 IPv6 address and the request fails
010031EA	"Requested to set the IP address (IPv6) of CLI8. Accept:xxx Value:xxx"	When HvmSh and so on is used to request change of LP CLI8 IPv6 address and the request is accepted
010031EC	"Set the IP address (IPv6) of CLI8. Value:xxx"	When the LPAR manager screen is used to request change of LP CLI8 IPv6 address and the request succeeds
010031ED	"Failed to set the IP address (IPv6) of CLI8. Value:xxx"	When the LPAR manager screen is used to request change of LP CLI8 IPv6 address and the request fails
010031EE	"Set the port dedicated mode of the PCI device. Slot#:xxx Port#:xxx Value:xxx"	When HvmSh and so on is used to request change of the port dedication setting for a PCI device and the request immediately succeeds
010031F0	"Requested to set the IP address of DNS server1. Accept:xxx Value:xxx"	When HvmSh and so on is used to request change of the IP address of DNS server1 and the request is accepted
010031F2	"Requested to set the IP address of DNS server2. Accept:xxx Value:xxx"	When HvmSh and so on is used to request change of the IP address of DNS server2 and the request is accepted
010031F4	"Requested to set the IP address of DNS server3. Accept:xxx Value:xxx"	When HvmSh and so on is used to request change of the IP address of DNS server3 and the request is accepted
010031F8	"Requested to enable or disable the regular diagnosis of the standby management path. Accept:xxx Value:xxx"	When HvmSh and so on is used to request change of the periodic diagnosis setting for the alternative port for the management path and the request is accepted
010031FA	"Enabled or disabled the HBA-core dedicated mode of the physical port. Slot#:xxx Port#:xxx Value:xxx"	When HvmSh and so on is used to request setting change of HBA-core dedicated mode for shared FC ports and the request immediately succeeds
010031FC	"Set the memory node(MN) number for the LPAR. LPARxxx Value:xxx"	"When HvmSh and so on is used to request change of a memory node, which is a NUMA node number, for an LPAR and the request immediately succeeds"
010031FE	"Set the memory node(MN) number for the LPAR. LPARxxx Value:xxx"	"When the LPAR manager screen is used to request change of a memory node, which is a NUMA node number, for an LPAR and the request succeeds"
010031FF	"Failed to set the memory node(MN) number for the LPAR. LPARxxx Value:xxx"	"When the LPAR manager screen is used to request change of a memory node, which is a

ID	Message	Operation for which an audit log is collected
		NUMA node number, for an LPAR and the request fails"
01003202	"Set the maximum aggregate throughput (Mbps) value of VF NIC. LPARXXX VNIC#:XXX Value:XXX"	When HvmSh and so on is used to request change of the transmission band restriction for an VF NIC (TXRATE) and the request immediately succeeds
01003204	"Set the maximum aggregate throughput (Mbps) value of VF NIC. LPARXXX VNIC#:XXX Value:XXX"	When the LPAR manager screen is used to request change of the transmission band restriction for an VF NIC (TXRATE) and the request succeeds
01003205	"Failed to set the maximum aggregate throughput (Mbps) value of VF NIC. LPARXXX VNIC#:XXX Value:XXX"	When the LPAR manager screen is used to request change of the transmission band restriction for an VF NIC (TXRATE) and the request fails
01003206	"Set the guest NUMA for the LPAR. LPARXXX Value:XXX"	When HvmSh and so on is used to request change of the guest NUMA setting and the request immediately succeeds
01003208	"Set the guest NUMA for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request change of the guest NUMA setting and the request succeeds
01003209	"Failed to set the guest NUMA for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request change of the guest NUMA setting and the request fails
0100320A	"Set the memory capacity allocated to the specified LPAR for each NUMA node number. LPARXXX Node#:XXX Value:XXX"	When HvmSh and so on is used to request change of memory size for an LPAR with its guest NUMA enabled and the request immediately succeeds
0100320C	"Set the memory capacity allocated to the specified LPAR for each NUMA node number. LPARXXX Node#:XXX Value:XXX"	When the LPAR manager screen is used to request change of memory size for an LPAR with its guest NUMA enabled and the request succeeds
0100320D	"Failed to set the memory capacity allocated to the specified LPAR for each NUMA node number. LPARXXX Node#:XXX Value:XXX"	When the LPAR manager screen is used to request change of memory size for an LPAR with its guest NUMA enabled and the request fails
0100320E	"Set the guest idle mode for the LPAR. LPARXXX Value:XXX"	When HvmSh and so on is used to request change of the GuestIdleMode setting for an LPAR and the request immediately succeeds
01003210	"Set the Low Latency option for the LPAR. LPARXXX Value:XXX"	When HvmSh and so on is used to request change of the LowLatency setting for an LPAR and the request immediately succeeds
01003212	"Set the EPT1GB option for the LPAR. LPARXXX Value:XXX"	When HvmSh and so on is used to request change of the EPT1GB setting for an LPAR and the request immediately succeeds
01003214	"Set the PRTE option for the LPAR. LPARXXX Value:XXX"	When HvmSh and so on is used to request change of the PRTE setting for an LPAR and the request immediately succeeds

ID	Message	Operation for which an audit log is collected
01003216	"Set the PRTE option for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request change of the PRTE setting for an LPAR and the request succeeds
01003217	"Failed to set the PRTE option for the LPAR. LPARXXX Value:XXX"	When the LPAR manager screen is used to request change of the PRTE setting for an LPAR and the request fails
01003218	"Set the Physical NUMA Node Binding Mode for the LPAR. LPARXXX Value:XXX"	When HvmSh and so on is used to request change of the logical processor assignment setting for the guest NUMA for an LPAR and the request immediately succeeds
0100321A	"Set the number of logical processors for the LPAR NUMA node. LPARXXX Node#:XXX Value:XXX"	When HvmSh and so on is used to request change of the number of processors for NUMA nodes and the request immediately succeeds
0100321C	"Set the timeout for LPAR migration. LPARXXX Value:XXX"	When HvmSh and so on is used to request change of the timeout period for LPAR migration and the request immediately succeeds
0100321E	"Set the FC login timeout for LPAR migration. Value:XXX"	When HvmSh and so on is used to request change of the timeout period for logging into a storage system and the request immediately succeeds
01003224	"Set the FC login delay for LPAR migration. Value:XXX"	When HvmSh and so on is used to request change of the storage login delay time for LPAR migration and the request immediately succeeds
01003226	"Set the FC logout delay for LPAR migration. Value:XXX"	When HvmSh and so on is used to request change of the storage logout delay time for LPAR migration and the request immediately succeeds
01003234	"Requested to cancel the LPAR migration. Accept:XXX LPARXXX"	When HvmSh and so on is used to request suspension of the migration execution and the request is accepted
0100323A	"Requested to set the LP TimerCounter Base. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of a base value for calculating the Timer Counter Base timer counter (Timer Counter Base) and the request is accepted
0100323C	"Set the LP TimerCounter Base. Value:XXX"	When the LPAR manager screen is used to request change of a base value for calculating the Timer Counter Base timer counter (Timer Counter Base) and the request succeeds
0100323D	"Failed to set the LP TimerCounter Base. Value:XXX"	When the LPAR manager screen is used to request change of a base value for calculating the Timer Counter Base timer counter (Timer Counter Base) and the request fails

ID	Message	Operation for which an audit log is collected
01003240	"Requested to set the security strength with HvmSh commands. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the encrypted communication strength for LPAR manager and HvmSh and the request is accepted
01003242	"Requested to enable or disable the security strength for communication with BSM. Accept:XXX Value:XXX"	When HvmSh and so on is used to request setting change of whether communication with LPAR manager and BSM is enabled or disabled and the request is accepted
01003244	"Requested to set the security strength for communication with HCSM. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the encrypted communication strength for LPAR manager and BSM and the request is accepted
01003246	"Requested to enable or disable the security strength through the LPAR manager Web system. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of whether http communication for LPAR managers is enabled or disabled and the request is accepted
01003248	"Requested to set the security strength for communication with LDAP servers. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the encrypted communication strength for LPAR manager and LDAP server and the request is accepted
0100324A	"Requested to enable or disable the certificate verification for communication with HCSM. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the certificate verification setting for the encrypted communication between LPAR manager and HCSM and the request is accepted
0100324C	"Requested to enable or disable the certificate verification for communication with the LDAP servers. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the certificate verification setting for the encrypted communication between LPAR manager and HCSM and the request is accepted
0100324E	"Requested to register the signed certificate of the LPAR manager. Accept:XXX IssuerCN:XXX SN:XXX"	When HvmSh and so on is used to request import of the server certificate for LPAR manager signed by the certificate authority and the request is accepted
01003250	"Requested to register the certificate of another server. Accept:XXX IssuerCN:XXX SN:XXX"	When HvmSh and so on is used to request registration of the certificate for a server with which LPAR manager communicates and the request is accepted
01003252	"Requested to generate the self-signed certificate. Accept:XXX IssuerCN:XXX"	When HvmSh and so on is used to request creation of an LPAR manager server certificate and the request is accepted
01003254	"Generated the certificate signing request (CSR) ."	When HvmSh and so on is used to request creation of a CSR for LPAR manager and the request immediately succeeds
01003256	"Requested to remove the certificate. Accept:XXX Certificate#:XXX IssuerCN:XXX SN:XXX"	When HvmSh and so on is used to request deletion of a server certificate for a server with which LPAR manager communicates and the request is accepted

ID	Message	Operation for which an audit log is collected
01003258	"Requested to enable or disable the user authentication of LP CLI. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of user authentication with an LPAR manager CLI and the request is accepted
0100325A	"Requested to enable or disable the user authentication of the virtual COM console. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of user authentication of a virtual COM console and the request is accepted
0100325C	"Enabled or disabled the user authentication of LP CLI. Value:XXX"	When the LPAR manager screen is used to request change of user authentication with an LPAR manager CLI and the request succeeds
0100325D	"Failed to enable or disable the user authentication of LP CLI. Value:XXX"	When the LPAR manager screen is used to request change of user authentication with an LPAR manager CLI and the request fails
0100325E	"Enabled or disabled the user authentication of the virtual COM console. Value:XXX"	When the LPAR manager screen is used to request change of user authentication of a virtual COM console and the request succeeds
0100325F	"Failed to enable or disable the user authentication of the virtual COM console. Value:XXX"	When the LPAR manager screen is used to request change of user authentication of a virtual COM console and the request fails
01003260	"Requested to add the local user. Accept:XXX User:XXX"	When HvmSh and so on is used to request addition of a local user and the request is accepted
01003262	"Added the local user. User:XXX"	When the LPAR manager screen is used to request addition of a local user and the request succeeds
01003263	"Failed to add the local user. User:XXX"	When the LPAR manager screen is used to request addition of a local user and the request fails
01003264	"Requested to remove the local user. Accept:XXX User:XXX"	When HvmSh and so on is used to request deletion of a local user and the request is accepted
01003266	"Removed the local user. User:XXX"	When the LPAR manager screen is used to request deletion of a local user and the request succeeds
01003267	"Failed to remove the local user. User:XXX"	When the LPAR manager screen is used to request deletion of a local user and the request fails
01003268	"Requested to change the password of the local user. Accept:XXX User:XXX"	When HvmSh and so on is used to request password change of a local user and the request is accepted
0100326A	"Changed the password of the local user. User:XXX"	When the LPAR manager screen is used to request password change of a local user and the request succeeds
0100326B	"Failed to change the password of the local user. User:XXX"	When the LPAR manager screen is used to request password change of a local user and the request fails

ID	Message	Operation for which an audit log is collected
0100326C	"Requested to set the login time valid for LP CLI of the user. Accept:XXX User:XXX Value:XXX"	When HvmSh and so on is used to request change of the valid login time by using HvmSh for a local user and the request is accepted
0100326E	"Requested to generate SSH host key used for the virtual COM console. Accept:XXX"	When HvmSh and so on is used to request creation of a host key for SSH connection of a virtual COM console and the request is accepted
01003270	"Generated SSH host key used for the virtual COM console."	When the LPAR manager screen is used to request creation of a host key for SSH connection of a virtual COM console and the request succeeds
01003271	"Failed to generate SSH host key used for the virtual COM console."	When the LPAR manager screen is used to request creation of a host key for SSH connection of a virtual COM console and the request fails
01003272	"Requested to set the virtual COM console connection method. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the connection method to a virtual COM console (connection type) and the request is accepted
01003274	"Set the virtual COM console connection method. Value:XXX"	When the LPAR manager screen is used to request change of the connection method to a virtual COM console (connection type) and the request succeeds
01003275	"Failed to set the virtual COM console connection method. Value:XXX"	When the LPAR manager screen is used to request change of the connection method to a virtual COM console (connection type) and the request fails
01003276	"Requested to set the certificate type for LP Web system. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of a server certificate for LP Web system and the request is accepted
01003278	"Requested to set the user authentication method. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the user authentication method (the method of accessing external authentication servers) and the request is accepted
0100327A	"Requested to set the login time valid for LP CLI of externally-authenticated user. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the valid login time by using HvmSh for a local user authenticated with an external server and the request is accepted
0100327C	"Requested to set name of LDAP server1. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the name of LDAP server1 and the request is accepted
0100327E	"Requested to set name of LDAP server2. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the name of LDAP server2 and the request is accepted

ID	Message	Operation for which an audit log is collected
01003280	"Requested to set name of LDAP server3. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the name of LDAP server3 and the request is accepted
01003282	"Requested to set the login ID attribution of LDAP authentication. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the login ID attribute for LDAP authentication and the request is accepted
01003284	"Requested to set the base DN for LDAP authentication. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of Base DN for LDAP authentication and the request is accepted
01003286	"Requested to set the port number of the LDAP servers. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of a port number of an LDAP server and the request is accepted
01003288	"Requested to enable or disable the anonymous bind for LDAP authentication. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the anonymous bind for LDAP authentication and the request is accepted
0100328A	"Requested to set the common role for the LDAP authentication users. Accept:XXX RoleXXX"	When HvmSh and so on is used to request change of a role for all users authenticated with an LDAP server and the request is accepted
0100328C	"Requested to set the bind DN for LDAP authentication. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of Bind DN for LDAP authentication and the request is accepted
0100328E	"Requested to change the bind the password for LDAP authentication. Accept:XXX"	When HvmSh and so on is used to request change of Bind password for LDAP authentication and the request is accepted
01003290	"Requested to set name of syslog server1. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the name of syslog server1 and the request is accepted
01003292	"Requested to set name of syslog server2. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the name of syslog server2 and the request is accepted
01003294	"Requested to set port number of the syslog servers. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of a port number of a syslog server and the request is accepted
01003296	"Requested to set the protocol used to communicate with the syslog servers. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of a protocol for communication with syslog servers and the request is accepted
01003298	"Requested to enable or disable the certificate verification for communication with syslog servers. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the certificate verification setting for communication with syslog servers and the request is accepted
0100329A	"Requested to set name of RADIUS server1. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the name of RADIUS server1 and the request is accepted

ID	Message	Operation for which an audit log is collected
0100329C	"Requested to set name of RADIUS server2. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the name of RADIUS server2 and the request is accepted
0100329E	"Requested to set name of RADIUS server3. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the name of RADIUS server3 and the request is accepted
010032A0	"Requested to set the shared secret of RADIUS server1. Accept:XXX"	When HvmSh and so on is used to request change of the shared key of RADIUS server1 and the request is accepted
010032A2	"Requested to set the shared secret of RADIUS server2. Accept:XXX"	When HvmSh and so on is used to request change of the shared key of RADIUS server2 and the request is accepted
010032A4	"Requested to set the shared secret of RADIUS server3. Accept:XXX"	When HvmSh and so on is used to request change of the shared key of RADIUS server3 and the request is accepted
010032A6	"Requested to set the port number of RADIUS server1. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the port number of RADIUS server1 and the request is accepted
010032A8	"Requested to set the port number of RADIUS server2. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the port number of RADIUS server2 and the request is accepted
010032AA	"Requested to set the port number of RADIUS server3. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the port number of RADIUS server3 and the request is accepted
010032AC	"Requested to set the time of retries of authentication by RADIUS server1. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the times of attempts in RADIUS server1 and the request is accepted
010032AE	"Requested to set the time of retries of authentication by RADIUS server2. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the times of attempts in RADIUS server2 and the request is accepted
010032B0	"Requested to set the time of retries of authentication by RADIUS server3. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the times of attempts in RADIUS server3 and the request is accepted
010032B2	"Requested to set the timeout period for accessing RADIUS server1. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of a timeout period of RADIUS server1 and the request is accepted
010032B4	"Requested to set the timeout period for accessing RADIUS server2. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of a timeout period of RADIUS server2 and the request is accepted
010032B6	"Requested to set the timeout period for accessing RADIUS server3. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of a timeout period of RADIUS server3 and the request is accepted
010032B8	"Requested to set the authentication method of RADIUS server1. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the authentication method of RADIUS server1 and the request is accepted

ID	Message	Operation for which an audit log is collected
010032BA	"Requested to set the authentication method of RADIUS server2. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the authentication method of RADIUS server2 and the request is accepted
010032BC	"Requested to set the authentication method of RADIUS server3. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the authentication method of RADIUS server3 and the request is accepted
010032BE	"Requested to set the common role for the RADIUS authentication users. Accept:XXX RoleXXX"	When HvmSh and so on is used to request change of a role for all users authenticated by a RADIUS server and the request is accepted
010032C0	"Requested to set the security permission for the user-defined role. Accept:XXX RoleXXX Value:XXX"	When HvmSh and so on is used to request change of a security permission for a users-defined role and the request is accepted
010032C2	"Requested to assign the role to the local user. Accept:XXX User:XXX RoleXXX"	When HvmSh and so on is used to request change of a role for local users and the request is accepted
010032C4	"Requested to assign the role of ManagementModuleUser. Accept:XXX RoleXXX"	When HvmSh and so on is used to request change of a role for the management module user and the request is accepted
010032D4	"Completed the LPAR migration. Position:XXX Method:XXX SrcLP:XXX SrcLPAR#:XXX LPAR_Name:XXX DstLP:XXX DstLPAR#:XXX"	When a migration execution succeeds
010032D8	"Completed the LPAR migration recovery. LPARXXX"	When a recovery operation of LPAR migration succeeds
010032DA	"Applied all pending changes to the LPAR manager."	"When the LPAR manager screen is used to request reflection of change with Update PCI Dev Schd or Update System Config and the request succeeds"
010032DB	"Failed to apply all pending changes to the LPAR manager."	"When the LPAR manager screen is used to request reflection of change with Update PCI Dev Schd or Update System Config and the request fails"
010032DC	"Canceled all pending changes to the LPAR manager."	When the LPAR manager screen is used to request cancel of change with Update PCI Dev Schd or Update System Config and the request succeeds
010032DD	"Failed to cancel all pending changes to the LPAR manager."	When the LPAR manager screen is used to request cancel of change with Update PCI Dev Schd or Update System Config and the request fails
010032DE	"Requested to set the L3_CBM for the LPAR. Accept:XXX LPARXXX Value:XXX"	When HvmSh and so on is used to request change of L3_CBM for an LPAR and the request is accepted

ID	Message	Operation for which an audit log is collected
010032E4	"Requested to set the logging policy (targets to log) of the LPAR manager. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the policy of audit log collection and the request is accepted
010032EC	"Requested to set the password expiration period (date) for local users. Accept:XXX Value:XXX"	When HvmSh and so on is used to request change of the password validity period for local users and the request is accepted
010032EE	"Set the password expiration period (date) for local users. Value:XXX"	When the LPAR manager screen is used to request change of the password validity period for local users and the request succeeds
010032EF	"Failed to set the password expiration period (date) for local users. Value:XXX"	When the LPAR manager screen is used to request change of the password validity period for local users and the request fails
010032F2	"Set the scheduling data for the LPAR. LPARXXX"	When HvmSh and so on is used to request setting of the scheduling data for an LPAR and the request succeeds
010032F3	"Failed to set the scheduling data for the LPAR. LPARXXX"	"When HvmSh and so on is used to request setting of the scheduling data for an LPAR and the request fails "
010032F4	"Set the threshold time for management path failover owing to link-down of the active port. Value:XXX"	When HvmSh and so on is used to request change of port-switching time in link-down of the management path and the request immediately succeeds
010032FA	"Enabled or disabled the option of the KeepConfig. Value:XXX"	When HvmSh and so on is used to request change of the KeepConfig option and the request immediately succeeds
010032FC	"Set the interrupt moderation type for all VNICs. Value:XXX"	When HvmSh and so on is used to request change of the interrupt moderation type for all VNICs and the request immediately succeeds
010032FE	"Set the host parameter for interrupt moderation for all VNICs. Value:XXX"	When HvmSh and so on is used to request change of the host parameter for interrupt moderation for all VNICs and the request immediately succeeds
01003300	"Set the HPET allocation for the LPAR. LPARXXX Value:XXX"	When HvmSh and so on is used to request change of the HPET allocation for the LPAR and the request immediately succeeds
01003306	"Set the maximum CPU resource usage of SYS2. Value:XXX"	When the LPAR manager screen is used to request change of the maximum number of processors for SYS2 and the request succeeds.
01003307	"Failed to set the maximum CPU resource usage of SYS2. Value:XXX"	When the LPAR manager screen is used to request change of the maximum number of processors for SYS2 and the request fails.
01003308	"Enabled or disabled the LPAR manager dump overwrite inhibition. Value:XXX"	When HvmSh is used to request change of the LPAR manager dump overwrite inhibition

ID	Message	Operation for which an audit log is collected
		setting and the request immediately succeeds.
0100330A	"Set the threshold of the LPAR manager dump overwrite inhibition. Value:xxx"	When HvmSh is used to request change of the LPAR manager dump overwrite inhibition time and the request immediately succeeds.
01003312	"Enabled or disabled the guest IBRS/IBPB. LPARxxx Value:xxx"	When HvmSh is used to request change of the guest IBRS/IBPB and the request immediately succeeds.
01003314	"Enabled or disabled the default value for guest IBRS/IBPB. Value:xxx"	When HvmSh is used to request change of the default value for guest IBRS/IBPB and the request immediately succeeds.
01003316	"Enabled or disabled the guest PCID. LPARxxx Value:xxx"	When HvmSh is used to request change of the guest PCID and the request immediately succeeds.
01003318	"Enabled or disabled the default value for guest PCID. Value:xxx"	When HvmSh is used to request change of the default value for guest PCID and the request immediately succeeds.
01013000	"Completed the request. Accept:xxx"	When a user performs an operation for setting Audit event type to ConfigurationAccess asynchronously and the operation succeeds
01013001	"Failed to complete the request. Accept:xxx"	When a user performs an operation for setting Audit event type to ConfigurationAccess asynchronously and the operation fails

Table 9-5 List of audit log messages (Maintenance)

ID	Message	Operation for which an audit log is collected
01008000	"Requested to inject an NMI to the LPAR to start retrieval the guest OS dump. Accept:xxx LPARxxx"	When HvmSh and so on is used to request issuing of NMI interrupt for an LPAR to collect the memory dump of the guest OS. and the request is accepted
01008002	"Injected an NMI to the LPAR to start retrieval guest OS dump. LPARxxx"	When the LPAR manager screen is used to request issuing of NMI interrupt for an LPAR to collect the memory dump of the guest OS. and the request succeeds
01008003	"Failed to inject an NMI to the LPAR to start retrieval guest OS dump. LPARxxx"	When the LPAR manager screen is used to request issuing of NMI interrupt for an LPAR to collect the memory dump of the guest OS. and the request fails
01008008	"Requested to switch the ports for the management path. Accept:xxx NextActiveManagementPath:xxx"	When HvmSh and so on is used to request activation of the specified management path port and the request is accepted

ID	Message	Operation for which an audit log is collected
01018000	"Completed the request. Accept:XXX"	When a user performs an operation for setting Audit event type to Maintenance asynchronously and the operation succeeds
01018001	"Failed to complete the request. Accept:XXX"	When a user performs an operation for setting Audit event type to Maintenance asynchronously and the operation fails

"HvmSh and so on" in the above messages shows the web console, HCSM, SC/BSM, HVM Navigator, and HvmSh.

HCSM Alert Messages

Table headings of HCSM alert messages

[ID]

Message ID

[Level]

Level of the message: Information; Warning; Error

[Message]

Alert messages are shown. "X" and "Y" in a message stands for character strings.

List of alert messages

ID	Level	Message
Description and Action		
0xFC71	Information	LPAR <X>, Activating due to scheduled turn on request.
[Description] Starts scheduled LPAR<X> activation. <X> is the LPAR number.		
[Action] None.		
0xFC70	Information	LPAR <X>, Activation completed.
[Description] LPAR <X> has been activated. <X> is the LPAR number.		
[Action] None.		
0xFCA0	Warning	LPAR <X>, Failed to activate. (RC=<Y>)
[Description] Failed to activate LPAR<X>. <X> is the LPAR number; <Y> is the error reason code.		
[Action] Check if space for CPU and memory is enough for activating the LPAR.		
0xFC72	Information	LPAR <X>, Deactivation completed.
[Description] Deactivated LPAR <X>. <X> is the LPAR number.		
[Action] None.		

ID	Level	Message
Description and Action		
0xFCA1	Warning	LPAR <X>, Failed to deactivate. (RC=<Y>)
[Description] Failed to deactivate LPAR <X>. <X> is the LPAR number; <Y> is the error reason code. [Action] Contact your reseller or maintenance personnel.		
0xFC73	Information	LPAR <X>, Initiating shutdown due to scheduled turn off request.
[Description] Starts scheduled LPAR<X> deactivation. <X> is the LPAR number. [Action]		
0xFCA2	Warning	LPAR <X>, Watchdog timer has expired. (RC=<Y>)
[Description] Watchdog timeout has been detected. <X> is the LPAR number; <Y> is the error reason code. [Action] Contact your reseller or maintenance personnel.		
0xFC74	Information	Migration process started on the source LP. (SIP=<X>,DIP=<Y>)
[Description] Starts LPAR migration on the source LP. <X> is the IP address on the migration source LP; <Y> is the IP address on the migration destination LP. [Action] None.		
0xFC75	Information	Migration process started on the destination LP. (SIP=<X>,DIP=<Y>)
[Description] Starts LPAR migration on the destination LP. <X> is the IP address on the migration source LP; <Y> is the IP address on the migration destination LP. [Action] None.		
0xFC76	Information	Migration process completed on the source LP. (SIP=<X>,DIP=<Y>)
[Description] LPAR migration process has been completed properly on the migration source. <X> is the IP address on the migration source LP; <Y> is the IP address on the migration destination LP. [Action] None.		
0xFC77	Information	Migration process completed on the destination LP. (SIP=<X>,DIP=<Y>)
[Description] LPAR migration process has been completed properly on the migration destination. <X> is the IP address on the migration source LP; <Y> is the IP address on the migration destination LP. [Action] None.		
0xFCA3	Warning	Migration failed on the source LP. (SIP=<X>,DIP=<Y>,RC=<Z>)
[Description] LPAR migration failed on the source LP. <X> is the IP address on the migration source LP; <Y> is the IP address on the migration destination LP; <Z> is the error reason code. [Action] Take actions following HCSM messages shown during LPAR migration task in operation.		

ID	Level	Message
Description and Action		
0xFCA4	Warning	Migration failed on the destination LP. (SIP=<X>,DIP=<Y>,RC=<Z>)
[Description] LPAR migration failed on the destination LP. <X> is the IP address on the migration source LP; <Y> is the IP address on the migration destination LP; <Z> is the error reason code. [Action] Take actions following HCSM messages shown during LPAR migration task in operation.		
0xFC78	Information	LPAR <X>, Sent information update alert.
[Description] LPAR <X> information is updated. <X> is the LPAR number. [Action] None.		
0xFC79	Information	LPAR <X>, Sent information update alert (add).
[Description] LPAR <X> is added. <X> is the LPAR number. [Action] None.		
0xFC7A	Information	LPAR <X>, Sent information update alert (remove).
[Description] LPAR <X> is removed. <X> is the LPAR number. [Action] None.		
0xFC03	Information	LP configuration format has been changed. (Previous Ver.=<X>,New Ver.=<Y>)
[Description] LP configuration format has been changed. <X> is the configuration format version before change; <Y> is the configuration format version after change. [Action] None.		
0xFC02	Information	LP configuration was saved. (RC=<X>)
[Description] LP configuration was saved. <X> is the trigger for saving. [Action] None.		
0xFC01	Information	LP started to shut down.
[Description] LP started shutdown. [Action] None.		
0xFC00	Information	LP boot has completed.
[Description] LP boot has completed. [Action] None.		

Notes

This chapter explains Notes for LPAR manager.

For notes for the system unit, see each User's Guides.

- ☐ [Note for the LPAR manager Setup](#)
- ☐ [Note for the LPAR manager operation](#)
- ☐ [Notes for System Management](#)

Note for the LPAR manager Setup

Restriction of SMP configuration

- In SMP configuration, a server blade having the highest slot number is called a primary server blade, and the others are called non-primary server blades.
- In the case of mismatching for LPAR manager model (Essential/Advanced/Enterprise), the lower LPAR manager model is booted.
- If the expiration dates of the LP licenses are not the same, the license with the earliest expiration date will be used to start the server blade. Note that if the expiration date has passed, a server blade will start as the Essential model.
- LP firmware of primary server blade is used.
- Configuration information of primary server blade is used, so this information is inherited.
- When using CB 520X B1 in a 4-blade SMP configuration, disable SAS controller on the EFI setup menu. If all the following conditions are met, the server blade might get stuck in a reboot loop and fail to boot.
 - a. SAS controller is enabled.
 - b. Either of the following operation is performed.
 - Updating the LPAR Manager Firmware to version 02-45 or higher
 - Adding a configuration such as LPAR or shared NIC when the Firmware version is 02-45 or higher
- The following table shows a comparison between primary server blade and non-primary server blade for a support function.

Table 10-1 Support function comparison

Item		Primary server blade	Non-primary server blade
USB		Y	Y
KVM	VGA	Y	-
	COM	Y	-
	USB	Y	-
Remote console		Y	-
LPAR manager firmware		Y	-
LPAR manager configuration		Y	-
Legend: Y: Supported -: Not supported			

Setting FC Switch

Setting FC Switch to be necessary when using the "SAN boot".

- FC switch ports, which will be connected to 4 Gbps fibre channel adapter in shared mode, should have NPIV enabled. With the `portcfgshow` command, you can find whether or not NPIV is enabled.
If NPIV is disabled, enable the NPIV using the `portcfgnpivport` command of FC switch. See the manual attached to the FC switch for how to set and confirm NPIV.
- When the transfer rate of the FC port in an FC switch is the default value, Auto-negotiation, LU in the storage may not be viewed because of the discrepancy between the transfer rate of the FC port and that of the fibre channel card.
In this case, change the transfer rate of the FC port to the same rate as that of your fibre channel card using the `portcfgspeed` command.

Requirements for LPAR manager Startup

Requirements for LPAR manager Startup are as below. LPAR manager cannot startup when the requirements are not fulfilled. Arrange to assign the system resources to LPAR according to your environment.

Table 10-2 Requirement Items for LPAR manager System

Item		Requirements
LPAR manager	Memory	For information on the amount of memory used by LPAR manager, see the description in Functions which LPAR manager supports on page A-9 Functions which LPAR manager supports.
	NIC	Minimum of one shared NIC (management path)
	FC	Minimum of one FC connection
LPAR	Processor	Two or more processors
	Memory	Windows Server 2008: 512MB (2048MB or more is recommended) Windows Server 2008R2: 512MB (2048MB or more is recommended) Windows Server 2012: 512MB (2048MB or more is recommended) Windows Server 2012R2: 512MB (2048MB or more is recommended) Windows Server 2016: 512MB (2048MB or more is recommended) Red Hat Enterprise Linux5: 512MB (1024MB/ LPAR is recommended) Red Hat Enterprise Linux6: 1024MB (1024MB/ LPAR is recommended)

Item	Requirements
	Red Hat Enterprise Linux7: 1024MB (1024MB/LPAR is recommended)

Notes on temporary LP licenses

- LPAR manager system log messages and HCSM alert messages are output before and when a temporary LP license expires. For details about the HCSM alert messages, see the *Hitachi Compute Blade 500 Series Management Module Setup Guide*.
- If the license expires while LPAR manager is operating, the following operations are suppressed:
 - Operation to activate LPARs
 - OS startup after reactivating LPARs
 - OS startup after restarting OSs
 - Operations that include the operation to activate LPARs (such as boot order configuration and boot device acquisition)
- If the expiration date has already passed when LPAR manager starts, the server blade will operate as the Essential model.
- If the license has expired, register a string of 49 characters (beginning with "0" and followed by the temporary LP license key of 48 characters) as the LP license key, so that the server blade can be updated to one with a permanent Essential license.
- When a temporary Enterprise license is additionally registered for a server blade with a permanent Advanced license, the permanent Advanced license is overwritten. Register the permanent Advanced license key again to return the server blade to the permanent Advanced license.
- To register a temporary Enterprise license, confirm in advance that a permanent Advanced license key exists. If registering the permanent LP license to a server blade with a temporary LP license causes some of the functions to become unavailable (see [Functional differences depending on the LPAR manager license on page A-23](#)) due to downgrading of the model, the LPAR settings for these functions will be changed to the default.
Therefore, back up the LPAR manager configuration information before registering a permanent LP license for a lower model, and then restore the LPAR manager configuration information after the purchased LP license is registered.
- The time setting of the management module and LPAR manager must be the same. If the time settings do not match, LPAR manager might recognize an expiration date earlier than the actual expiration date.

Maximum Resolution

The following table describes the maximum resolution when the remote desktop, remote console, or NETM/Remote Control is used

Table 10-3 Maximum Resolution

Application	Maximum resolution	Prerequisite
Remote desktop	-	Up to the maximum resolution can be specified: 1280 x 1024 for example.
Remote console	1024 x 768	It is recommended that the resolution of a guest OS be 1024 x 768. If a guest OS resolution is more than 1024 x 768, the console terminal displays the area of 1024 x 768 out of the screen. But the screen can be scrolled by moving the scroll box.
NETM/Remote Console		

Note for the LPAR manager operation

LPAR manager boot up

Please do not boot the multiple LPAR managers whose configuration have not been made and whose firmware version are 01-1x, simultaneously. When multiple LPAR managers are booted simultaneously, the failure which LPAR manager hangs up might occur on initializing LPAR manager display.

For the LPAR manager firmware version 02-62 or later, the LPAR manager system time is reset to 2000/01/01 00:00:00 when LPAR manager starts, unless the physical RTC time is set within the range from years 2000 to 2099. Then, the reset time is saved in the physical RTC. In the LPAR manager system log, system event log, and HCSM alert, you can check that the LPAR manager system time is reset.

LPAR Memory Fragmentation

When you repeatedly activate and deactivate LPARs with different memory size on LPAR manager firmware version 01-1X or lower, a message "Memory allocation failed (Fragmentation)." appears and an LPAR may fail to be activated even if the memory size is enough. This is called "LPAR memory fragmentation", which occurs in activating an LPAR that requires discontinuous blanks of memory on physical memory. A typical example is shown below.

Example 1:

Failure in LPAR activation due to LPAR memory fragmentation

(LPAR activation fails when 5 or more discontinuous blanks of memory are allocated to an LPAR)

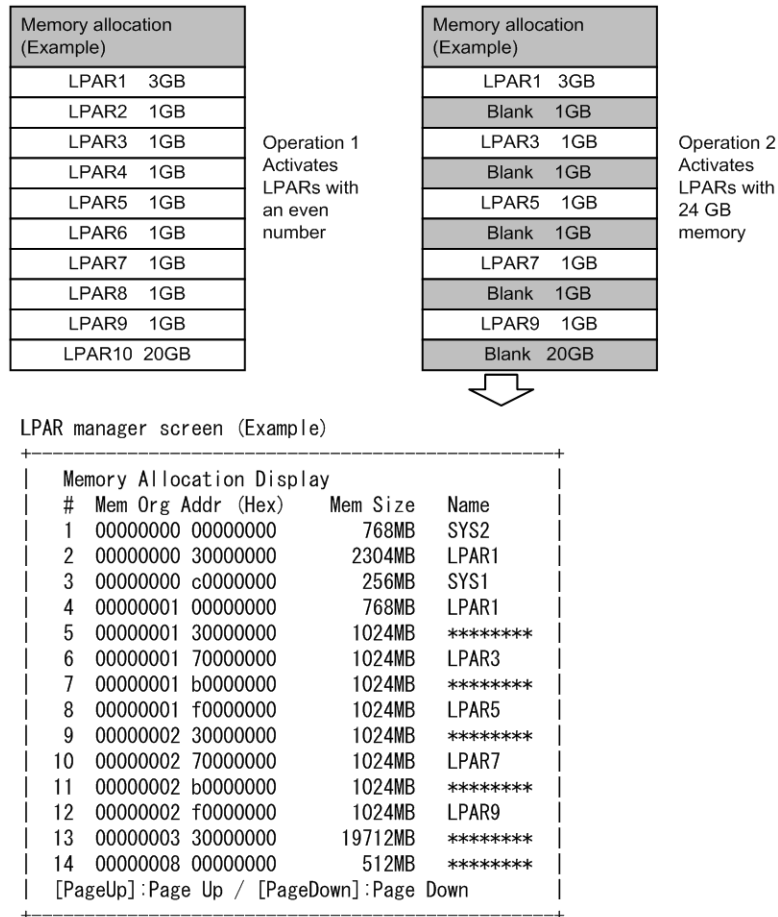


Figure 10-1 Example 1 of Memory Fragmentation

When this problem has occurred, performing the following operations may activate the LPAR. You can find the LPAR memory allocation on the physical memory in the memory allocation display in the logical partition (LPAR) configuration screen.

1. Change the memory size of an LPAR to activate to the size containing up to 4 blanks of memory.
2. Deactivate those activated LPARs that are using memory next to blank memory.
3. Define a dummy LPAR, specify smaller blanks of memory to the memory size of the dummy LPAR, and then perform activation.



Note:

- It is recommended that you should check blank memory allocation in the memory allocation display to keep the number of discontinuous blanks of memory up to 4 during operation.

Example 2:

Failure in LPAR activation due to LPAR memory fragmentation

(LPAR activation fails when 4 or more discontinuous blanks of memory which all the blanks are under the following condition are allocated to an LPAR)
Condition: Blank size exceeds the total memory size from the row which physical memory address is "00000000 00000000" to the row above the row which 'Name' column is 'SYS1' on "Memory Allocation Display" (*1).

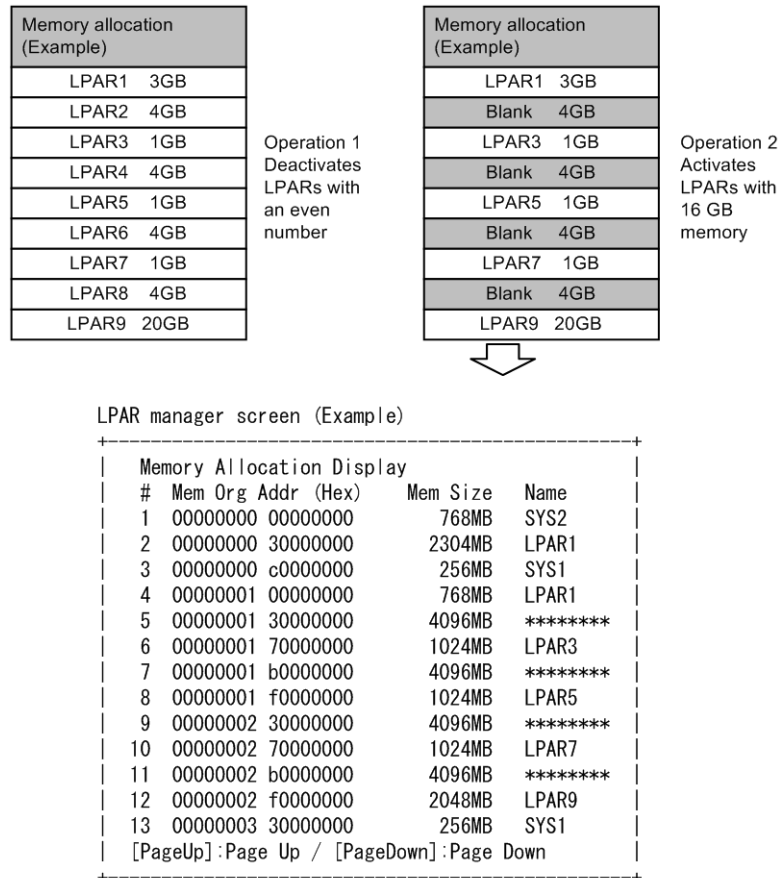


Figure 10-2 Example 2 of Memory Fragmentation

When this problem has occurred, performing the following operations may activate the LPAR. You can find the LPAR memory allocation on the physical memory in the memory allocation display in the logical partition (LPAR) configuration screen.

1. The size of memory which allocate to activated LPAR is set to the size under the total memory size from the row which physical memory address is "00000000 00000000" to the row above the row which **Name** column is **SYS1** on **Memory Allocation Display**.
2. Deactivate an LPAR which the memory next to blank memory is allocated to in order to reduce the number of discontinuous blank of memory.
3. Define a dummy LPAR, set the memory size of the dummy LPAR to the total memory size which shown at 1.).

Memory allocation to LPARs

Memory setting over 1TB is supported only for the following OSs. Do not set it to other OS, otherwise OSs might not boot properly.

- Windows Server 2008 R2 *1
- Windows Server 2008 R2 SP1
- Windows Server 2012
- Windows Server 2012 R2
- Windows Server 2016
- Red Hat Enterprise Linux 6
- Red Hat Enterprise Linux 7

*1: When using a memory in excess of 1TB, you must set the memory by following procedures.

1. Set the memory capacity to less than 1TB, and boot the OS.
2. Apply the KB980598 into the OS.
3. Shut down the OS.
4. Set the memory capacity to over 1TB, and boot the OS.

PCI Device Assignment

- When LPAR using a USB device is changed, the connection target of the remote console is changed together.
- It is necessary to assign the USB device to the LPAR which uses the USB device before activation. You cannot select an LPAR, to which the USB device is not assigned, to use the USB device.
- It is necessary to activate an LPAR to use the USB device. You cannot select the LPAR deactivated or in failure to use the USB device. When the LPAR using a USB device fails, you cannot change the destination of the USB device to another LPAR.
- Check carefully that the condition is as described below, and detach the USB device.

- The OS is not in the booting or rebooting.
- USB device is recognized by the OS or firmware for use once, and then the USB device is detached from the OS by performing hardware secure detachment for Windows or unmount operation for Linux.
- Do not remain to lock Alt, Windows, **Ctrl** and **Shift** keys after display the Remote console.

If detaching the USB device when these conditions are not met, the following phenomena might occur.

- Unstable status in firmware or OS, or OS hang up.
- Data loss or remaining the display of the USB device on the OS.
- Keyboard operation does not worked correctly.

When these phenomena above occur by detaching the USB device, carry out the procedure corresponding to each phenomenon.

- Attach USB device to the LPAR first. When the OS does not operate properly even if you have attached USB device. deactivate the LPAR and then activate the LPAR again.
- Attach the USB device, and then detach it again.
- Some key might be pressed and being locked on OS. Carry out the following procedure.

When using the Windows, display the OS by Remote console and NETM / Remote console or the remote desktop of a full display, and then press all of Alt, Windows, **Ctrl** and **Shift** keys which are on the right and left side.

When using the Linux, display the OS on the Remote console and then press all of Alt, Windows, **Ctrl** and **Shift** keys which are on the right and left side.

- When attaching the USB device to the LPAR, the OS on the LPAR recognizes the USB device automatically. When detaching the USB device has not been completed properly, the OS may not recognize the USB device automatically, and the same thing might happen according to the OS status.

When the USB is not recognized for a while, detach the USB device and then attach it again.

When the detaching and the re-attaching do not work, unplug and plug the USB cable or uninstall the USB device driver from the OS and then reinstall the driver.

- An error message may be displayed in detachment of USB with Linux. If the USB device is not be mounted, the USB device data and the future OS performance will not be affected.
- When a USB port different from the port used when the EFI boot option is registered, the CD/DVD drive may not be recognized. If this occurs, re-register the boot option.
- At the LPAR manager boot, do not connect a disk with the GUID partition table (GPT) to the front USB. If you attempt to boot LPAR manager with a GPT disk in the front USB, the LPAR manager may fail to be booted. If this happens, remove the GPT disk from the front USB and then boot the LPAR manager.
- Do not use devices not supported by LPAR manager. If you do, something wrong may occur such as that EFI on the LPAR cannot recognize the device or that the guest OS may fail to boot up.

Using inter-LPAR communication in a redundant network configuration

To use inter-LPAR communication with shared NICs within the same server blade, you must specify the settings below for applicable network segments (both primary and secondary).

If you do not specify the settings, inter-LPAR communication might not be possible during a link failover.

Table 10-4 Settings specified for network segments that use inter-LPAR communication

Communication source LPAR configuration / Guest OS		Communication destination LPAR configuration / Guest OS						
		Windows Server 2008		Windows Server 2012	RHEL			
		Intel(R) PROSet ¹	Intel(R) PROSet ²	OS standard teaming ³	bonding active-backup	bonding balance-tlb	bonding balance-alb	hbonding active-backup
Windows Server 2008	Intel(R) PROSet ¹	C	C	C	C	C	C	C
	Intel(R) PROSet ²	C	A	A	B	C	A	C
Windows Server 2012	OS standard teaming ³	C	A	A	B	C	A	C
RHEL	bonding active-backup	C	B	B	B	C	B	C
	bonding balance-tlb	C	C	C	C	C	C	C
	bonding balance-alb	C	A	A	B	C	A	C
	hbonding active-backup	C	C	C	C	C	C	C
Legend: A: On the Inter-LPAR Packet Filtering sub-screen on the Virtual NIC Assignment screen, use the default, Disable. B: On the Inter-LPAR Packet Filtering sub-screen on the Virtual NIC Assignment screen, use the default, Disable. Set "fail_over_mac=1" for the bonding option of the guest RHEL. Only when "fail_over_mac=1" cannot be set, select Disable(ALL) on the Inter-LPAR Packet Filtering sub-screen. C: On the Inter-LPAR Packet Filtering sub-screen on the Virtual NIC Assignment screen, select Enable. Note: 1 When Intel(R) PROSet connection monitoring function is enabled in Windows Server 2008 SP2 / Windows Server 2008 R2 / Windows Server 2008 R2 SP1								

Communication source LPAR configuration / Guest OS	Communication destination LPAR configuration / Guest OS						
	Windows Server 2008		Windows Server 2012	RHEL			
	Intel(R) PROSet ¹	Intel(R) PROSet ²	OS standard teaming ³	bonding active-backup	bonding balance-tlb	bonding balance-alb	hbonding active-backup
2	When Intel(R) PROSet connection monitoring function is disabled in Windows Server 2008 SP2 / Windows Server 2008 R2 / Windows Server 2008 R2 SP1						
3	When OS standard teaming function is used in Windows Server 2012 or later Windows Server						

Displaying shared NIC/virtual NIC by ethtool command

- The displaying contents of shared NIC/virtual NIC by `ethtool` command of Linux are as follows for both onboard and mezzanine card.

Table 10-5 Ethtool command

Item	Support
Supported ports	FIBRE
Supported link modes	1000baseT/Full

Use Dedicated NIC

- When SR-IOV is enabled, a performance may degrade because multiqueue operating in dedicated mode does not work.
For details, see the *Hitachi Compute Blade Emulex Adapter User's Guide for Hardware*.
However, it cannot be changed in LP mode. If necessary, change it in Basic mode.

Use Shared NIC

- Shared NIC function in which LPAR manager emulate the LAN controller. Performance is influenced according to an environment such as use situation of processor. In communication with an external network, the difference of communication performance with a physical LAN controller and the range of fluctuation of performance also become large as the number of shares of a physical controller increases. Therefore use a physical LAN controller properly according to requirement to be used, such as environment and band width. When using many physical LAN controllers or 10Gps high-speed physical LAN controllers, performance of shared NIC may not appear as equivalent to a bandwidth.

- When even one LPAR is in an activate mode, an addition and deletion of shared NIC cannot be executed. When changing a configuration of shared NIC, all the LPARs need to be in a Deactivate mode.
Therefore set up the configuration of shared NIC before LPAR is in an activate mode (recommended)
- When a failure of link down occurs in a physical NIC, shared NICs that share the physical LAN controller where the failure occurred can no longer communicate with the external network or other LPARs. Moreover, when the hardware failure which can be automatic recovery may become impossible temporarily. In this case, since the status which cannot communicate continues for about 60seconds, some applications may terminate by abnormality communication.
Therefore, it recommends making time of recovery of a communication failure into sufficient value, or making the system redundancy.
- At the time of LPAR manager booting, force recovery and unexpected rebooting, or unexpected rebooting external equipment may detect a temporary link down of shared NIC.

Availability of Shared FC

The following table shows the availability of shared FC under the connection configurations.

Table 10-6 Availability of the shared FC

Connection configuration			Availability of shared FC	
			8Gbps FC adapter	16Gbps FC adapter
Connected to the storage via FC switch module	FC switch module supporting NPIV	PtoP Connection	Available	Available
		FC-AL (Loop) Connection	Not Available	Not Available
	FC switch module not supporting NPIV	PtoP Connection	Not Available	Not Available
		FC-AL (Loop) Connection	Not Available	Not Available

Timeout in Saving Configuration

Timeout time for saving configuration is 12 minutes. However, timeout might occur in saving the configuration, if LPAR manager is in a high load status.

You can confirm the status of LPAR manager load by the value of SYS2 on the LPAR Usage screen.

It is assumed that the LPAR manager is in a high load status if the value of Dsp(ms) on SYS2 is more than 1800ms. If the high load is temporary, causing the timeout in saving configuration, please save the configuration again after the load is decreased.

Boot Option Settings

When the same device path is registered in different boot options, you may fail to install or boot the OS. It is confirmed that this problem has occurred in Windows Server 2008.

In this case, Delete the boot option of the other and execute boot OS/Install of OS.

The following is an example where the same device path is registered in different boot options.

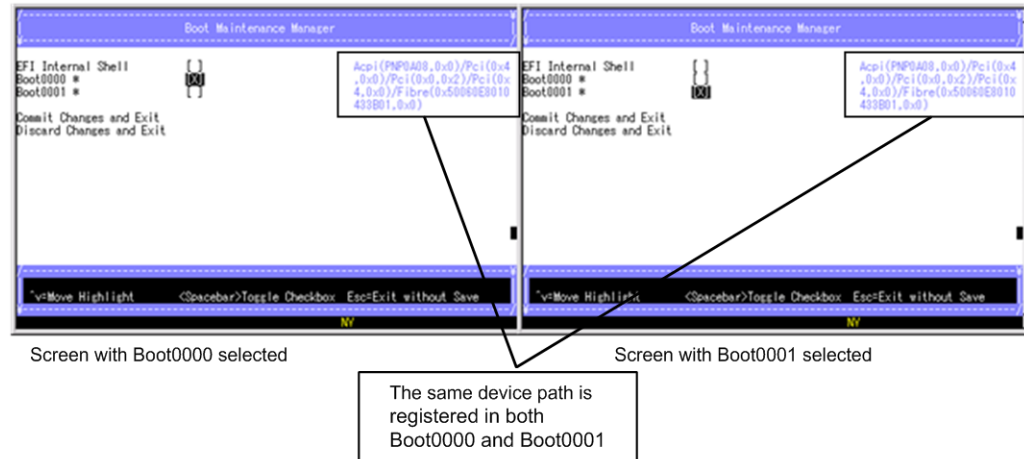


Figure 10-3 Boot Device Selecting Screen

LPAR manager Shutdown

- There is no way to check when the configuration information is saved. If the time is unknown, you need to save the configuration information before shutting down. If you shut down or reboot LPAR manager before saving the configuration, newly changed values will be lost. See Save Configuration Changed on LPAR manager Screen for how to save LPAR manager configuration.
- Do not turn off LPAR manager from the management module. It might cause serious trouble to LPAR manager. (LPAR manager might not turn on) When turning off LPAR manager, deactivate all LPARs, then shut off.

Notes for System Management

Restriction when Dual-core CPU is installed in CB 520H A1/B1/B2/B3/B4 model

When only one dual-core CPU is installed in the server blade CB 520H A1/B1/B2/B3/B4 model, set "Enable" to Hyper-Threading. If Hyper-Threading is "Disable", an unexpected system-down might occur on LPARs.

Restriction when TPM (Trusted Platform Module) is installed

LPAR manager does not support TPM (Trusted Platform Module). Set the TMP setting in the EFI setup menu as follows:

Select System Settings > System Security > TPM Settings. And then disable TPM Device.

For details, see the *Hitachi Compute Blade 500 series EFI User's Guide*.

Isolation/degradation for CPU, memory, or PCI device

- System event log (SEL) collection for a system unit or alert notice for SC/BSM is performed when isolation/degradation occurs in a CPU, a memory, or a PCI device.
- Some devices cannot be recognized at the next LPAR manager startup time, and some LP configuration information are deleted or reconfigured when isolation/degradation occurs in a CPU, a memory, or a PCI device. Note that, by using the KeepConfig option, the LPAR manager holds the LPAR manager configuration in the management module. For details, see [Backing up the LPAR manager configuration as of a time before device isolation on page 6-3](#).
- Restore backup files to return to the original LP configuration information before starting a LPAR manager when isolation/degradation is recovered due to hardware exchange. If the backup file is not created, check that the LP configuration is changed or not, and set the LP configuration as needed.
- When you migrate an LPAR with one or more FC ports isolated on the source server blade to the destination server blade with FC ports with no errors in Concurrent Maintenance mode, the FC ports may be isolated even on the destination server blade.

For removing an FC port isolated, see the *Hitachi Compute Blade LPAR Migration Guide*.

CPU core degradation

When restarting LPAR manager in a state that CPU core degradation occurs, LPAR manager cannot recognize a core which was degenerated, and the following events occur.

- A mapping of physical processor for logical processor in all LPARs is initialized.
- A processor group number of core which was degenerated is initialized.

Restrictions on use of Onboard LAN

Note the following restrictions when you use Onboard LAN on CB 520X B1/B2/B3 server blades.

- Disable a port on an OS when you do not desire to allow the OS to use the port.

- Windows: Right-click on the target of the ports listed in Network adapters in the Device Manager window, and then select disabled.
- Red Hat Enterprise Linux: Execute the "ifdown eth* (* shows a port number)" command to the target port.
- The Onboard LAN does not support the auto failback function for NIC teaming configurations with only Onboard LAN ports.

Restrictions on use of Emulex 10Gb NIC

When the following Emulex 10Gb NICs are used, there are limitations on the supported LPAR manager firmware versions depending on the firmware versions of these NICs:

- Onboard LAN
- Emulex 10Gb 4-port LAN mezzanine card
- Emulex 10Gb 4-port converged network mezzanine card

Table 10-7 Emulex 10Gb NIC firmware combinations (Emulex Blade Engine 3)

Emulex 10Gb NIC firmware version	LP firmware version					
	01-3X or lower	01-4X or later	01-7X or later	01-90 or later	02-40 or later	02-45 or later
4.1.334.2801 or lower	Y ¹	-	-	-	-	-
4.2.433.604 or later	Y ¹	Y	Y	Y	-	-
4.6.348.0 or later	-	-	Y	Y	-	-
10.2.340.10 or later	-	-	-	Y	Y	Y
10.6.144.270 2 or later	-	-	-	-	-	Y
11.1.215.0 or later	-	-	-	-	-	-
Legend: Y: Supported -: Not supported Notes: 1. Not supported when connecting Emulex 10Gb NIC-1Gb switch module.						

Table 10-8 Emulex 10Gb NIC firmware combinations (Emulex XE104)

Emulex 10Gb NIC firmware version	LP firmware version	
	02-01 or later	02-45 or later
10.2.370.16 or later	Y	Y
10.6.144.2704 or later	-	Y
Legend: Y: Supported -: Not supported		

Restrictions of the numbers of NIC ports assignment for Windows

- When using Windows, there are restrictions in the maximum number of the ports which can be assigned to one LPAR. When exceeding the limitation, the following phenomena may occur.
 - OS installation may fail or take so much time.
 - Temporary link-down may occur during OS operation.

[Windows Server 2008, Windows Server 2008 R2]

- Up to eight ports can be assigned per core.
- However, in case of Emulex 10Gb mezzanine LAN card, 4 times as many CPU resources are consumed per single port, as compared with other cards. When assigning ports of "Emulex 10Gb mezzanine LAN card", count one port as four ports.
- The relation between the number of processors and the maximum number of card ports which can be assigned is shown below.

Table 10-9 Relation between the number of CPUs and the number of card ports (in case of Windows Server 2008, Windows Server 2008 R2)

Number of processors per LPAR		Maximum number of ports	Number of ports which can be assigned	
Hyper- Threading is Disable (Number of cores)	Hyper- Threading is Enable (Number of threads)		Dedicated NIC (Emulex 10Gb) ¹	Shared NIC Virtual NIC VF NIC
1	1 to 2	8	-	8
			2	-
2	3 to 4	16	-	16
			2	8
			4	-

Number of processors per LPAR		Maximum number of ports	Number of ports which can be assigned	
Hyper-Threading is Disable (Number of cores)	Hyper-Threading is Enable (Number of threads)		Dedicated NIC (Emulex 10Gb) ¹	Shared NIC Virtual NIC VF NIC
3	5 to 6	24	-	16
			2	16
			4	8
			6	-
4	7 to 8	32	-	16
			2-4	16
			6	8
5 or more	9 or more	No limitation		
Notes:				
1. One port uses the CPU resource for four ports.				

[Windows Server 2012, Windows Server 2012 R2]

- Up to eight ports can be assigned per core, but four FC ports use the CPU resource for one port.
- The relation between the number of processor cores and the maximum number of card ports which can be assigned is shown below.

Table 10-10 Relation between the number of CPUs and the number of card ports (in case of Windows Server 2012, Windows Server 2012 R2)

Number of CPUs/LPAR		Maximum number of ports	Number of ports which can be assigned		
Hyper-Threading is Disable (Number of cores)	Hyper-Threading is Enable (Number of threads)		Dedicated NIC (Emulex 10Gb)	Shared NIC Virtual NIC VF NIC	FC adapter ¹
1	1 to 2	7	-	7	4
			2	5	4
			4	3	4
			6	1	4
2	3 to 4	15	-	15	4
			2	13	4

Number of CPUs/LPAR		Maximum number of ports	Number of ports which can be assigned		
Hyper-Threading is Disable (Number of cores)	Hyper-Threading is Enable (Number of threads)		Dedicated NIC (Emulex 10Gb)	Shared NIC Virtual NIC VF NIC	FC adapter ¹
			4	11	4
		6	9	4	
3 or more	5 or more	No limitation			
Notes:					
1. Four ports use the CPU resource for one port.					

[Windows Server 2016]

- You are able to assign up to 13 ports per processor core. However, note that four FC ports of a Hitachi 8Gb FC adapter use the equivalent resources of one port and three FC ports of the Hitachi 16Gb FC adapter use the equivalent resources of one port.
- The relation between the number of processor cores and the maximum number of card ports which can be assigned is shown below.

Table 10-11 Relation between the number of CPUs and the number of card ports (in case of Windows Server 2016)

Number of CPUs/LPAR		Maximum number of ports	Number of ports which can be assigned		
Hyper-Threading is Disable (Number of cores)	Hyper-Threading is Enable (Number of threads)		Shared NIC Virtual NIC VF NIC	8Gb FC adapter ¹	16Gb FC adapter ²
1	1 to 2		13	12	4
			12	-	3
2 or more	3 or more	No limitation			
Notes:					
1. Four ports use the CPU resource for one port.					
2. Three ports use the CPU resource for one port.					

Multicast communication errors

When all of the following occurrence conditions are met, multicast packets that use shared NIC cannot be sent or received:

- When the firmware version of LPAR manager being used is 01-01 to 02-20.
- When the external switch settings on the multicast communication route match No. 2 in the following table:

No.	External switch settings		Communication error
	IGMP Snooping	IGMP Querier	
1	Enabled	Enabled	None
2	Enabled	Disabled	Occurred
3	Disabled	Enabled	None
4	Disabled	Disabled	None

Apply the following workaround if the occurrence conditions above are met:

1. Set IGMP Querier for the external switch to "Enable". (Recommended)
This setting is required for the external switch that is connected to the virtual switch on the LPAR manager. However, if this workaround is performed and the external switch is using IGMP Membership Query of IGMPv2, the IGMPv3 function (source filtering) cannot be used.
2. Set IGMP Snooping for the external switch to "Disable".
The same setting is required for all external switches on the multicast communication route. However, if this workaround is performed, the network performance might decrease because the multicast packets are sent to all ports. If you want to decrease the load, set VLAN for the virtual and external switches.

Performance Slowdown on the Management Path

When the processor usage rate has reached significantly high in the LPAR manager network communication due to heavy load on the shared NIC, performance in LPAR manager management path can slow down to cause the following problems.

- It takes longer time, six minutes or longer, to save configuration information.
- It takes longer time, 30 minutes or longer for 1 Gbps interface, to upload the firmware update in operation.
- It takes longer time for HvmSh to respond a command, or the timeout occurs.
- Registering or updating LPAR manager with HVM Navigator fails due to the communication error.
- Operation to LPAR manager from SC/BSM fails due to the timeout.
- LP Web system, logical VGA snapshot, is not displayed, or refreshing the display takes longer time.
- It takes longer time, five minutes or longer, to collect LPAR manager dumps.

You can find a value of the processor usage rate in the LPAR manager network communication as a value of SYS2 on the LPAR Usage screen. When a problem shown above occurs, check the SYS2 value on the LPAR Usage screen. If 1800 ms or larger is shown as Dsp (ms) in SYS2, the heavy load on the shared NIC is supposed to cause the problem.

When a heavy load on the shared NIC causes such a problem, reconfigure the network configuration of the shared NIC and the load on it.

When the heavy load is temporary, perform the failed operation again after the load is relieved.

Expansion of VNIC System No

The following table shows that N+M cold standby function is supported or not due to expanding of VNIC System No. The standby server blade version should be equal to or greater than the active server blade version.

Table 10-12 Support condition

Active server blade		Standby server blade	Support status of N+M cold standby function
Expansion of VNIC System No	VNIC System No	Expansion of VNIC System No	
Not supported	1 to 128	Not supported	Y
		Supported	Y ¹
Supported	1 to 128	Not supported	-
		Supported	Y
	129 or larger	Not supported	-
		Supported	Y

Notes:

1.

When VNIC System No is changed to 129 or larger in the standby server blade, the switching back N+M cold standby function cannot be used.

Y: Supported, -: Not supported

Remote Console Function

- The power operations through remote console are performed to the server blades. In other words, the power operations to the server blade in the LP Mode effect the all LPARs which LPAR manager manages. Therefore, when the server blade is in the LP mode, power operation through the remote console is disabled. So, power-on, forced power-off, and reset using the remote console are not available. Perform the power operations to the server blade by using Web console, when it is in the LP mode.
- When you use the remote control function, the screen display and mouse operation slow down due to SVGA emulation.

- If you operate the mouse on the EFI screen or text screen during the guest OS installation, input from the keyboard may slow down. Do not use the mouse on those screens.
- There is possibility that the error message is not displayed during Windows boot up. In that case, check a guest screen or a virtual COM console.

NETM/Remote Control

When you use the remote control function, the screen display and mouse operation slow down due to SVGA emulation.

When you need not assign USB, use the remote control function while USB device/remote control are not assigned.

However, the performance of remote control function improved only following condition.

Table 10-13 Available Display Size for Remote Console

Video Mode	Display Size	Assigned USB Device/Remote control to LPAR	
		Yes	No
Text Mode	N/A	-	-
Graphic Mode	640x480	-	-
	800x600	-	-
	1024x768	-	Y
	1280x1024	-	-
	Other	-	-
Legend: Y: Improved -: Not Improved			

Server Conductor/Blade Server Manager

Not supported for displaying/setting of VF NIC.

Do not backup configuration information using SC/BSM while the configuration is being saved on the LPAR manager screen or HVM Navigator, or LPAR migration is being performed. If you do, backed up configuration is incomplete. Discard the back-up obtained during the saving or migration mentioned lower. Back up the configuration again after the save or the migration is complete.

Server Conductor/Deployment Manager

For the latest configuration of Server Conductor/Deployment Manager, see the *Server Conductor/Deployment Manager*.

- Not supported for VF NIC.
- Clearing partitions on the disk of LPAR manager including "OS clear install" is not supported.
- Network boot (PXE boot) of dedicated NIC is not supported.
- Boot configuration should be set as network boot (PXE boot) when using Server Conductor/Deployment Manager.
- To check the execution status of a DPM scenario in an LPAR manager environment, use the remote console. If a guest screen is displayed during the execution of a DPM scenario, the execution of the scenario might fail because of a network communication timeout.
- The MAC address to a parameter file for disk duplication of the DPM management server should be the same as the MAC address of a NIC registered at the top of the EFI Boot Order.
- LPAR reboots five (5) times at the disk duplicate installation as Basic does. If executing one of the followings before five reboots are completed, automatic reboots stops and DPM will halt still in the status of operation. Then follow the two instructions.
 - (1) Connect to the guest console from the LPAR manager screen.
 - (2) Connect via the remote desktop.
- Both LPAR to be a master client and LPAR to be a target client should have the same number of ports for a fibre channel (FC), even if any LU is not assigned to the LPARs. If not the same, installation may fail. FC assignment can be executed on the PCI Device Assignment screen. For other conditions including the LU size, see the *Server Conductor/Deployment Manager*.
- The progress status report displayed on the remote console may have disturbed characters. DPM will operate properly regardless of the symptom.

Server Conductor/Advanced Agent

In Linux, when a high load is continuously applied to USB storage devices such as USB memory by using, for example, the benchmark measurement tool, if the watchdog timer is set for Server Conductor/Advanced Agent, a watchdog timeout might occur.

Power Capping

Slowdown of processor occurs when the value for upper limit of power consumption is too low. Then Guest OS on LPAR might not operate normally. Therefore check the processor performance on the Guest OS and set the proper value.

Setting Item Catalogue

This Appendix describes Setting Item Catalogue.

- ☐ [Server Blade which LPAR manager supports](#)
- ☐ [PCI device which LPAR manager supports](#)
- ☐ [OSs which LPAR manager supports](#)
- ☐ [Functions which LPAR manager supports](#)
- ☐ [SR-IOV functions which LPAR manager supports](#)
- ☐ [LPAR manager licenses](#)
- ☐ [Differences in supported items depending on the guest OSs](#)

Server Blade which LPAR manager supports

Server Blade supported by LPAR manager is shown in the table below.

Table A-1 Server Blade which LPAR manager supports

Server Blade ¹		Support
CB 520H	A1/B1	Y (01-0X or later)
	B2	Y (01-6X or later)
	B3	Y (02-05 or later)
	B4	Y (02-50 or later)
CB 520A	A1	Y (01-1X or later)
CB 540A	A1/B1	Y (01-2X or later)
CB 520X	B1	Y (01-8X or later)
	B2	Y (02-27 or later)
	B3	Y (02-56 or later)
Notes:		
1. Internal disks (HDD/SDD) in Server blades are not available.		

PCI device which LPAR manager supports

The PCI device supported by LPAR manager is shown in the table below.

Table A-2 PCI device which LPAR manager supports

PCI-Device			Support		
			Dedicated	Shared	Exclusive shared
NIC	Onboard LAN 1 ¹ , 2, 3, 4		-	Y	-
	Onboard LAN 2-4 ¹ , 2, 3, 4		Y	Y	-
	Mezzanine card	Broadcom 1Gb 4-port LAN mezzanine card	-	Y	-
		Broadcom 1Gb 8-port LAN mezzanine card	-	Y	-
		Emulex 10Gb 4-port LAN mezzanine card ¹ , 3, 4	Y	Y	-
		Emulex 10Gb 4-port converged	Y	Y	-

PCI-Device			Support		
			Dedicated	Shared	Exclusive shared
		network mezzanine card 1, 2, 3, 4			
FC	Mezzanine card	Hitachi 8Gb 2-port fibre channel mezzanine card	Y	Y	-
		Hitachi 8Gb 4-port fibre channel mezzanine card	Y	Y	-
		Hitachi 16Gb 2-port fibre channel mezzanine card ⁵	Y	Y	-
		Hitachi 16Gb 4-port fibre channel mezzanine card ⁵	Y	Y	-
USB	CD/DVD Drive	CB 520H A1/B1/B2/B3/B4, CB 520A A1, CB 540A A1/B1	-	-	Y
		CB 520X B1/B2/B3	Y	-	-
	USB Memory	CB 520H A1/B1/B2/B3/B4, CB 520A A1, CB 540A A1/B1	-	-	Y
		CB 520X B1/B2/B3	Y	-	-
	Key Board		-	-	-
	Mouse		-	-	-
KVM	CD/DVD Drive		-	-	Y
	USB Memory		-	-	Y
	Key Board		-	-	Y
	Mouse		-	-	Y
Remote Console	CD/DVD Drive		-	-	Y
	USB Memory		-	-	Y
	Key Board		-	-	Y
	Mouse		-	-	Y

Notes:
1. Port Multiple Assignment has not available.
Set "MultiChannel Support" as <Disabled>.
See the *Hitachi Compute Blade Emulex Adapter User's Guide for Hardware* for setting it.
However, it cannot be changed in LP mode. If necessary, change it in Basic mode.

PCI-Device	Support		
	Dedicated	Shared	Exclusive shared
2. Modes other than NIC and FCoE are not available. Set the Personality to NIC or FCoE. See the <i>Hitachi Compute Blade Emulex Adapter User's Guide for Hardware</i> for setting it. However, it cannot be changed in LP mode. If necessary, change it in Basic mode. 3. In LPAR assigned shared NIC or virtual NIC, the NIC (Intel 82576) is recognized as a 1Gbps of NIC on a guest OS. 4. In LPAR assigned shared NIC or virtual NIC, total throughput is about 3Gbps per LPAR manager. 5. Supported in LPAR manager firmware version 02-2X or later. For details about the supported fibre channel adapter versions, see the <i>HITACHI Gigabit Fibre Channel Adapter User's Guide (Support Matrix Edition)</i>.			

OSs which LPAR manager supports

OSs which LPAR manager supports are shown in the table below.

Table A-3 OSs which LPAR manager supports

Item		Support (version)
Guest OS CB 520H A1/B1	Windows Server 2008 SP2	Y (01-0X or later)
	Windows Server 2008 R2	Y (01-0X or later)
	Windows Server 2008 R2 SP1	Y (01-0X or later)
	Windows Server 2012	Y (01-3X or later)
	Windows Server 2012 R2	Y (01-9X or later)
	Windows Server 2016	-
	Red Hat Enterprise Linux 5.7	Y (01-2X or later)
	Red Hat Enterprise Linux 5.9	Y (01-7X or later)
	Red Hat Enterprise Linux 6.2	Y (01-0X or later)
	Red Hat Enterprise Linux 6.4	Y (01-5X or later)
	Red Hat Enterprise Linux 6.5	Y (01-9X or later)
	Red Hat Enterprise Linux 6.6	Y (02-06 or later)
	Red Hat Enterprise Linux 6.7	Y (02-45 or later)
	Red Hat Enterprise Linux 6.8	Y (02-56 or later)
	Red Hat Enterprise Linux 6.9	-
	Red Hat Enterprise Linux 7.1	Y (02-40 or later)
	Red Hat Enterprise Linux 7.2	Y (02-45 or later)

Item		Support (version)
	Red Hat Enterprise Linux 7.3	-
	Red Hat Enterprise Linux 7.4	-
Guest OS CB 520H B2	Windows Server 2008 SP2	-
	Windows Server 2008 R2	-
	Windows Server 2008 R2 SP1	Y (01-6X or later)
	Windows Server 2012	Y (01-6X or later)
	Windows Server 2012 R2	Y (01-7X or later)
	Windows Server 2016	-
	Red Hat Enterprise Linux 5.7	-
	Red Hat Enterprise Linux 5.9	-
	Red Hat Enterprise Linux 6.2	-
	Red Hat Enterprise Linux 6.4	Y (01-6X or later)
	Red Hat Enterprise Linux 6.5	Y (01-9X or later)
	Red Hat Enterprise Linux 6.6	Y (02-06 or later)
	Red Hat Enterprise Linux 6.7	Y (02-45 or later)
	Red Hat Enterprise Linux 6.8	Y (02-56 or later)
	Red Hat Enterprise Linux 6.9	-
	Red Hat Enterprise Linux 7.1	Y (02-40 or later)
	Red Hat Enterprise Linux 7.2	Y (02-45 or later)
	Red Hat Enterprise Linux 7.3 ²	Y (02-58 or later)
	Red Hat Enterprise Linux 7.4	-
Guest OS CB 520H B3	Windows Server 2008 SP2	-
	Windows Server 2008 R2	-
	Windows Server 2008 R2 SP1	Y (02-40 or later)
	Windows Server 2012	Y (02-05 or later)
	Windows Server 2012 R2	Y (02-05 or later)
	Windows Server 2016	Y (02-56 or later)
	Red Hat Enterprise Linux 5.7	-
	Red Hat Enterprise Linux 5.9	-
	Red Hat Enterprise Linux 6.2	-
	Red Hat Enterprise Linux 6.4	-
	Red Hat Enterprise Linux 6.5 ¹	Y (02-05 or later)
	Red Hat Enterprise Linux 6.6 ¹	Y (02-06 or later)

Item		Support (version)
	Red Hat Enterprise Linux 6.7 ¹	Y (02-45 or later)
	Red Hat Enterprise Linux 6.8 ¹	Y (02-55 or later)
	Red Hat Enterprise Linux 6.9 ^{1, 2}	Y (02-59 or later)
	Red Hat Enterprise Linux 7.1	Y (02-40 or later)
	Red Hat Enterprise Linux 7.2	Y (02-45 or later)
	Red Hat Enterprise Linux 7.3 ²	Y (02-58 or later)
	Red Hat Enterprise Linux 7.4 ²	Y (02-62 or later)
Guest OS CB 520H B4	Windows Server 2008 SP2	-
	Windows Server 2008 R2	-
	Windows Server 2008 R2 SP1	-
	Windows Server 2012	Y (02-50 or later)
	Windows Server 2012 R2	Y (02-50 or later)
	Windows Server 2016	Y (02-56 or later)
	Red Hat Enterprise Linux 5.7	-
	Red Hat Enterprise Linux 5.9	-
	Red Hat Enterprise Linux 6.2	-
	Red Hat Enterprise Linux 6.4	-
	Red Hat Enterprise Linux 6.5	-
	Red Hat Enterprise Linux 6.6	-
	Red Hat Enterprise Linux 6.7 ¹	Y (02-50 or later)
	Red Hat Enterprise Linux 6.8 ¹	Y (02-55 or later)
	Red Hat Enterprise Linux 6.9 ^{1, 2}	Y (02-59 or later)
	Red Hat Enterprise Linux 7.1	-
	Red Hat Enterprise Linux 7.2	Y (02-50 or later)
	Red Hat Enterprise Linux 7.3 ²	Y (02-58 or later)
	Red Hat Enterprise Linux 7.4 ²	Y (02-62 or later)
Guest OS CB 520A A1	Windows Server 2008 SP2	Y (01-1X or later)
	Windows Server 2008 R2	Y (01-1X or later)
	Windows Server 2008 R2 SP1	Y (01-1X or later)
	Windows Server 2012	Y (01-3X or later)
	Windows Server 2012 R2	-
	Windows Server 2016	-

Item		Support (version)
	Red Hat Enterprise Linux 5.7	Y (01-2X or later)
	Red Hat Enterprise Linux 5.9	Y (01-7X or later)
	Red Hat Enterprise Linux 6.2	Y (01-1X or later)
	Red Hat Enterprise Linux 6.4	Y (01-5X or later)
	Red Hat Enterprise Linux 6.5	Y (01-9X or later)
	Red Hat Enterprise Linux 6.6	Y (02-06 or later)
	Red Hat Enterprise Linux 6.7	-
	Red Hat Enterprise Linux 6.8	-
	Red Hat Enterprise Linux 6.9	-
	Red Hat Enterprise Linux 7.1	-
	Red Hat Enterprise Linux 7.2	-
	Red Hat Enterprise Linux 7.3	-
	Red Hat Enterprise Linux 7.4	-
Guest OS CB 540A A1/B1	Windows Server 2008 SP2	Y (01-2X or later)
	Windows Server 2008 R2	Y (01-2X or later)
	Windows Server 2008 R2 SP1	Y (01-2X or later)
	Windows Server 2012	Y (01-3X or later)
	Windows Server 2012 R2	-
	Windows Server 2016	-
	Red Hat Enterprise Linux 5.7	Y (01-3X or later)
	Red Hat Enterprise Linux 5.9	Y (01-7X or later)
	Red Hat Enterprise Linux 6.2	Y (01-2X or later)
	Red Hat Enterprise Linux 6.4	Y (01-5X or later)
	Red Hat Enterprise Linux 6.5	Y (01-9X or later)
	Red Hat Enterprise Linux 6.6	Y (02-06 or later)
	Red Hat Enterprise Linux 6.7	-
	Red Hat Enterprise Linux 6.8	-
	Red Hat Enterprise Linux 6.9	-
	Red Hat Enterprise Linux 7.1	-
	Red Hat Enterprise Linux 7.2	-
	Red Hat Enterprise Linux 7.3	-
	Red Hat Enterprise Linux 7.4	-
Guest OS CB 520X B1	Windows Server 2008 SP2	-
	Windows Server 2008 R2	-

Item		Support (version)
	Windows Server 2008 R2 SP1	Y (01-9X or later)
	Windows Server 2012	Y (01-8X or later)
	Windows Server 2012 R2	Y (01-8X or later)
	Windows Server 2016	-
	Red Hat Enterprise Linux 5.7	-
	Red Hat Enterprise Linux 5.9	-
	Red Hat Enterprise Linux 6.2	-
	Red Hat Enterprise Linux 6.4	-
	Red Hat Enterprise Linux 6.5 ¹	Y (01-8X or later)
	Red Hat Enterprise Linux 6.6 ¹	Y (02-06 or later)
	Red Hat Enterprise Linux 6.7 ¹	Y (02-45 or later)
	Red Hat Enterprise Linux 6.8 ¹	Y (02-55 or later)
	Red Hat Enterprise Linux 6.9 ^{1, 2}	Y (02-59 or later)
	Red Hat Enterprise Linux 7.1	Y (02-40 or later)
	Red Hat Enterprise Linux 7.2	Y (02-45 or later)
	Red Hat Enterprise Linux 7.3 ²	Y (02-59 or later)
	Red Hat Enterprise Linux 7.4 ²	Y (02-62 or later)
Guest OS CB 520X B2	Windows Server 2008 SP2	-
	Windows Server 2008 R2	-
	Windows Server 2008 R2 SP1	-
	Windows Server 2012	Y (02-27 or later)
	Windows Server 2012 R2	Y (02-27 or later)
	Windows Server 2016	Y (02-56 or later)
	Red Hat Enterprise Linux 5.7	-
	Red Hat Enterprise Linux 5.9	-
	Red Hat Enterprise Linux 6.2	-
	Red Hat Enterprise Linux 6.4	-
	Red Hat Enterprise Linux 6.5	-
	Red Hat Enterprise Linux 6.6 ¹	Y (02-27 or later)
	Red Hat Enterprise Linux 6.7 ¹	Y (02-45 or later)
	Red Hat Enterprise Linux 6.8 ¹	Y (02-55 or later)
	Red Hat Enterprise Linux 6.9 ^{1, 2}	Y (02-59 or later)

Item		Support (version)
	Red Hat Enterprise Linux 7.1	Y (02-40 or later)
	Red Hat Enterprise Linux 7.2	Y (02-45 or later)
	Red Hat Enterprise Linux 7.3 ²	Y (02-58 or later)
	Red Hat Enterprise Linux 7.4 ²	Y (02-62 or later)
Guest OS CB 520X B3	Windows Server 2008 SP2	-
	Windows Server 2008 R2	-
	Windows Server 2008 R2 SP1	-
	Windows Server 2012	Y (02-56 or later)
	Windows Server 2012 R2	Y (02-56 or later)
	Windows Server 2016	Y (02-56 or later)
	Red Hat Enterprise Linux 5.7	-
	Red Hat Enterprise Linux 5.9	-
	Red Hat Enterprise Linux 6.2	-
	Red Hat Enterprise Linux 6.4	-
	Red Hat Enterprise Linux 6.5	-
	Red Hat Enterprise Linux 6.6	-
	Red Hat Enterprise Linux 6.7	-
	Red Hat Enterprise Linux 6.8 ¹	Y (02-56 or later)
	Red Hat Enterprise Linux 6.9 ^{1, 2}	Y (02-59 or later)
	Red Hat Enterprise Linux 7.1	-
	Red Hat Enterprise Linux 7.2	Y (02-56 or later)
	Red Hat Enterprise Linux 7.3 ²	Y (02-58 or later)
	Red Hat Enterprise Linux 7.4 ²	Y (02-62 or later)
Notes: 1. Only the 64-bit version is supported. 2. There are some restrictions on supported functionality. For detailed restrictions, see Differences in supported items depending on the guest OSs on page A-24		

Functions which LPAR manager supports

Functions supported by LPAR manager are shown in the table below.

Table A-4 Functions which LPAR manager supports

Item			Support (version)
SMP configuration ¹³	2-blade SMP		Y (01-8X or later)
	4-blade SMP ¹⁴		Y (01-9X or later)
Max LPAR No.	Max LPAR No. which can be defined		30 (01-0X or later)
			60 (02-0X or later)
	Max LPAR No. which can be Activated.		Essential: 4 (01-0X or later) Advanced: 30 (01-0X or later) Enterprise: 60 (02-27 or later)
processor	Minimum division unit		Thread (01-0X or later)
	Max logical Processor No.	CB 520H A1/B1/B2	32 (01-0X or later)
		CB 520H B3	64 (02-05 or later) 72 (02-50 or later)
		CB 520H B4	88 (02-50 or later)
		CB 520A A1	32 (01-1X or later)
		CB 540A A1/B1	32 (01-2X or later)
		CB 520X B1/B2/B3	32 (01-8X or later) 64 (01-9X or later) 72 (02-28 or later) 240 (Only Dedicated mode, and 02-40 or later)
	Dedicated Processor	Physical Processor No.Specifier	Y (01-0X or later)
	Shared Processor	Physical Processor No.Specifier	Y (01-0X or later)
		Service rate	Y (01-0X or later)
		Idle Detection	Y (01-0X or later)
		Processor capping	Y (01-0X or later)
	The Max group No. which can be defined		Essential: 4 (01-0X or later) Advanced: 30 (01-0X or later) Enterprise: 60 (02-27 or later)
	Hyper Thread		Y (01-0X or later)
	Scheduling Mode dynamic change		Y (01-0X or later)
	Partition Reference Time Enlightenment (PRTE)		Y (02-25 or later)

Item			Support (version)
Memory	Minimum division unit		256 MB (01-0X or later)
	Max memory amount ¹	CB 520H A1/B1/B2/B3/B4	512 GB (01-0X or later) 768 GB (01-3X or later)
		CB 520A A1	384 GB (01-1X or later)
		CB 540A A1/B1	1024 GB (01-2X or later) 1536 GB (01-7X or later)
		CB 520X B1/B2/B3	1-blade: 1536 GB (01-8X or later) 2-blade: 3072 GB (01-8X or later) 4-blade: 6144 GB ² (01-9X or later)
	Memory amount which LPAR manager uses	CB 520H A1/B1/B2	2 GB (01-0X or later)
		CB 520H B3	2.5 GB (02-05 or later)
		CB 520H B4	4 GB (when MM Config Base is set to 2 GB, and 02-50 or later) 6 GB (when MM Config Base is set to 3 GB, and 02-50 or later)
		CB 520A A1	2 GB (01-1X or later)
		CB 540A A1/B1	2 GB (01-2X or later)
		CB 520X B1/B2	3 GB (01-8X or later)
		CB 520X B3	6 GB (02-56 or later)
	Non-NUMA	CB 520H A1/B1/B2/B3/B4	Y (01-0X or later)
		CB 520A A1	Y (01-1X or later)
		CB 540A A1/B1	-
		CB 520X B1/B2/B3	Y (01-8X or later)
	NUMA		Y (01-2X or later)
	L3 cache allocation ¹⁵	CB 520H A1/B1/B2/B3	-
		CB 520H B4	Y (02-55 or later)
		CB 520A A1	-
		CB 540A A1/B1	-
		CB 520X B1/B2	-
		CB 520X B3	Y (02-56 or later)

Item			Support (version)
NIC	Dedicated NIC ¹⁷	Minimum division unit	Controller (01-0X or later)
		Max Dedicated NIC Port No. which can be allocated to 1 LPAR.	Same as the number of physical NIC Number. (01-0X or later)
		VLAN	Y (01-0X or later)
		WOL	-
		Teaming	Y (01-0X or later)
		TSO	Y (01-0X or later)
		promiscuous mode	-
		communication among LPARs Packet Filter	-
		PXE Boot	-
		iSCSI Boot	-
		FCoE Boot ^{16,17}	Y (02-50 or later)
	Shared NIC	Minimum division unit	Port (01-0X or later)
		Max Physical LAN Controller No. which can be allocated to LPAR manager	8 (01-0X or later)
		Max logical port No. which can be allocated to LPAR manager	16 (01-0X or later)
		Max shared NIC port NO. which can be allocated to 1 LPAR.	16 (01-0X or later)
		port duplicate assignment	Y (01-0X or later)
		Port division allocation	Y (01-0X or later)
		VLAN	Y (01-0X or later)
		WOL ^{3,4}	Y (01-0X or later)
		Teaming	Y (01-0X or later)
		TSO	Y (01-0X or later)
		promiscuous mode	Y (01-0X or later)

Item			Support (version)
		Communication among LPARs Packet Filter	Y (01-0X or later)
		PXE Boot ³	Y (01-0X or later)
		iSCSI Boot	-
		FCoE Boot	-
	Virtual Function (VF) NIC	Minimum division unit	Port (01-9X or later)
		Maximum number of physical LAN controllers to be assigned per LPAR manager	4 (01-9X or later)
		Maximum number of physical ports to be assigned per LPAR manager	8 (01-9X or later)
		Maximum number of VF NIC per LPAR	16 (01-9X or later)
		Assigning a NIC port duplicately to an LPAR	Y (01-9X or later)
		Assigning a NIC port respectively to an LPAR	Y (01-9X or later)
		VLAN	Y (01-9X or later)
		WOL	-
		Teaming	Y (01-9X or later)
		TSO	Y (01-9X or later)
		Promiscuous mode	-
		Inter-LPAR transmission packet filter	-
		PXE boot	-
		iSCSI boot	-
		FCoE Boot	-
	Virtual NIC ¹⁷	Max Network Segment No.	4 (01-0X or later)
		Max Virtual NIC Port No. which can be allocated to 1 LPAR	16 (01-0X or later)

Item			Support (version)
		VLAN	Y (01-0X or later)
		WOL	-
		Teaming	Y (01-0X or later)
		TSO	Y (01-0X or later)
		promiscuous mode	Y (01-0X or later)
		Communication among LPARs Packet Filter	-
		PXE Boot	-
		iSCSI Boot	-
		FCoE Boot	-
	Multi-channel		-
	SR-IOV ⁵		Y (01-9X or later)
FC	Dedicated FC	Minimum division unit	Controller (01-0X or later)
		Max Dedicated FC Port No. which can be Dedicated at all LPARs	Same as the number of physical FC ports. (01-0X or later)
		SAN Boot	Y (01-0X or later)
		NPIV Support FC Switch Connection Configuration	Y (01-0X or later)
		SAN Storage directly Configuration	-
		LUID inheritance method	-
	Shared FC	Minimum division unit	port (01-0X or later)
		Max Shared FC port No. which can be shared at all LPARs (8Gbps FC adapter)	15 (01-0X or later)
		Max Shared FC port No. which can be shared at all LPARs (16Gbps FC adapter)	30 (02-2X or later)
		SAN Boot	Y (01-0X or later)

Item			Support (version)
		NPIV Support FC Switch Connection Configuration	Y (01-0X or later)
		SAN Storage directly Configuration	-
		HBA-core dedicated mode ¹⁵	Y (02-27 or later)
		LUID inheritance method	-
USB/KVM	Front panel	USB	-
	Server Blade	USB	Y (01-0X or later)
		KVM	Y (01-0X or later)
User Interface	GUI	Web Console	Y (01-0X or later)
		HCSM ⁶	Y (01-51 or later)
		SC/BSM ^{7,8}	Y (01-0X or later)
		HVM Navigator ¹⁷	Y (01-0X or later)
	CUI	LPAR manager Screen	Y (01-0X or later)
		Guest Screen	Y (01-0X or later)
	CLI	HvmSh	Y (01-0X or later)
		HvmGetPerf	Y (01-0X or later)
System operation	Web Console		Y (01-0X or later)
	HCSM ⁶		Y (01-51 or later)
	SC/BSM ^{7,8}		Y (01-0X or later)
	SC/DPM ⁹		Y (01-0X or later)
	HVM Navigator ¹⁷	LPAR configuration	Y (01-0X or later)
		Monitoring	Y (01-0X or later)
		Configuration Viewer	Y (01-0X or later)
		LPAR Migration	Y (01-0X or later)
	Remote Console		Y (01-0X or later)
	Virtual COM Console	Max simultaneous connection No.	16 (01-0X or later)
	Logical VGA snap shot		Y (01-0X or later)
	LP System Time	Local time	Y (01-0X or later)
		UTC	Y (01-6X or later)

Item			Support (version)
	NTP	LPAR Time	Y (01-0X or later)
		LPAR manager System time	Y (01-0X or later)
	Power Saving	Power Capping	Y (01-0X or later)
		C3	Y (01-0X or later)
		C6	Y (01-0X or later)
		P-State	Y (01-0X or later)
	LP IP Address	IPv4	Y (01-0X or later)
		IPv6	Y (02-25 or later)
	LP communication settings		Y (02-25 or later)
	Maximum settable VNIC System No		128 (01-01 or later) 1024 (01-4X or later)
	DNS		Y (02-40 or later)
	Performance tuning options ¹⁵		Y (02-27 or later)
Hi-reliability	N+M Cold Standby ^{10,11}		Y (01-0X or later)
	UPS		Y (01-0X or later)
	Role-based access control		Y (02-45 or later)
	User authentication	Local authentication	Y (02-05 or later)
		LDAP authentication	Y (02-40 or later)
		RADIUS authentication	Y (02-45 or later)
		User authentication log	Y (02-05 or later)
	Audit log		Y (02-40 or later)
Maintenance	LPAR manager security		Y (01-8X or later)
	LPAR manager Dump		Y (01-0X or later)
	Guest OS dump		Y (01-0X or later)
	Console log data		Y (01-0X or later)
	Guest Memory Dump		Y (01-0X or later)
	LPAR manager Firmware Version Upgrade / Revision Update		Y (01-0X or later)
Virtualization software	VMware		-
	Hyper-V		-
Database	HiRDB		Y (01-0X or later)

Item		Support (version)
	Oracle Database ¹²	Y (01-0X or later)
Notes: 1. The maximum amount of memory that can be allocated to LPAR is calculated by the following formula: (maximum-amount-memory) - (amount-of-memory-used-by-LPAR-manager) 2. The maximum amount of memory that can be allocated per LPAR is 4092 GB. 3. Only supported the Onboard-LAN (LOM) or the mezzanine card. And only when the management tool is the deployment manager of HCSM. 4. Only supported a power control by way of WOL by SC/BSM and SC/DPM. 5. For supported status, see SR-IOV functions which LPAR manager supports. 6. For support status, see the <i>Hitachi Command Suite Compute Systems Manager User Guide</i>. 7. CB 520X B1/B2/B3 does not support this item. 8. VF NIC view and settings are not supported. 9. VF NIC does not support this item. 10. N+M cold standby is supported only between same server blade models. 11. Unsupported when Emulex 10Gb 4 port Onboard LAN is enabled on CB 520X B1/B2/B3. 12. Supported status differs depending on Oracle Database version. Visit the following URL. <Linux> http://www.oracle.com/technetwork/database/enterprise-edition/tech-generic-linux-new-086754.html <Windows> http://www.oracle.com/technetwork/jp/database/clustering/tech-generic-windows-new-166584.html 13. Only CB 520X B1/B2/B3 supports this item. 14. For CB 520X B1, this item is supported by LPAR manager firmware versions 01-90 or later. For CB 520X B2, this item is supported by LPAR manager firmware versions 02-27 or later. 15. Only Enterprise models are supported. 16. The FCoE functionality is supported only by onboard LANs (Emulex XE104). 17. There are some restrictions on supported functionality. For detailed restrictions, see Differences in supported items depending on the guest OSs on page A-24		

SR-IOV functions which LPAR manager supports

SR-IOV functions supported by LPAR manager are shown in the table below.

Table A-5 SR-IOV functions which LPAR manager supports

Item		Support (version)
Prerequisite configuration	Switch module	Connection only to 10Gb switch module is supported. ¹⁶ (01-9X or later)
	NIC ^{1, 2, 3, 19}	Emulex 10Gb NIC (01-9X or later)
	OS ^{4, 5, 6, 7, 17}	Emulex Blade Engine 3 Windows Server 2012 (02-55 or later) Windows Server 2012 R2 (02-55 or later) Red Hat Enterprise Linux 6.4 (01-9X or later) Red Hat Enterprise Linux 6.5 (01-9X or later) Red Hat Enterprise Linux 6.6 (02-06 or later) Red Hat Enterprise Linux 6.7 (02-45 or later) Red Hat Enterprise Linux 7.1 (02-45 or later) Red Hat Enterprise Linux 7.2 (02-50 or later)
		Emulex XE104 Red Hat Enterprise Linux 6.4 (01-9X or later) Red Hat Enterprise Linux 6.5 (01-9X or later) Red Hat Enterprise Linux 6.6 (02-06 or later) Red Hat Enterprise Linux 6.7 (02-45 or later) Red Hat Enterprise Linux 7.1 (02-45 or later)

Item			Support (version)
			Red Hat Enterprise Linux 7.2 (02-50 or later)
Settings with SR-IOV	NIC SR-IOV settings		Enabled (01-9X or later)
	NIC scheduling mode		Shared mode (01-9X or later)
Performance	Maximum throughput ^{8, 9}		About 7 Gbps (01-9X or later)
	Load on physical processors		Low (01-9X or later)
NIC functions	RSS (Multi-queue)		-
	Flow control		Y (01-9X or later)
	Transmission bandwidth control ¹⁸		Only Send is supported. Unit: 100 Mbps Range: 100 Mbps to 10000 Mbps (01-9X or later)
	Virtual port (VF)	Number of Shared ports ¹⁰	16 (Emulex Blade Engine 3) 15 (Emulex XE104) (01-9X or later)
		Multicast packet	Y (01-9X or later)
		Broadcast packet	Y (01-9X or later)
		Promiscuous mode	-
	Redundancy configuration (Windows)	Mode	No dependency on the switch: Y Static teaming: Y LACP: N
	Redundancy configuration (Linux) ¹¹	Monitoring	ARP monitoring/MII monitoring (Emulex Blade Engine 3) MII monitoring (Emulex XE104) (01-9X or later)
		Mode	balance-rr: N active-backup: Y balance-xor: N broadcast: N 802.3ad: N balance-tlb: N balance-alb: N
MAC failover		Y (01-9X or later)	

Item			Support (version)
	VLAN ^{11, 15, 20}	Undef	-
		Port VLAN (Untagged) ¹⁷	Y (01-9X or later) (Only one VLAN can be set to one VF port.)
		Tagged VLAN	Y (01-9X or later) (Only [All] can be set.)
	Inter LPAR communication ^{12, 13}		Y (01-9X or later)
LPAR manager functions	User interface	HVM Navigator	Y (01-9X or later)
		LPAR manager screen	Y (01-9X or later)
		HvmSh	Y (01-9X or later)
	LPAR migration	Shutdown	Y (01-9X or later)
		Concurrent maintenance	-
	Force Recovery ¹⁴		Y (01-9X or later)
Middleware	HCSM		Y (01-9X or later) (Display only)
	SC/BSM		-
	SC/DPM		-
	Server installation and monitoring tool (SIMT) log monitor		Y (01-9X or later)
	Linux high reliability options	Linux Tough Dump	Y (01-9X or later)
		HA Network Driver for Linux	-
		HA Logger Kit for Linux	Y (01-9X or later)

Notes:

- Emulex 10 Gb NIC has multiple ports per controller. Set the same value of SR-IOV to ports in the controller: Enable or Disable.
- Emulex 10Gb NIC of different types of firmware cannot be mounted in a server blade.
- For details about combinations of firmware versions and drivers, see the *Hitachi Compute Blade Emulex Adapter User's Guide for Driver*.
- When a guest OS, to which VF NIC is assigned, is rebooted, the following messages may appear in /var/log/messages and in the system event log if SIMT log monitor is running. They do not affect the guest OS operation.

[/var/log/messages]
be2net 0000:XX:XX.X: Could not use PCIe error reporting
XX:XX.X: Bus: Dev. Func
[System event log]

Item	Support (version)
Timestamp Module Level System event log Message ----- yyyy-mm-dd hh:mm:ss PX Info 007B D2 7400 32 37XX 39FFFFFF An error was detected in H/W agent. This appears only when 37XX 39FFFFFF (XX depends on the LPAR number) is output. 5. When a guest OS enables promiscuous mode to VF NIC, at tcpdump startup for example, the following messages may appear in /var/log/messages and in the system event log if SIMT log monitor is running. They do not affect the guest OS operation. [/var/log/messages] be2net 0000:XX:XX.X: opcode 34-1 failed:status 3-8 XX:XX.X: Bus: Dev. Func [System event log] Timestamp Module Level System event log Message ----- yyyy-mm-dd hh:mm:ss PX WARNING 007B D2 7400 32 37XX 34FFFFFF An error was detected in H/W agent. This appears only when 37XX 39FFFFFF (XX depends on the LPAR number) is output. 6. When a VF NIC device is isolated, the following message appears in /var/log/messages. Immediately reboot the guest OS to which the VF NIC device is assigned to release the isolation. [/var/log/messages] clocksource tsc unstable (delta = -8589944970 ns) 7. For RX-ERR RX-DRP RX-OVR and TX-ERR TX-DRP TX-OVR in output results of netstat -i command, a value of the physical port are displayed. 8. This representative value is based on measurement results at Hitachi's environment. Actual throughput value differs depending on measuring environment and measuring method. 9. Network throughput value may not be get enough when the following situations occur: - Network traffic of VF NIC is high - A lot of interrupts occur for a short time, and CPU utilization is high. Reboot the OS after adding the following commands on "/etc/rc.d/rc.local" file. (is set automatically when rebooting the OS.) <pre>/sbin/ethtool -C eth<N> adaptive-rx off /sbin/ethtool -C eth<N> rx-usecs 128</pre> Specify a network device name of target VF NIC in "eth<N>". 10. If a NIC where Emulex Blade Engine 3 is installed and a NIC where Emulex XE104 is installed co-exist, this number is 15 per port for both NICs. 11. When using path redundancy and VLAN, set the values in Table A-6 Setting value when using path redundancy and VLAN on page A-22. However, set the same VF NIC to primary devices each LPAR when setting "fail_over_mac=0". 12. When using inter-LPAR communication with VF NIC, set "fail_over_mac=1" to the bonding option. If not, the inter-LPAR communication may not be available at switching bonding.	

Item	Support (version)
13. Inter-LPAR communications are not available between VF NIC and Shared NIC used the same physical port.	
14. When you need to execute Force Recovery, shutdown the OS on the LPAR to be deactivated before the execution. If Force Recovery is executed while the LPAR is running, VF NIC will be unavailable on the OS on the LPAR. To recover VF NIC, reboot the OS on the LPAR after Force Recovery is completed.	
15. Do not specify the TagVLAN setting in the OS of the VF NIC for which Untagged is set.	
16. This is only available for 10 Gb connections. No link-up occurs if the communication speed is fixed to 1 Gb.	
17. Untagged cannot be used in a VF NIC configuration where guest OSs are Red Hat Enterprise Linux 6.7/7.1/7.2.	
18. There is a difference of, at the most, approximately 100 Mbps between the actual throughput and the value set for TxRate.	
19. When you add or remove VF NICs to a guest OS, the PCI config addresses of some VF NICs are changed. In this case, when the following conditions are met, the values of the network settings, such as the MAC address, the IP address, and so on, for VF NICs are also changed.	
- o A VF NIC of the same controller is added or removed. - o A VF NIC with the same alphabetical character or an alphabetical character prior in alphabetical order, is added or removed. (For example, adding 1av affects the network settings of 1av and 1bv.) - o The guest OS is Red Hat Enterprise Linux 7.	
20. When an Emulex adapter is used in your Windows environment, VLAN communications cannot be accomplished if the teaming window of Windows is used for VLAN configuration. You must use Device Manager to configure the VLAN.	
1. Start Device Manager. 2. Open the properties of the Emulex NIC device below Network adapters. 3. In the Advanced tab, select VLAN Identifier (802.1q) and configure the VLAN ID.	

Table A-6 Setting value when using path redundancy and VLAN

Item	VLAN mode for LPAR manager	fail_over_mac
ARP monitoring	Untagged	fail_over_mac=1
MII monitoring	Untagged	• For Emulex Blade Engine 3/Emulex XE104 firmware version 10.2 fail_over_mac=1 (recommended) or fail_over_mac=0 • For Emulex Blade Engine 3/Emulex XE104 firmware version 10.6 fail_over_mac=1

Item	VLAN mode for LPAR manager	fail_over_mac
	Tagged (only [All])	fail_over_mac=0

LPAR manager licenses

There are three types of licenses for LPAR manager: Essential, Advanced, and Enterprise. In addition, there are two types of licenses for the Advanced and Enterprise licenses: a permanent LP license (with no expiration date) and a temporary LP license (with an expiration date).

Types of LPAR manager licenses

The following table describes the types of LPAR manager licenses:

Table A-7 Types of LPAR manager licenses

LPAR manager license		Supported versions		Supported blades
		Management module	LPAR manager	
Essential license (Essential model)	permanent LP license	All versions	All versions	All blades
	temporary LP license	--	--	--
Advanced license (Advanced model)	permanent LP license	All versions	All versions	All blades
	temporary LP license	A0305 or later	02-50 or later	CB 520H B4
		A0270 or later	02-27 or later	CB 520X B2
		A0320 or later	02-56 or later	CB 520X B3
Enterprise license (Enterprise model)	permanent LP license	A0305 or later	02-50 or later	CB 520H B4
		A0270 or later	02-27 or later	CB 520X B2
		A0320 or later	02-56 or later	CB 520X B3
	temporary LP license	A0305 or later	02-50 or later	CB 520H B4
		A0270 or later	02-27 or later	CB 520X B2
		A0320 or later	02-56 or later	CB 520X B3

Functional differences depending on the LPAR manager license

The following table describes functional differences depending on the type of LPAR manager license:

Table A-8 Functional differences depending on the LPAR manager license

Function	Essential	Advanced	Enterprise
Maximum number of LPARs that can be activated	4	30	60
LPAR migration (Concurrent maintenance)	N	Y	Y
HBA-core dedicated mode	N	N	Y
L3 cache allocation	N	N	Y
Performance tuning options	N	N	Y
Legend: Y: Supported N: Not supported			

Differences in supported items depending on the guest OSs

The following table describes the differences in supported items depending on the guest OSs.

Table A-9 Differences in supported items depending on the guest OSs

Items		Guest OSs		
		Other than Windows Server 2016 or RHEL6.8/6.9 /7.3/7.4	Windows Server 2016, RHEL6.8	RHEL6.9/7.3 /7.4
Hardware configuration/ functionality	FCoE mode (Emulex CNA)	Y	Y	N
LPAR manager functionality	Dedicated NIC(Emulex NIC)	Y	N	N
	VF NIC(Emulex NIC)	Y	N	N
	LPAR migration in concurrent maintenance mode	Y	Y	N
Middleware	HVM Navigator	Y	Y	N
Legend: Y: Supported N: Not supported				

Setting Item List

This Appendix describes Setting Item List.

- ☐ [LPAR manager Setting Items](#)
- ☐ [EFI Driver Setting Items](#)

LPAR manager Setting Items

The following table shows LPAR manager setting items required to configure LPAR manager.

Table B-1 LPAR manager setting items

item		Setting items Description	default	Support Version	
Web Console	LPAR manager firmware Bank		Sets 0 to 3	0	01-0X or later
	Logical Partitioning		Sets the LP mode	Depends on a factory-shipments state	01-0X or later
	IPv4	LP IP Address	Set the LP IP address for IPv4 and other items.	0.0.0.0	01-0X or later
		Subnet Mask		0.0.0.0	01-0X or later
		Default Gateway		0.0.0.0	01-0X or later
	IPv6	Static address	Set the LP IP address for IPv6 and other items.	Disabled	02-25 or later
		IP address		-	02-25 or later
		Prefix len		-	02-25 or later
		Default gateway		Not used	02-25 or later
		Address		-	02-25 or later
		Stateless address		Disabled	02-25 or later
	LP communication settings		Sets the protocol that is used for communication between LPAR manager and the management module.	IPv4	02-25 or later
	VNIC System No		Sets VNIC System No *Sets the value which does not overlap with all LPAR manager(s) which is containing Compute Blade Series.	0	01-0X or later
	Time Zone		Sets LPAR manager System time zone	Depends on a factory-shipments state	01-0X or later
	Performance tuning options		To enable Performance tuning options, set Enable.	Disabled	02-27 or later

item		Setting items Description	default	Support Version
	Management Path	Sets the management path	Disabled	02-2X or later
	Authentication	Sets whether to perform user authentication when performing connection by using the LP CLI.	Disabled	02-05 or later
	LP CLI IP Address (IPv4)	Sets a IP address of a server which installed a HvmSh etc.	0.0.0.0	01-0X or later
	LP CLI IP Address (IPv6)		::	02-25 or later
	Connection mode	Set the connection method of the virtual COM console.	Telnet	02-05 or later
	Telnet authentication	Sets whether to perform user authentication when connecting to the guest screen.	Disable	02-05 or later
	Virtual COM console port	Set a TCP port of a virtual COM console.	20801	02-05 or later
	Password expiry	Set the validity period of a password.	0	02-05 or later
	Mgmt path periodic diagnosis setting	Displays the management path periodic diagnosis settings.	Disable	02-2X or later
LPAR manager Screen System Configuration	LP ID	Sets the LP ID	LP_0000	01-0X or later
	BSM IP Address	Sets a IP address of a server which installed a SC/BSM etc.	Depends on a factory-shipments state	01-0X or later
	BSM Alert Port			01-0X or later
	VNIC System No	Sets VNIC System No *Sets the value which does not overlap with all LPAR manager(s) which is containing Compute Blade Series.	0	01-0X or later
	Alert Language	Sets a language of alert message.	Depends on a factory-shipments state	01-0X or later
	Virtual Console Port	Sets a TCP port of a virtual COM console.	20801	01-0X or later
	LP CLI IP Address (IPv4)	Sets a IP address of a server which installed a HvmSh etc.	0.0.0.0	01-0X or later
	LP CLI IP Address (IPv6)		::	02-25 or later

item		Setting items Description	default	Support Version
	VC	Sets whether to perform user authentication when connecting to the guest screen.	Disable	02-05 or later
	LP CLI	Sets whether to perform user authentication when performing connection by using the LP CLI.	Disable	02-05 or later
	Expiry	Sets the password expiration date.	0	02-05 or later
	Type	Sets the virtual COM console connection method.	Telnet	02-05 or later
	SYS2 Processors	Set the upper limit of the number of the physical processors used by SYS2.	2	02-62 or later
LPAR manager Screen Date and Time	Select Display	Selects a time display.	LPAR RTC	01-0X or later
	System Time Zone	Sets a time zone of LPAR manager System.	+ 0:00	01-0X or later
	TimeSync	Select a time synchronous setup by a NTP server. *recommends making a setup which performs matching the time by a management module.	Disable	01-0X or later
LPAR manager Screen LP Options	Pre-State Auto Activation	Sets a Yes for restoring LPAR to same condition as previous LPAR before rebooting LPAR manager by accident.	No	01-0X or later
	LP Auto Shutdown	Sets a Yes for shutting down when all LPARs are in deactivated status.	No	01-0X or later
	LP ErrorWatching	Sets a Yes for detecting a hung-up state.	Yes	01-0X or later
	PhyCPU C-State (>= C3)	Sets an Enable when a save electric power function enables.	Enable	01-0X or later
	USB Auto Allocation to LPAR	Sets an Enable if you want to enable USB-Automatic-Attach when LPAR is activated / reactivated.	Enable	01-0X or later
	Save changed Config Format	Sets an Enable to enable the configuration Information auto save function.	Disable	01-0X or later
	LP Timercounter Base	Specifies the base for TimerCounter. *LP TimerCounter Base is displayed when the timer	TSC	01-3X or later

item		Setting items Description	default	Support Version
		precision of "TSC" is lower during operation, you can select "TSC" or "Cpu Frequency". Select the smaller one for time-lag. LP TimerCounter Base is not displayed when the timer precision of "TSC" is higher, "TSC" is operated.		
	Save Time Config	Sets an Enable for the time information auto save function.	Disable	01-6X or later
	Activation	Sets a Yes for displaying a confirmation sub-screen when operating activate.	Yes	01-0X or later
	Deactivation and Reactivation	Sets a Yes for displaying a sub-screen when operating a Deactivate or a Reactivate.	Yes	01-0X or later
	Screen Switching Character	Sets a conversion letter of a guest screen to a LPAR manager screen.	I	01-0X or later
LPAR manager Screen Logical Partition Configuration	LPAR Name	Sets a LPAR name	NO_NAME	01-0X or later
	Scheduling Mode (Scd)	Sets a shared mode or a dedicated mode.	D	01-0X or later
	Logical Processor Number (Pro)	Sets a logical processor number.	1	01-0X or later
	Processor Group Number (Grp)	Sets a processor group number.	0	01-0X or later
	Service rate (Srv)	Sets a Service ratio of physical processor. It is possible to set to only the LPAR of Shared mode.	100	01-0X or later
	Memory Size (Mem)	Sets a memory size.	1024	01-0X or later
	Memory Node number (MN)	Sets the Memory Node number which is assigned to the LPAR. MN is available only when using NUMA.	A	01-2X or later
	Idle Detection (ID)	Sets "Y" when an Idle state of Logical processor is detected. Set this item to Y to use CPU resources efficiently.	If Performance tuning options are disabled: Y If Performance tuning options are enabled: N	01-0X or later

item		Setting items Description	default	Support Version
	Guest Idle Mode	Indicates a mode to process instructions when logical processors are idle. You can change the setting only while Performance tuning options are enabled.	If Performance tuning options are disabled: HALT If Performance tuning options are enabled: MWAIT	02-27 or later
	Low Latency	Indicates a method in which logical processors work in I/O access. You can change the setting only while Performance tuning options are enabled.	If Performance tuning options are disabled: N If Performance tuning options are enabled: Y	02-27 or later
	EPT1GB	Indicates the size of a memory unit for memory control and operation. You can change the setting only while Performance tuning options are enabled.	Performance tuning options are disabled: N Performance tuning options are enabled: Y	02-27 or later
	Automatic Activate (AA)	Sets the order which is a LPAR Activated automatically when LPAR manager-Booting.	*(non-assign)	01-0X or later
	Automatic Clear (AC)	Sets Y when carrying out the automatic clearance of the logical SEL.	N	01-0X or later
	Processor Capping (PC)	Setting 'Y' when doing a processor-capping. It is possible to set to only LPARs of Shared mode.	*(non-assign)	01-0X or later
	Virtual COM Console (VC)	Setting "Y" when using a virtual Com console.	N	01-0X or later
	Pre-boot firmware (PB)	For CB 520H A1/B1/B2 / CB 520A A1 / CB 540A A1/B1: Select pre-boot firmware.	BIOS	01-0X or later
		For CB 520H B3/B4 / CB 520X B1/B2/B3: Select pre-boot firmware.	64UEFI	01-8X or later

item		Setting items Description	default	Support Version
		Do not change the value of this setting from the default value.		
	Guest NUMA (NUMA)	Sets Y to use the guest NUMA. It is possible to set this setting when the NUMA setting is enabled for the EFI.	N	02-0X or later
	Partition Reference Time Enlightenment (PRTE)	Sets Y to use PRTE.	N	02-25 or later
LPAR manager Screen Logical Processor Configuration	Logical Processor Assignment	Sets an assignment of a physical processor to a logical processor.	A	01-0X or later
LPAR manager Screen Physical Processor Configuration	Processor Group Configuration	Sets a Processor group number	0	01-0X or later
LPAR manager Screen PCI Device Assignment	Scheduling Mode (Schd)	Sets Shared mode or Dedicated mode	S	01-0X or later
	PCI Device Assignment	Sets an assignment of PCI Device.	-	01-0X or later
LPAR manager Screen Virtual NIC Assignment	VNIC Assignment	Sets Logical NIC.	*(non-assign)	01-0X or later
	Promiscuous Mode	Sets a promiscuous mode.	T (Shared NIC/Virtual NIC) R (VF NIC)	01-0X or later
	VLAN mode	Sets a VLAN mode.	*(non-assign)	01-0X or later
	Inter-LPAR Packet Filtering	Sets between-LPARs communication packet filter.	Disable	01-0X or later
	TXRATE	Sets a limited transmission bandwidth of VF NIC.	10000Mbps	01-9X or later
LPAR manager Screen Shared FC Assignment	Shared FC Assignment	Sets an assignment of Shared-FC-Port	*(non-assign)	01-0X or later

EFI Driver Setting Items

An EFI driver setting items necessary in order to build LPAR manager are below.

Table B-2 EFI Driver setting items

Item	Setting Items Description	default
Boot Function	Sets Enabled when San-Boot-function enables. It is necessary to set Enabled to a FC port of Boot path.	Disabled
Connection Type	Sets the connection form of FC-interface.	Auto
Data Rate	Sets the Data transfer speed of FC-interface.	Depends on a factory-shipments state
Select Boot Device	Sets Enable when searching Boot-Device that is registered to Boot-Device-list.	Disabled
LUID scan mode	Sets LUID scan mode to "Disabled". (Note that the LUID inheritance method is not supported.) If LUID scan mode is not displayed, you do not need to set LUID scan mode.	Disabled
Boot Device List	Registers the using Boot Device when select Boot Device is set Enabled.	(All Zero)



Console Types

This Appendix describes Console Types.

□ [Console Types](#)

Console Types

The following table describes Console types.

1. Web Console
2. HCSM Console
3. SC/BSM Console
4. HVM Navigator Console
5. LPAR manager Screen
6. Guest Screen
7. Remote Console
8. Virtual COM Console
9. Remote Desktop
10. LP Web System Console

Table C-1 Console types

Item	1	2 ¹	3 ⁴	4 ³	5	6	7	8	9	10
1.EFI settings	Y	-	-	-	-	-	-	-	-	-
2.LPAR manager Firmware Bank Selecting	Y	-	-	-	-	-	-	-	-	-
3.LPAR manager initial settings	Y	Y	-	Y	Y	-	-	-	-	-
4.LP Mode Setting	Y	Y	-	-	-	-	-	-	-	-
5.LPAR manager Boot Up	Y	Y	Y	-	-	-	-	-	-	-
6.Creating LPAR	Y	Y	Y	Y	Y	-	-	-	-	-
7.Boot Order Setting	Y ²	-	-	Y	-	Y	Y	Y	-	-
8.LPAR Activation	Y	Y	Y	Y	Y	-	-	-	-	-
9.Guest OS Installation	-	-	-	-	-	-	Y	-	-	-
10.Guest OS Operation	-	-	-	-	-	Y	Y	Y	Y	-
11.Guest OS Failure Detection	-	-	-	-	-	Y	Y	Y	-	Y

Item	1	2 ¹	3 ⁴	4 ³	5	6	7	8	9	10
12. Collecting dump for a guest OS	-	-	-	Y	Y	-	-	-	-	-
13. Guest OS Shutdown	-	Y	-	-	-	Y	Y	Y	Y	-
14. LPAR Deactivation	Y	Y	Y	Y	Y	-	-	-	-	-
15. LPAR manager Shutdown	Y	Y	Y	Y	Y	-	-	-	-	-
16. Version Upgrade / Revision Update	Y	-	-	-	-	-	-	-	-	-
17. Model Upgrade	Y	-	-	-	-	-	-	-	-	-
18. Using each LPAR manager or LPAR	LPM	LPM	LPM	LPM	LPM	LPM	LPM	LP	LP	LPM
Legend: Y: Available -: Not available LPM: LPAR manager LP: LPAR Notes: - For the latest support status, see the <i>Hitachi Command Suite Compute Systems Manager User Guide</i>. - Management Module Firmware version A0125 or later. - For the latest support status, see the <i>Hitachi Compute Blade HVM Navigator User's Guide - Getting Started</i>. - Not supported in CB 520X B1/B2/B3.										



LPAR manager use Port numbers

This Appendix describes LPAR manager use Port numbers.

□ [LPAR manager use Port numbers](#)

LPAR manager use Port numbers

The following table describes the port numbers (the setting at shipping time) that LPAR manager uses to communicate with the management server.

For each of the following items, you can change the default port number to any port number in the range of specifiable values.

Table D-1 LPAR manager use port numbers

Item	Protocol	Port Number	Direction of Communication (LPAR manager-Management Server)	Description	Note
HCSM	TCP	22611	->	Communication to HCSM	-
SC/BSM	TCP	20079	->	Communication to Manager Service	-
	TCP	21001	<-	Communication from Manager Service	
LPAR Migration	TCP	23401, 20671, 20650	<- ->	LPAR Migration	-
NTP	UDP	123	->	Time Synchronization	NTP
Virtual COM Console	TCP	[LPAR manager firmware version 02-02 or earlier] 20801 to 20816 (specifiable values: 1024 to 65520)	<-	Virtual COM Console	-
		[LPAR manager firmware version 02-05 or later] 20801 to 20832 (specifiable values: 1024 to 65520 ¹)			
Virtual COM Console (LPAR manager internal use only)	TCP	24450	<-	Virtual COM Console	-

Item	Protocol	Port Number	Direction of Communication (LPAR manager-Management Server)	Description	Note
LP Web System	TCP	443	<-	Logical VGA Snap Shot	HTTPS
HvmSh	UDP	623	<-	HCSM HVM Navigator, HvmSh Command, etc.	RMCP
	TCP	23250, 20670	<-		
HvmGetPerf	UDP	623	<-	HvmGetPerf Command	RMCP
Guest memory dump collection command and LPAR manager dump collection command	TCP	20, 21	->	Get Dump	FTP
DNS	UDP	53	->	Name retrieval	-
Syslog	UDP	6514 (specifiable values: 1 to 65535)	->	Acquisition of audit logs	-
	TCP				
	TLS				
LDAP	TCP	389 (specifiable values: 1 to 65535)	->	LDAP authentication	-
RADIUS	UDP	1812 (specifiable values: 1 to 65535)	->	RADIUS authentication	-
Notes:					
1. If the virtual COM console connection method is "Telnet for which user authentication is enabled" or "ssh", the values that can be set are 1024 to 65504.					

Table D-2 LPAR manager use port numbers

Item	Protocol	Port Number	Direction of Communication (LPAR manager-Management module)	Description
Communication between management modules	TCP	[LPAR manager firmware version 02-20 or earlier] 25101, 25102	->	Heart beat between management modules, N+M cold standby, Saving configuration

Item	Protocol	Port Number	Direction of Communication (LPAR manager-Management module)	Description
		[LPAR manager firmware version 02-25 or later] 25101, 25102 (specifiable values: 1024 to 32767)		information, Transfer Dump for LPAR manager, or something
Boot notification for management module	UDP	[LPAR manager firmware version 02-20 or earlier] 25202	<-	Boot notification for management module
		[LPAR manager firmware version 02-25 or later] 25202 (specifiable values: 1024 to 32767)		
HvmSh	TCP	[LPAR manager firmware version 02-20 or earlier] 23250	<-	Web console, Communication from HCSM
		[LPAR manager firmware version 02-25 or later] 20670 (specifiable values: 1024 to 32767)		

Table D-3 LPAR manager use port numbers

Item	Protocol	Port Number	Direction of Communication (LPAR manager-LPAR manager)	Description
LPAR migration	TCP	23402	<- ->	LPAR migration

Table D-4 LPAR manager use port numbers

Item	Protocol	Port Number	Direction of Communication (Management Server - Management Server)	Description
LPAR migration	TCP	23400	<- ->	LPAR migration



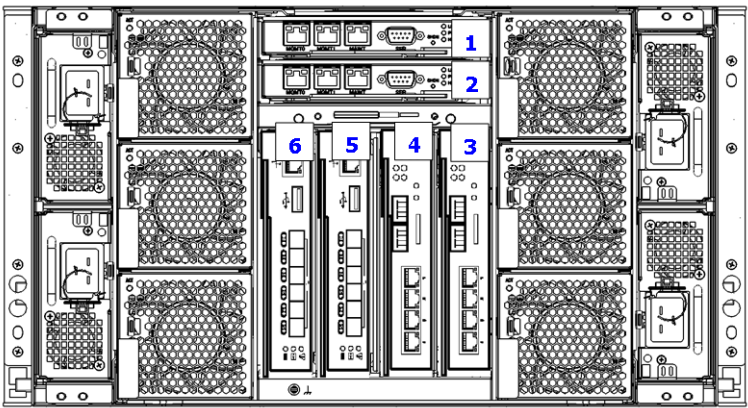
System Configuration

This Appendix describes System Configuration.

- ☐ [Recommended LPAR manager Configuration \(SAN Boot\)](#)

Recommended LPAR manager Configuration (SAN Boot)

Recommended configuration of the LPAR manager system is shown below. (In this Example, 10 Gbps Ethernet Mezzanine Card (4port) is installed to the expansion slot 1, and 8 Gbps FC Mezzanine Card (2port) is installed to the expansion slot 2)



Rear Side of Chassis

Figure E-1 Rear Side of Server Chassis

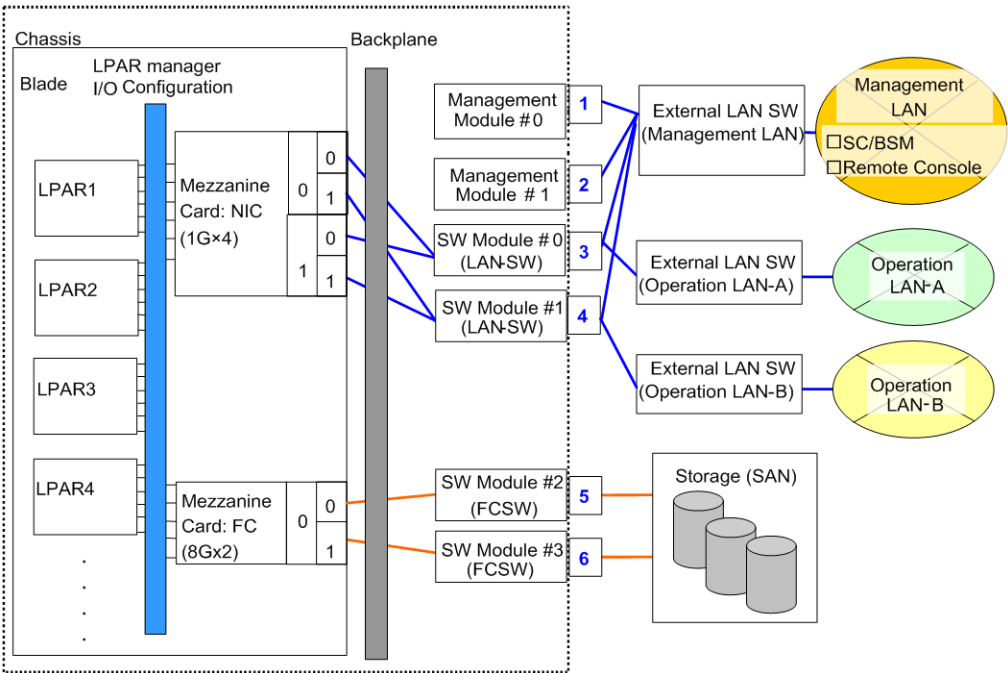


Figure E-2 LPAR manager Interface Configuration

Logical Partition Configuration

Example screen of Logical Partition Configuration is below. (Generating and configuring 4 LPARs at this example)

+- Logical Partition(LPAR) Configuration -----+													
#	Name	Sta	Scd	Pro	Grp	Srv	Mem	VN	ID	AA	AC	PC	VC PB
1	aSRV001	Dea	S	4	0	100	2048	0	Y	*	N	N	N BIOS
2	bSRV002	Dea	S	4	0	100	2048	0	Y	*	N	N	N BIOS
3	cSRV003	Dea	S	4	0	100	2048	0	Y	*	N	N	N BIOS
4	dSRV004	Dea	S	4	0	100	2048	0	Y	*	N	N	N BIOS
5													
6													
7													
8													
9													
10													
[PageUp]:Page Up / [PageDown]:Page Down													
+- Logical Information +- Physical Information -----+													
			Pro	Shr	Ded		Mem	VN				User Memory	: 31488
Assign Total			16	16	0		8192	0				Processors	: 16(16)
Act Total			0	0	0		0	0				Shared	: 16
Remain							31488					Dedicate	: 0
Logical partition name													
F1:VCAssign F2:MemAllocDsp F3:Act F4:Deact F5:React F6:Add F7:Remove Esc:Menu													

Figure E-3 Example of 4 LPARs Configuration

In example screen, all parameters for LPAR are set in default values except 3 parameters in the table below.

Table E-1 Example of 4 LPARs Configuration

LPAR No.	LPAR Name	Processor (No.)	Amount of Memory
LPAR1	aSRV001	Shared (4)	2048MB
LPAR2	bSRV002	Shared (4)	2048MB
LPAR3	cSRV003	Shared (4)	2048MB
LPAR4	dSRV004	Shared (4)	2048MB

Virtual NIC Assignment

Example screen of Virtual NIC Assignment is below. Shared NICs (VNIC ID: 1a through 6b) correspond to port of physical NICs one-to-one. Therefore configurable range of the VNIC IDs depends on configuration of physical NICs. Configurable VNIC IDs can be confirmed on the sub-screen which is displayed by selecting configuration of VNCI ID.

In this example, "VNIC ID: 1a through 4b" are set to 4 LPARs.

+ Virtual NIC Assignment +												
			Virtual NIC Number									
#	Name	Sta #	VNIC	0	1	2	3	4	5	6	7	8 9
1	aSRV001	Dea	8	1a	1b	2a	2b	3a	3b	4a	4b	* *
2	bSRV002	Dea	8	1a	1b	2a	2b	3a	3b	4a	4b	* *
3	cSRV003	Dea	8	1a	1b	2a	2b	3a	3b	4a	4b	* *
4	dSRV004	Dea	8	1a	1b	2a	2b	3a	3b	4a	4b	* *
5												
6												
7												
8												
9												
10												
[PageUp]:Page Up / [PageDown]:Page Down												
+ VNIC Information +												
No: 0 MAC Address: 00.00.87.62.db.00 Shared NIC#: 1 Tag: Undef Prm: T												
Inter-LPAR Packet Filtering: Disable												
VLANID:												
F2:Disp F5:Set Prom. Mode F6:Change MAC Addr F7:Select VLAN												
F8:Packet Filter F11:Left F12:Right Esc:Menu												

Figure E-4 Example of 4 LPARs VNIC Configuration

Shared FC Assignment

Example screen of Shared FC Assignment is below.

+ Shared FC Assignment +												
			Shared FC#:	0	1	2	3	4	5	6	7	8 9
			Slot#:	E12	E12							
			Port#:	0	1							
			PortStatus:	A	A							
#	Name	Sta										
1	aSRV001	Dea		1	5							
2	bSRV001	Dea		2	6							
3	cSRV001	Dea		3	7							
4	dSRV001	Dea		4	8							
5												
6												
7												
8												
9												
10												
[PageUp]:Page Up / [PageDown]:Page Down												
+ Selected Virtual FC Port WWN Information +												
#	LPAR#	WWPN	WWNN	Bus#	Dev#	Func#	vfcID#					
0	1	2348000087000310	2348000087000311	2a	0	0	1					
F11:Left F12:Right Esc:Menu												

Figure E-5 Example of 4 LPARs FC Configuration

Shared FC can be assigned to LPARs on this screen.

Table E-2 Example of 4 LPARs FC Configuration

LPAR No.	LPAR Name	vfcID	
		Port 0	Port 1
LPAR1	aSRV001	1	5
LPAR2	bSRV002	2	6
LPAR3	cSRV003	3	7
LPAR4	dSRV004	4	8



HvmGetPerf Command

This Appendix describes HvmGetPerf Command.

□ [HvmGetPerf Command](#)

HvmGetPerf Command



Note:

- The HvmGetPerf command cannot be used for server blades in a four-blade SMP configuration.

The HvmGetPerf command obtains an overview of system operation from the specified LPAR manager and outputs the results to the specified destination. It can also output information for a specific LPAR only.

If it cannot connect to the specified LPAR manager, it terminates by time-out.

Execute the HvmGetPerf command as follows: (Δ indicates a space.)

```
HvmGetPerfΔ-host=Ip-address[Δ-type=item-to-be-obtained] [Δ-lpar=LPAR-number] [Δ-filename=output-destination-file-name] [Δ-timeout=timeout-time] [Δ-srcip=IP-address]
```

The table below describes options for HvmGetPerf command.

Table F-1 Options for HvmGetPerf command

Option	Description
-host=IP-address	Specify the IP address of the LPAR manager for which to obtain an overview of operation. Specify an address in dot-delimited decimal format ("."). This parameter is required. Example: 192.168.0.20
-type=item-to-be-obtained	Specify the item for which to obtain an overview of operation. The following values can be specified. all Obtains all operation overview items. host Obtains an operation overview for the LPAR manager system. pcpu Obtains an operation overview for the physical CPU. lpar Obtains an operation overview for the LPAR. If this option is omitted, the command obtains all operation overview items.
-lpar=LPAR-number	Specify the LPAR number for which to obtain an overview of operation using an integer. If this option is omitted, the command outputs information for all LPARs.
-filename=output-destination-file-name	The command outputs an overview of operation in text format to the specified file. If the specified file exists, the contents of the file are erased and overwritten with the operation outline information. If a minus sign (-) is specified as the destination, the command outputs an overview of operation to the standard output. If the -filename parameter is omitted, the command outputs operation overview information in summary format to the standard output.
-timeout=timeout-time	Specify the time in which the command times out if it cannot connect to the LPAR manager, in the range from 1

Option	Description
	to 3600 seconds. If this option is omitted, the command will time out in three seconds. If 0 is specified, the HvmGetPerf command never times out and infinitely waits for a response from the LPAR manager.
-srcip=IP-address	Specify an IP address on the management server side for communicating LP IP Address of the sender. This setting is required for fixing an IP address for HvmGetPerf command when the management server uses the IP address in the network configuration, where the server is connected to multiple segments. HvmGetPerf: 1.5 or later versions

Output in summary format

If the filename option is omitted, the HvmGetPerf command outputs system operation overview in summary format. The following figure shows an example output in summary.

GetPerf ver.1 2007/10/01 11:13:27 GMT+9:00	Header information
HVM IP: 192.168.0.20 Name: HVM_192168020	System information
LPAR Total Busy 54 msec 1.3%	
SYS1 5 msec 0.1%	Operation information
SYS2 48 msec 1.2%	
Proc Shr:2 Ded:2	
Proc#:000 2.90% Blade#:3 Die#:0 Core#:0 Thread#:0	Physical processor operation
Proc#:001 2.50% Blade#:3 Die#:0 Core#:1 Thread#:0	
Proc#:002 2.90% Blade#:3 Die#:1 Core#:0 Thread#:0	
Proc#:003 2.40% Blade#:3 Die#:1 Core#:1 Thread#:0	
LPAR Count:3	
LPAR#:01 Shr:00 Ded:01 ID:DB_SRVM	LPAR operation information
SrvRatio: --- Srv: ---%, 1000ms Dsp: 12ms Busy: 1.2% Dsp: ---% PC:*	
LProc#00:000 Hyper: 994msec Ready: 1msec Used: 12msec	Operation per physical processor
LPAR#:02 Shr:02 Ded:00 ID:DB_SRVS	LPAR operation information
SrvRatio: 100 Srv:100.0%, 2000ms Dsp: 30ms Busy: 1.5% Dsp: 1.5% PC:N	
LProc#00:Shr Hyper: 985msec Ready: 0msec Used: 30msec	Operation per physical processor
LProc#01:Shr Hyper: 2000msec Ready: 0msec Used: 0msec	
LPAR#:03 Shr:00 Ded:01 ID:APP_SRVM	
SrvRatio: --- Srv: ---%, 1000ms Dsp: 12ms Busy: 1.2% Dsp: ---% PC:*	
LProc#00:001 Hyper: 990msec Ready: 0msec Used: 12msec	

Figure F-1 Output example

The table below describes the information items output in summary format.

Table F-2 outputting items in summary format

Output item	Description	Type option
Header	Outputs the command version and the time at which operation overview was output.	Always
LPAR manager system information	Outputs the IP address and identifier of the target LPAR manager.	all host

Output item	Description	Type option
LPAR manager system operation information	Indicates the operating status of the LPAR manager system. It shows execution times and busy ratios for all LPARs and LPAR manager system as well as the numbers of shared and dedicated CPUs assigned.	all host
Physical processor operation information	Indicates the operating status of the physical processors mounted in the LPAR manager system. It shows the busy ratio and the mounting location of each processor.	all pcpu
LPAR operation information	Indicates the number of LPARs defined and settings and operating status for each defined LPAR. The LPAR Count line at the top displays the number of LPARs defined. As definition information for each LPAR, the LPAR number, number of shared CPUs (Shr), number of dedicated CPUs (Ded) and LPAR name (ID) are output. As operation information for each LPAR, the same information as that shown in the LPAR Usage screen is displayed for SrvRatio, Srv(%), Dsp(ms), Busy(%), Dsp(%) and PC. For each logical CPU defined for each LPAR, the logical CPU number, whether it is dedicated or shared (Shr or the number of the physical processor occupying it), LPAR manager execution time (Hyper), running wait time (Ready) and LPAR execution time (Used) are output. If the -lpar option specifies LPAR, the command outputs information only for the specified LPAR. If the -lpar option is omitted, the command outputs information for all LPARs defined. For inactive LPARs, the corresponding information field shows "---" and does not show information for each logical CPU.	all lpar

The summary format output shows information equivalent to that shown in the LPAR Usage screen. For details of data, see also description in "LPAR Usage".

Output in text format

The following figure shows an example output in text format.

HVM_192168020 192.168.0.20 55 1.3 12 0.3 48 1.2 2 2	HVM system
0 3.60 3 0 0 0 1 2.60 3 0 1 0 2 3.00 3 1 0 0 3 2.30 3 1 1 0 4 * 0 0 0 0 5 * 0 0 0 0 (Omitted in the middle)	Physical processor information
1 DB_SRVM 0 1 * * 1000 12 1.2 * 2 2 DB_SRVS 2 0 100 100.0 2000 31 1.5 21 1 3 APP_SRVM 0 1 * * 1000 12 1.2 * 2 4 * 0 0 0 0.0 0 0 0.0 0 0 (Omitted in the middle)	LPAR information
1 0 0 1002 4 12 1 1 * 0 0 0 (Omitted in the middle)	LPAR1 Logical processor
2 0 * 992 0 31 2 1 * 1000 0 0 (Omitted in the middle)	LPAR2 Logical processor
3 0 1 994 1 12 3 1 * 0 0 0 (The rest is omitted)	

Figure F-2 Example outputting in text format

Explanation is shown below about the contents of the text format output.

Table F-3 outputting the contents of the text format

Output item	Description	Type option
LPAR manager system information	Indicates the operating status of the entire LPAR manager. It shows the identifier of the target LPAR manager, LP IP Address, total execution time for all LPARs, total busy ratio for all LPARs, execution time for HVM System1, busy ratio for LPAR manager System1, execution time for LPAR manager System2, busy ratio for LPAR manager System2, number of shared CPUs and number of dedicated CPUs, in the stated order. Execution times are displayed in millisecond units.	all host
Physical CPU information	For each physical CPU mounted on the LPAR manager system, outputs the physical CPU number, busy ratio, blade number, socket number, core number and thread number, in the stated order. Information for the maximum number of installable CPUs is displayed, regardless of the number of installed CPUs. For CPUs not mounted, the busy ratio is shown as "*" and other items shown as 0.	all pcpu
LPAR information	Indicates the operating status for each LPAR. It shows the LPAR number, LPAR name, number of shared	all lpar

Output item	Description	Type option
	CPUs, number of dedicated CPUs, SrvRatio, Srv(%), Srv(ms), Dsp(ms), Busy(%), Dsp(%) and PC (processor capping) in the stated order. For details of each value, see description in "LPAR Usage". For PC, a value of 0 indicates a shared CPU with processor capping, 1 indicates a shared CPU without processor capping and 2 indicates a dedicated CPU. Information for 16 LPARs is displayed regardless of whether the LPARs are defined. For LPARs not defined, the LPAR name is shown as "*" and other items shown as 0. If the -lpar option specifies an LPAR number, the command outputs information only for the specified LPAR.	
Logical CPU information for each LPAR	Indicates the operating status of the logical CPU assigned to the LPAR. It shows the LPAR number, logical CPU number, dedicated/shared, system execution time, running wait time and LPAR execution time, in the stated order. Time values are displayed in milliseconds. The dedicated/shared item displays the physical CPU number for a dedicated CPU or "*" for a shared CPU. Information for the maximum number of logical CPUs for which the LPAR can be set is displayed, regardless of whether or not the LPAR is defined and of the number of logical CPUs defined in the LPAR. For logical CPUs that were not running when information was obtained, the dedicated/shared item is shown as "*" and other items shown as 0. A CPU that is "not running" see a logical CPU for an undefined or inactive LPAR or a logical CPU that is not defined for an active LPAR. To determine whether each LPAR is defined or how many logical CPUs are defined, see the LPAR name, the number of shared CPUs and the number of dedicated CPUs in LPAR information. If the -lpar option specifies an LPAR number, the command outputs information only for logical CPUs for the specified LPAR.	all lpar

Example

The HvmGetPerf command obtains a system operation overview only once per execution. To obtain an overview of system operation for a long period of time, it is necessary to use a batch file or other program that executes the HvmGetPerf command periodically. The table below shows an example batch file.

```
@echo off
:logging
date /t >>log.txt
time /t >>log.txt
HvmGetPerf -host=192.168.0.20 -filename=- >> log.txt
ping localhost -n 5 > nul
goto logging
```

Figure F-3 Using example

Save the above text file as a batch file (with an extension of .bat). When executed, the batch file executes the HvmGetPerf command at intervals of about five seconds and logs the command outputs in the log.txt file. In this example, the date and time of command execution precede the results of the HvmGetPerf command.

Error message

If an error occurs during command execution, the following message is output to the standard error.

```
IPMIClient: [Client|HVM|Server] Time: 2007/05/01 12:12:12 Return: 0XXXXXXXXX Message
[Client|HVM|Server] An error detection part is shown.
Client : The error is detected at a command. HVM, Server : The
error is detected at HVM.
Time: 2007/05/01 12:12:12 The error occurring time is shown.
0XXXXXXXXX The error code of a command is shown.
Message The contents of the error are shown.
```

Figure F-4 Error message

If an error occurs, the command process terminates with the termination code described in the message. In a Windows batch file, you can obtain the termination code by referencing the ERRORLEVEL environment variable immediately after executing the HvmGetPerf command.

The following table lists the errors contained in messages output by the command and the corresponding termination codes.

Table F-4 Error of the message and terminations code

Error message and termination code	Description	Action
Invalid Option. 0x01010000	An invalid option is specified	Check the command options.
Target Host Unreachable. 0x01020000	The specified host is not found	Check that the specified address is correct and that the specified target host is operating normally.
Response Timeout. 0x01020001	The specified host has not responded.	Check that the specified address is correct and that the specified target host is operating normally.
Unknown Data Received. 0x01030000, 0x000000ce, 0x000000cc	Unexpected data has been received.	Check that the specified target host is operating normally.
Failed to bind. 0x01030001	Network bind operation has failed.	Check the communication configuration. Alternatively, wait for a while and retry.
Failed to activate session. 0x01030002	Failed to establish a communication session.	Check the number of SC/BSM devices concurrently connecting to the LPAR manager and

Error message and termination code	Description	Action
		whether other machines are executing the HvmGetPerf command simultaneously. Only up to four devices can connect to the LPAR manager simultaneously.
Cannot Write File or Given Too Long File Name. 0x01040000	Failed to write data to a file.	Check that the specified file is write-. Alternatively, shorten the length of the filename.
Target LPAR is undefined. 0x04000000	The specified LPAR is not defined.	When using the lpar option, specify only a defined LPAR.
Unexpected Exception was raised. 0xffffffff	An internal error has occurred.	Check the command options, network conditions and the operating status of the specified LPAR manager.
Invalid Command Received. 0x000000c1	The target host failed to accept the HvmGetPerf command.	Check whether the LP IP address is specified correctly.



Software License Information

This Appendix describes Software License Information.

☐ [Software License Information](#)

Software License Information

Embedded software to the LPAR manager is constituted by the independent multiple software.

The software are developed by Hitachi, Ltd or third party, and they also have Copyright© of the software. The software which is developed by Hitachi has copyrights, properties and intellectual properties. And the documents for the software also have copyrights, properties and intellectual properties. The software and the documents are protected by copyrighted law and other relevant laws.

LPAR manager is using the open software which was developed by third party according to each software license agreement below.

The URL links below are accurate as of the date this manual was issued. Note that these links might change.

Table G-1 Software License Agreement List

Software	Related software use agreement contract
ACPI Component Architecture	ACPICA License See the following contents. INTEL MAKES NO WARRANTY OF ANY KIND REGARDING ANY SOFTWARE PROVIDED HERE. ANY SOFTWARE ORIGINATING FROM INTEL OR DERIVED FROM INTEL SOFTWARE IS PROVIDED "AS IS," AND INTEL WILL NOT PROVIDE ANY SUPPORT, ASSISTANCE, INSTALLATION, TRAINING OR OTHER SERVICES. INTEL WILL NOT PROVIDE ANY UPDATES, ENHANCEMENTS OR EXTENSIONS. INTEL SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY, NONINFRINGEMENT AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL INTEL HAVE ANY LIABILITY TO LICENSEE, ITS LICENSEES OR ANY OTHER THIRD PARTY, FOR ANY LOST PROFITS, LOST DATA, LOSS OF USE OR COSTS OF PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES, OR FOR ANY INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THIS AGREEMENT, UNDER ANY CAUSE OF ACTION OR THEORY OF LIABILITY, AND IRRESPECTIVE OF WHETHER INTEL HAS ADVANCE NOTICE OF THE POSSIBILITY OF SUCH DAMAGES. THESE LIMITATIONS SHALL APPLY NOTWITHSTANDING THE FAILURE OF THE ESSENTIAL PURPOSE OF ANY LIMITED REMEDY. Licensee shall not export, either directly or indirectly, any of this software or system incorporating such software without first obtaining any required license or other approval from the U. S. Department of Commerce or any other agency or department of the United States Government. In the event Licensee exports any such software from the United States or re-exports any such software from a foreign destination, Licensee shall ensure that the distribution and export/re-export of the software is in compliance with all laws, regulations, orders, or other restrictions of the U.S. Export Administration Regulations. Licensee agrees that neither it nor any of its subsidiaries will export/re-export any technical data, process, software, or service, directly or indirectly, to any country for which the United States government or any agency thereof requires an export license, other governmental approval, or letter of assurance, without first obtaining such license, approval or letter.
Broadcom Tigon3 ethernet driver	GNU General Public License version 2 Visit the following URL. http://www.gnu.org/licenses/gpl.html

Software	Related software use agreement contract
bzip2	BSD License Visit the following URL. http://www.opensource.org/licenses/bsd-license.php
Emulex Driver for Linux	GNU General Public License version 2 Visit the following URL. http://www.gnu.org/licenses/gpl.html
glibc	GNU Lesser General Public License 2.1 Visit the following URL. http://www.gnu.org/licenses/lgpl-2.1.html
Intel(R) Gigabit Ethernet Linux driver	GNU General Public License version 2 Visit the following URL. http://www.gnu.org/licenses/gpl.html
Linux Kernel	GNU General Public License version 2 Visit the following URL. http://www.gnu.org/licenses/gpl-2.0.html
ser2net	GNU General Public License version 2 Visit the following URL. http://www.gnu.org/licenses/gpl-2.0.html
binutils	GNU General Public License version 2 Visit the following URL. http://www.gnu.org/licenses/gpl-2.0.html
openssl	OpenSSL License Visit the following URL. http://www.openssl.org/source/license.html
tianocore EFI	FAT32 License See the following contents. BSD License - Modified for the FAT32 Driver by Intel Copyright (c) 2004, Intel Corporation All rights reserved. Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met: Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution. Neither the name of Intel nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission. THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR

Software	Related software use agreement contract
	CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE. Additional terms: In addition to the forgoing, redistribution and use of the code is conditioned upon the FAT 32 File System Driver and all derivative works thereof being used for and designed only to read and/or write to a file system that is directly managed by an Extensible Firmware Interface (EFI) implementation or by an emulator of an EFI implementation. TianoCore Contribution Agreement See the following contents. ===== = TianoCore Contribution Agreement 1.0 = ===== INTEL CORPORATION ("INTEL") MAKES AVAILABLE SOFTWARE, DOCUMENTATION, INFORMATION AND/OR OTHER MATERIALS FOR USE IN THE TIANOCORE OPEN SOURCE PROJECT (COLLECTIVELY "CONTENT"). USE OF THE CONTENT IS GOVERNED BY THE TERMS AND CONDITIONS OF THIS AGREEMENT BETWEEN YOU AND INTEL AND/OR THE TERMS AND CONDITIONS OF LICENSE AGREEMENTS OR NOTICES INDICATED OR REFERENCED BELOW. BY USING THE CONTENT, YOU AGREE THAT YOUR USE OF THE CONTENT IS GOVERNED BY THIS AGREEMENT AND/OR THE TERMS AND CONDITIONS OF ANY APPLICABLE LICENSE AGREEMENTS OR NOTICES INDICATED OR REFERENCED BELOW. IF YOU DO NOT AGREE TO THE TERMS AND CONDITIONS OF THIS AGREEMENT AND THE TERMS AND CONDITIONS OF ANY APPLICABLE LICENSE AGREEMENTS OR NOTICES INDICATED OR REFERENCED BELOW, THEN YOU MAY NOT USE THE CONTENT. Unless otherwise indicated, all Content made available on the TianoCore site is provided to you under the terms and conditions of the BSD License ("BSD"). A copy of the BSD License is available at http://opensource.org/licenses/bsd-license.php or when applicable, in the associated License.txt file. Certain other content may be made available under other licenses as indicated in or with such Content. (For example, in a License.txt file.) You accept and agree to the following terms and conditions for Your present and future Contributions submitted to TianoCore site. Except for the license granted to Intel hereunder, You reserve all right, title, and interest in and to Your Contributions. == SECTION 1: Definitions == * "You" or "Contributor" shall mean the copyright owner or legal entity authorized by the copyright owner that is making a Contribution hereunder. All other entities that control, are controlled by, or are under common control with that entity are considered to be a single Contributor. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity. * "Contribution" shall mean any original work of authorship, including any modifications or additions to an existing work, that is intentionally submitted by You to the TianoCore site for inclusion in, or documentation of, any of the Content. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the TianoCore site or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the TianoCore site for the purpose of discussing and improving the Content, but excluding communication that is conspicuously marked or otherwise designated in writing by You as "Not a Contribution." == SECTION 2: License for Contributions ==

Software	Related software use agreement contract
	* Contributor hereby agrees that redistribution and use of the Contribution in source and binary forms, with or without modification, are permitted provided that the following conditions are met: ** Redistributions of source code must retain the Contributor's copyright notice, this list of conditions and the following disclaimer. ** Redistributions in binary form must reproduce the Contributor's copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution. * Disclaimer. None of the names of Contributor, Intel, or the names of their respective contributors may be used to endorse or promote products derived from this software without specific prior written permission. * Contributor grants a license (with the right to sublicense) under claims of Contributor's patents that Contributor can license that are infringed by the Contribution (as delivered by Contributor) to make, use, distribute, sell, offer for sale, and import the Contribution and derivative works thereof solely to the minimum extent necessary for licensee to exercise the granted copyright license; this patent license applies solely to those portions of the Contribution that are unmodified. No hardware per se is licensed. * EXCEPT AS EXPRESSLY SET FORTH IN SECTION 3 BELOW, THE CONTRIBUTION IS PROVIDED BY THE CONTRIBUTOR "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE CONTRIBUTOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THE CONTRIBUTION, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE. == SECTION 3: Representations == * You represent that You are legally entitled to grant the above license. If your employer(s) has rights to intellectual property that You create that includes Your Contributions, You represent that You have received permission to make Contributions on behalf of that employer, that Your employer has waived such rights for Your Contributions. * You represent that each of Your Contributions is Your original creation (see Section 4 for submissions on behalf of others). You represent that Your Contribution submissions include complete details of any third-party license or other restriction (including, but not limited to, related patents and trademarks) of which You are personally aware and which are associated with any part of Your Contributions. == SECTION 4: Third Party Contributions == * Should You wish to submit work that is not Your original creation, You may submit it to TianoCore site separately from any Contribution, identifying the complete details of its source and of any license or other restriction (including, but not limited to, related patents, trademarks, and license agreements) of which You are personally aware, and conspicuously marking the work as "Submitted on behalf of a third-party: [named here]". == SECTION 5: Miscellaneous == * Applicable Laws. Any claims arising under or relating to this Agreement shall be governed by the internal substantive laws of the State of Delaware or federal courts located in Delaware, without regard to principles of conflict of laws. * Language. This Agreement is in the English language only, which language shall be controlling in all respects, and all versions of this Agreement in any other language shall be for accommodation only and shall not be binding. All communications and notices

Software	Related software use agreement contract
	made or given pursuant to this Agreement, and all documentation and support to be provided, unless otherwise noted, shall be in the English language. BSD License Visit the following URL. http://opensource.org/licenses/bsd-license.php Eclipse License Visit the following URL. http://opensource.org/licenses/EPL-1.0
zlib	zlib license Visit the following URL. http://www.zlib.net/zlib_license.html
Others: software contained in Redhat Enterprise Linux 6 server	GNU General Public License version2, and license agreement of each software Visit the following URL. http://www.gnu.org/licenses/gpl.html

Hitachi Data Systems

Corporate Headquarters

2845 Lafayette Street
Santa Clara, California 95050-2639
U.S.A.
www.hds.com

Regional Contact Information

Americas

+1 408 970 1000
info@hds.com

Europe, Middle East, and Africa

+44 (0)1753 618000
info.emea@hds.com

Asia Pacific

+852 3189 7900
hds.marketing.apac@hds.com



MK-91CB500068-27