

# ServerView Resource Orchestrator Cloud Edition V3.0.0



## User's Guide for Infrastructure Administrators (Resource Management)

Windows/Linux

J2X1-7612-01ENZ0(07)  
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# Preface

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## Purpose

This manual provides an outline of ServerView Resource Orchestrator (hereinafter Resource Orchestrator) and the operations and settings required for setup.

## Target Readers

This manual is written for system administrators who will use Resource Orchestrator to operate the infrastructure in private cloud or data center environments.

When setting up systems, it is assumed that readers have the basic knowledge required to configure the servers, storage, network devices, and server virtualization software to be installed. Additionally, a basic understanding of directory services such as Active Directory and LDAP is necessary.

## Organization

This manual is composed as follows:

Title	Description
Chapter 1 Screen Layout	Provides an overview of the ROR console.
Chapter 2 Register Resources	Explains how to register, change, and delete resources used by Resource Orchestrator.
Chapter 3 Changing Resources	Explains how to change settings for the admin server or resources registered on the admin server.
Chapter 4 Configuring the Operating Environment of Managed Servers	Explains how to install software to the registered managed servers and set up their operating environment.
Chapter 5 Deleting Resources	Explains how to delete resources.
Chapter 6 Pre-configuration	Provides an overview of the pre-configuration function and explains how to use system configuration files.
Chapter 7 Register Resources in Resource Pools	Explains how to register resources in resource pools.
Chapter 8 L-Server Template Operations	Explains how to operate L-Server templates.
Chapter 9 Operating User Accounts	Explains the operation of user accounts.
Chapter 10 Creating an L-Server	Explains how to create L-Servers.
Chapter 11 Operating L-Servers	Explains how to operate L-Servers.
Chapter 12 Resource Pool Operations	Explains how to add new resource pools, and delete or modify existing resource pools.
Chapter 13 Resource Folder and Tenant Operations	Explains how to operate resource folders and tenants.
Chapter 14 Network Device Operations	Explains how to operate network devices.
Chapter 15 User Group Operations	Explains how to operate user groups.
Chapter 16 Linking L-Servers with Configured Physical Servers or Virtual Machines	Explains how to link L-Servers with configured physical servers and virtual machines.
Appendix A Format of CSV System Configuration Files	Explains the format of the CSV system configuration files used by Resource Orchestrator's pre-configuration function.

Title	Description
Appendix B Maintenance Mode	Explains the maintenance mode available in Resource Orchestrator and how to use it.
Glossary	Explains the terms used in this manual. Please refer to it when necessary.

## Notational Conventions

The notation in this manual conforms to the following conventions.

- When using Resource Orchestrator and the functions necessary differ due to the necessary basic software (OS), it is indicated as follows:

[Windows]	Sections related to Windows (When not using Hyper-V)
[Linux]	Sections related to Linux
[VMware]	Sections related to VMware
[Hyper-V]	Sections related to Hyper-V
[Xen]	Sections related to RHEL5-Xen
[KVM]	Sections related to RHEL-KVM
[Oracle VM]	Sections related to Oracle VM
[Windows/Hyper-V]	Sections related to Windows and Hyper-V
[Windows/Linux]	Sections related to Windows and Linux
[Linux/VMware]	Sections related to Linux and VMware
[Xen/KVM]	Sections related to RHEL5-Xen and RHEL-KVM
[VM host]	Sections related to Windows Server 2008 with VMware or Hyper-V enabled

- Unless specified otherwise, the blade servers mentioned in this manual refer to PRIMERGY BX servers.
- References and character strings or values requiring emphasis are indicated using double quotes ( " ).
- Window names, dialog names, menu names, and tab names are shown enclosed by brackets ( [ ] ).
- Button names are shown enclosed by angle brackets (<>) or square brackets ( [ ] ).
- The order of selecting menus is indicated using [ ]-[ ] .
- Text to be entered by the user is indicated using bold text.
- Variables are indicated using italic text and underscores.
- The ellipses ("...") in menu names, indicating settings and operation window startup, are not shown.
- The ">" used in Windows is included in usage examples. When using Linux, read ">" as meaning "#".

## Menus in the ROR console

Operations on the ROR console can be performed using either the menu bar or pop-up menus. By convention, procedures described in this manual only refer to pop-up menus.

## Documentation Road Map

The following manuals are provided with Resource Orchestrator. Please refer to them when necessary:

Manual Name	Abbreviated Form	Purpose
ServerView Resource Orchestrator Cloud Edition V3.0.0 Setup Guide	Setup Guide CE	<b>Please read this first.</b> Read this when you want information about the purposes and uses of basic functions, and how to install Resource Orchestrator.
ServerView Resource Orchestrator Cloud Edition V3.0.0 Installation Guide	Installation Guide CE	Read this when you want information about how to install Resource Orchestrator.
ServerView Resource Orchestrator Cloud Edition V3.0.0 Operation Guide	Operation Guide CE	Read this when you want information about how to operate systems that you have configured.
ServerView Resource Orchestrator Cloud Edition V3.0.0 User's Guide for Infrastructure Administrators (Resource Management)	User's Guide for Infrastructure Administrators (Resource Management) CE	Read this when you want information about how to operate the GUI (resource management) used by infrastructure administrators and dual-role administrators.
ServerView Resource Orchestrator Cloud Edition V3.0.0 User's Guide for Infrastructure Administrators	User's Guide for Infrastructure Administrators CE	Read this when you want information about how to operate the GUI (for operations other than resource management) used by infrastructure administrators and dual-role administrators.
ServerView Resource Orchestrator Cloud Edition V3.0.0 User's Guide for Tenant Administrators	User's Guide for Tenant Administrators CE	Read this when you want information about how to operate the GUI used by tenant administrators.
ServerView Resource Orchestrator Cloud Edition V3.0.0 User's Guide for Tenant Users	User's Guide for Tenant Users CE	Read this when you want information about how to operate the GUI used by tenant users.
ServerView Resource Orchestrator Cloud Edition V3.0.0 Reference Guide for Infrastructure Administrators (Resource Management)	Reference Guide (Resource Management) CE	Read this when you want information about commands used by infrastructure administrators and dual-role administrators to manage resources, messages output by the system, and how to perform troubleshooting.
ServerView Resource Orchestrator Cloud Edition V3.0.0 Reference Guide for Infrastructure Administrators	Reference Guide CE	Read this when you want information about the commands used by infrastructure administrators and dual-role administrators for operations other than resource management.
ServerView Resource Orchestrator Cloud Edition V3.0.0 Messages	Messages CE	Read this when you want detailed information about the corrective actions for displayed messages.

In some cases this manual may ask you to refer to the following Virtual Edition manuals.  
Please refer to them when necessary:

Manual Name	Abbreviated Form	Purpose
ServerView Resource Orchestrator Virtual Edition V3.0.0 Setup Guide	Setup Guide VE	Read this when you want information about the purposes and uses of basic functions, and how to install Resource Orchestrator.
ServerView Resource Orchestrator Virtual Edition V3.0.0 Installation Guide	Installation Guide VE	Read this when you want information about how to install Resource Orchestrator.
ServerView Resource Orchestrator Virtual Edition V3.0.0 Operation Guide	Operation Guide VE	Read this when you want information about how to operate systems that you have configured.
ServerView Resource Orchestrator Virtual Edition V3.0.0 User's Guide	User's Guide VE	Read this when you want information about how to operate the GUI.
ServerView Resource Orchestrator Virtual Edition V3.0.0 Command Reference	Command Reference	Read this when you want information about how to use commands.

Manual Name	Abbreviated Form	Purpose
ServerView Resource Orchestrator Virtual Edition V3.0.0 Messages	Messages VE	Read this when you want detailed information about the corrective actions for displayed messages.

## Related Documentation

Please refer to these manuals when necessary.

- When using VMware
  - vSphere Resource Management Guide
- When using ETERNUS storage
  - ETERNUS SF Storage Cruiser User's Guide
  - ETERNUS SF Storage Cruiser Event Guide
  - ETERNUS SF Storage Cruiser Message Guide
  - ETERNUS SF Express V15.0/ AdvancedCopy Manager Operation Guide for Copy Control Module

## Abbreviations

The following abbreviations are used in this manual:

Abbreviation	Products
Windows	Microsoft(R) Windows Server(R) 2008 Standard Microsoft(R) Windows Server(R) 2008 Enterprise Microsoft(R) Windows Server(R) 2008 R2 Standard Microsoft(R) Windows Server(R) 2008 R2 Enterprise Microsoft(R) Windows Server(R) 2008 R2 Datacenter Microsoft(R) Windows Server(R) 2003 R2, Standard Edition Microsoft(R) Windows Server(R) 2003 R2, Enterprise Edition Microsoft(R) Windows Server(R) 2003 R2, Standard x64 Edition Microsoft(R) Windows Server(R) 2003 R2, Enterprise x64 Edition Windows(R) 7 Professional Windows(R) 7 Ultimate Windows Vista(R) Business Windows Vista(R) Enterprise Windows Vista(R) Ultimate Microsoft(R) Windows(R) XP Professional operating system
Windows Server 2008	Microsoft(R) Windows Server(R) 2008 Standard Microsoft(R) Windows Server(R) 2008 Enterprise Microsoft(R) Windows Server(R) 2008 R2 Standard Microsoft(R) Windows Server(R) 2008 R2 Enterprise Microsoft(R) Windows Server(R) 2008 R2 Datacenter
Windows 2008 x86 Edition	Microsoft(R) Windows Server(R) 2008 Standard (x86) Microsoft(R) Windows Server(R) 2008 Enterprise (x86)
Windows 2008 x64 Edition	Microsoft(R) Windows Server(R) 2008 Standard (x64) Microsoft(R) Windows Server(R) 2008 Enterprise (x64)
Windows Server 2003	Microsoft(R) Windows Server(R) 2003 R2, Standard Edition Microsoft(R) Windows Server(R) 2003 R2, Enterprise Edition Microsoft(R) Windows Server(R) 2003 R2, Standard x64 Edition Microsoft(R) Windows Server(R) 2003 R2, Enterprise x64 Edition

Abbreviation	Products
Windows 2003 x64 Edition	Microsoft(R) Windows Server(R) 2003 R2, Standard x64 Edition Microsoft(R) Windows Server(R) 2003 R2, Enterprise x64 Edition
Windows 7	Windows(R) 7 Professional Windows(R) 7 Ultimate
Windows Vista	Windows Vista(R) Business Windows Vista(R) Enterprise Windows Vista(R) Ultimate
Windows XP	Microsoft(R) Windows(R) XP Professional operating system
Linux	Red Hat(R) Enterprise Linux(R) 5 (for x86) Red Hat(R) Enterprise Linux(R) 5 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.1 (for x86) Red Hat(R) Enterprise Linux(R) 5.1 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.2 (for x86) Red Hat(R) Enterprise Linux(R) 5.2 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.3 (for x86) Red Hat(R) Enterprise Linux(R) 5.3 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.4 (for x86) Red Hat(R) Enterprise Linux(R) 5.4 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.5 (for x86) Red Hat(R) Enterprise Linux(R) 5.5 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.6 (for x86) Red Hat(R) Enterprise Linux(R) 5.6 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.7 (for x86) Red Hat(R) Enterprise Linux(R) 5.7 (for Intel64) Red Hat(R) Enterprise Linux(R) 6.2 (for x86) Red Hat(R) Enterprise Linux(R) 6.2 (for Intel64) SUSE(R) Linux Enterprise Server 11 for x86 SUSE(R) Linux Enterprise Server 11 for EM64T
Red Hat Enterprise Linux	Red Hat(R) Enterprise Linux(R) 5 (for x86) Red Hat(R) Enterprise Linux(R) 5 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.1 (for x86) Red Hat(R) Enterprise Linux(R) 5.1 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.2 (for x86) Red Hat(R) Enterprise Linux(R) 5.2 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.3 (for x86) Red Hat(R) Enterprise Linux(R) 5.3 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.4 (for x86) Red Hat(R) Enterprise Linux(R) 5.4 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.5 (for x86) Red Hat(R) Enterprise Linux(R) 5.5 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.6 (for x86) Red Hat(R) Enterprise Linux(R) 5.6 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.7 (for x86) Red Hat(R) Enterprise Linux(R) 5.7 (for Intel64) Red Hat(R) Enterprise Linux(R) 6.2 (for x86) Red Hat(R) Enterprise Linux(R) 6.2 (for Intel64)
Red Hat Enterprise Linux 5	Red Hat(R) Enterprise Linux(R) 5 (for x86) Red Hat(R) Enterprise Linux(R) 5 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.1 (for x86) Red Hat(R) Enterprise Linux(R) 5.1 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.2 (for x86) Red Hat(R) Enterprise Linux(R) 5.2 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.3 (for x86) Red Hat(R) Enterprise Linux(R) 5.3 (for Intel64)

Abbreviation	Products
	Red Hat(R) Enterprise Linux(R) 5.4 (for x86) Red Hat(R) Enterprise Linux(R) 5.4 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.5 (for x86) Red Hat(R) Enterprise Linux(R) 5.5 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.6 (for x86) Red Hat(R) Enterprise Linux(R) 5.6 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.7 (for x86) Red Hat(R) Enterprise Linux(R) 5.7 (for Intel64)
Red Hat Enterprise Linux 6	Red Hat(R) Enterprise Linux(R) 6.2 (for x86) Red Hat(R) Enterprise Linux(R) 6.2 (for Intel64)
RHEL5-Xen	Red Hat(R) Enterprise Linux(R) 5.4 (for x86) Linux Virtual Machine Function Red Hat(R) Enterprise Linux(R) 5.4 (for Intel64) Linux Virtual Machine Function
RHEL-KVM	Red Hat(R) Enterprise Linux(R) 6.2 (for x86) Virtual Machine Function Red Hat(R) Enterprise Linux(R) 6.2 (for Intel64) Virtual Machine Function
DOS	Microsoft(R) MS-DOS(R) operating system, DR DOS(R)
SUSE Linux Enterprise Server	SUSE(R) Linux Enterprise Server 11 for x86 SUSE(R) Linux Enterprise Server 11 for EM64T
Oracle VM	Oracle VM Server for x86
ESC	ETERNUS SF Storage Cruiser
GLS	PRIMECLUSTER GLS
Navisphere	EMC Navisphere Manager
Solutions Enabler	EMC Solutions Enabler
MSFC	Microsoft Failover Cluster
SCVMM	System Center Virtual Machine Manager 2008 R2 System Center 2012 Virtual Machine Manager
VMware	VMware vSphere(R) 4 VMware vSphere(R) 4.1 VMware vSphere(R) 5
VMware FT	VMware Fault Tolerance
VMware DRS	VMware Distributed Resource Scheduler
VMware DPM	VMware Distributed Power Management
VMware vDS	VMware vNetwork Distributed Switch
VIOM	ServerView Virtual-IO Manager
ServerView Agent	ServerView SNMP Agents for MS Windows (32bit-64bit) ServerView Agents Linux ServerView Agents VMware for VMware ESX Server
ROR VE	ServerView Resource Orchestrator Virtual Edition
ROR CE	ServerView Resource Orchestrator Cloud Edition
Resource Coordinator	Systemwalker Resource Coordinator Systemwalker Resource Coordinator Virtual server Edition

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# Chapter 1 User Interface

Resource Orchestrator includes two graphical user interfaces: the ROR console and BladeViewer.

This chapter provides an overview of the ROR console.

For details on how to open and close the ROR console, refer to "7.1 Login" of the "Setup Guide CE".

For details on BladeViewer, refer to "Chapter 3 BladeViewer" of the "Operation Guide VE".

## 1.1 ROR Console Layout

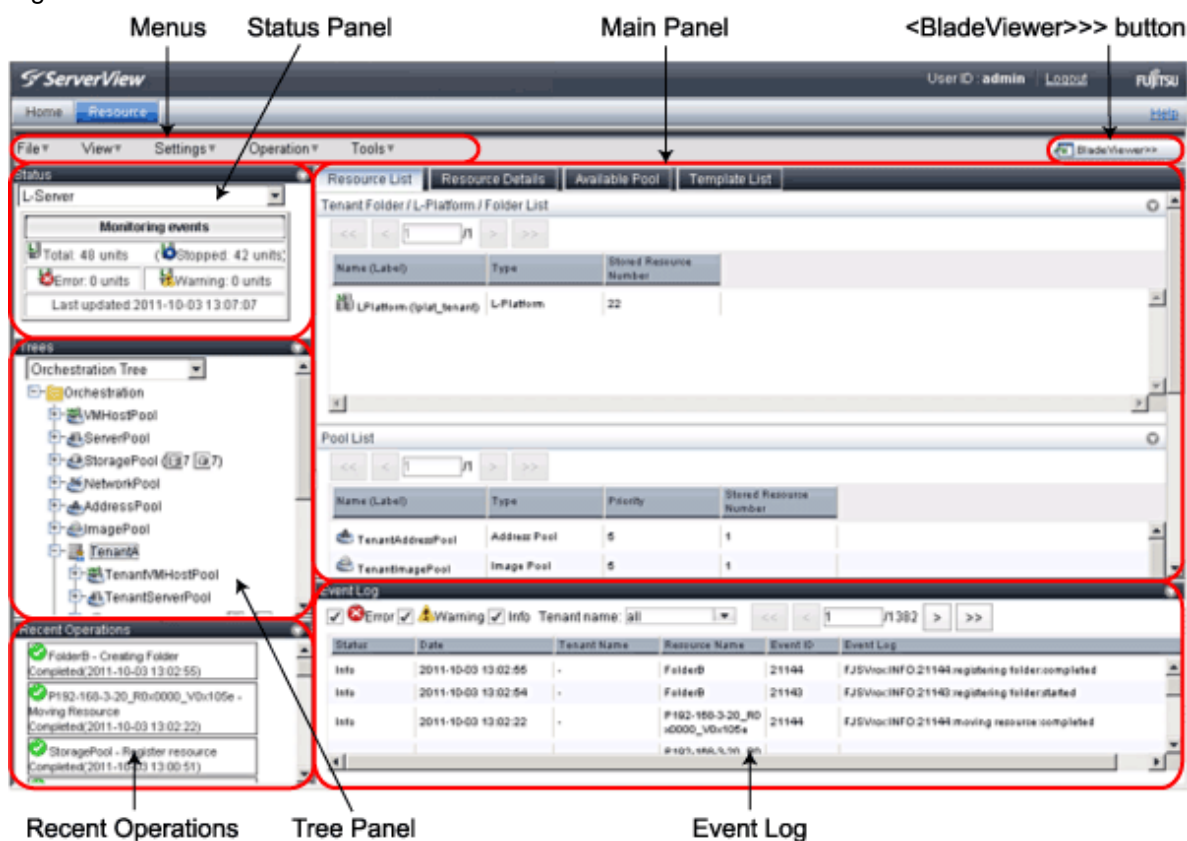
This section explains how the [Resource] tab of the ROR console is organized.

For sections other than the [Resource] tab, refer to the following manuals:

- "User's Guide for Infrastructure Administrators CE"
- "User's Guide for Tenant Administrators CE"
- "User's Guide for Tenant Users CE"

The [Resource] tab of the ROR console is sometimes referred to as the ROR console.

Figure 1.1 ROR Console



### Menus

Operations can be performed either from the menu bar or popup menus.

### Status Panel

The Status Panel displays the status of managed servers.

The statuses of both physical servers and L-Servers can be displayed. The properties displayed for physical servers and L-Servers can be switched from the drop-down menu.

Only the status of L-Servers is displayed for the following users:

- Users with a role that only allows use of L-Servers
- Users with restricted access

If a warning or error event occurs on a managed server, the status monitoring area starts to blink.

If you click the blinking area, the server's information is displayed on the main panel.

For details on different statuses, refer to "[1.3 Status Panel](#)".

## Tree Panel

By switching between tree types, it is possible to select from the following 7 types of trees.

If resource folders have been created in the server tree, these resource folders are also displayed.

Only the orchestration tree is displayed for the following users:

- Users with a role that only allows use of L-Servers
- Users with restricted access

The resources displayed are restricted according to the access rights of the logged in user.

## Server Resources

The resources below are shown in a tree view. A status icon is displayed over each resource's icon.

- Chassis
- Server
- Physical OS
- VM Host
- VM Guest
- LAN Switch (LAN Switch Blades)

## Network Devices

The resources below are shown in a tree view. A status icon is displayed over each resource's icon.

- Network Devices (Firewalls and L2 Switches)

## Network Resources

The resources below are shown in a tree view. A status icon is displayed over each resource's icon.

- LAN switch (excluding LAN switch blades)

## Power Monitoring Devices

The following power monitoring devices are shown in a tree view.

- PDU
- UPS

## Management Software

The following management software which can be used in coordination with Resource Orchestrator are shown in a tree view. A status icon is displayed over each resource's icon.

- Management Software (vCenter Server)
- Management Software (SCVMM)
- Management Software (VIOM)

## VLAN

Selecting a VLAN ID shows a list of resources on which this ID has been applied to.

- Chassis
- Server

- VM Host
- VM Guest
- LAN Switch
- NIC
- LAN Switch Port

## Storage

In the Storage Tree, resources managed by Resource Orchestrator are displayed in a tree view. The following resource types are displayed:

- Storage Management Software
- Storage Units
- RAID Groups
- LUNs
- Virtual Disks of VM Guests

## Orchestration Tree

Manages and operates L-Servers and resource pools.

All resources authorized for access by the logged in user are displayed. The resources displayed differ depending on the role and access rights of the user.

The resources below are shown in a tree view.

- Resource folders and L-Servers
- Resource pools and the resources registered in resource pools

The top-level resource folder of each tree is called a root folder. The standard tree consists of only the root folder.

The orchestration tree displays the following information:

- [Resource List] Tab  
Displays information on resources related to the resource selected in the resource tree.
- [Resource Details] Tab  
Displays detailed information for the resource selected in the resource tree. Additionally, external software can be opened.
- Available Pool  
A list of resource pools available for use is displayed.
- Template List  
A list of L-Server templates available for use is displayed.  
Using an L-Server template, an L-Server can be created.

## Main Panel

The Main Panel displays information on resources selected in the tree.

- [Resource List] Tab  
Displays information on resources related to the resource selected in the resource tree.
- [Resource Details] Tab  
Displays more detailed information on the resource selected in the tree, or on a resource that was double-clicked in the [Resource List] tab.
- [Recovery Settings] Tab  
Displays information on the spare servers assigned to the resource selected in the resource tree.



- [Image List] Tab  
Displays system and cloning image information.
- [Network Map] Tab  
Displays a network diagram of registered resources.

### Recent Operations

Displays the progress statuses and results of operations performed in Resource Orchestrator according to the user's access scope.

### Event Log

The Event Log displays information on events that have occurred.

Resource Orchestrator events are displayed in the event log.

It displays a log of events that have occurred on managed resources.

The resources displayed are restricted according to the role and scope of access of the user.

### <BladeViewer>>> Button

Opens the BladeViewer interface.

BladeViewer is a management interface specially designed for blade servers. It can only be used in conjunction with PRIMERGY BX servers registered as managed servers.

When users are as follow, <BladeViewer>>> is not displayed.

- Users with a role that only allows use of L-Servers
- Users with restricted access

## 1.2 Menus

This section describes the menus available in the ROR console.

Figure 1.2 Menu



### 1.2.1 List of Menus

The menus provided on the menu bar of the ROR console are listed in the table below. Options available vary according to the authority level of the user account.

Menu Items		Function	
Menu	Submenu		
File	System Configuration File	Import	Imports the system configuration file for pre-configuration.
		Export	Exports the system configuration file for pre-configuration.
		Download Template	Downloads a sample of the system configuration file (CSV format) for pre-configuration.
	L-Server Template	Import	Imports an L-Server template.
		Export	Exports an L-Server template.
		Edit	Creates and edits an L-Server template.
	Export Environmental Data	Chassis	Exports environmental data collected from chassis.
		Server	Exports environmental data collected from servers.

Menu Items		Function	
Menu	Submenu		
	Power Monitoring Devices	Exports environmental data collected from power monitoring devices.	
View	Reset Layout	-	
Settings	Register	Chassis	Registers a chassis.
		Server	Registers a server.
		PRIMEQUEST	Registers a PRIMEQUEST.
		LAN Switch	Registers a LAN switch.
		Agent	Registers an agent.
		Power Monitoring Device	Registers a power monitoring device.
		Management Software (vCenter Server)	Registers VM management software (VMware vCenter Server).
		Management Software (SCVMM)	Registers VM management software (System Center Virtual Machine Manager).
		Management Software (OVM Manager)	Registers management software (OVM Manager).
		Management Software (VIOM)	Registers VM management software (VIOM).
	Pool	Register Resources	Registers a resource to the selected resource pool.
		Unregister Resources	Unregisters the selected resource from a resource pool. Or unregisters resources registered in currently selected resource pools.
		Move Resources	Moves the selected resource to another resource pool. Or moves a resource from the selected resource pool.
	Create	Folder	Creates a resource folder in the server resource tree or orchestration tree.
		Tenant (*1)	Creates a tenant folder in the orchestration tree.
		Pool	Creates a resource pool in the orchestration tree.
		L-Server	Creates an L-Server.
		Network Resource (New)	Creates a new network resource.
		Network Resource (Using existing admin subnet)	Creates a network resource from an admin LAN subnet.
	Move to Folder	-	Moves a resource pool, resource folder, or a resource to another resource folder.
	Delete	-	Deletes a resource.
	Modify (*2)	Registration Settings	Modifies a resource's registration settings.
		HBA address rename settings (*3)	Modifies the HBA address rename settings of a server.
		Network Settings (*4, *5)	Modifies the network settings of a LAN switch.
		Global pool	Modifies the global pool information for the tenant.
		Spare Server Settings (*6)	Modifies a server's recovery settings.
		Monitoring Settings	Modifies the monitoring information for a server.
		WWN Settings (*7)	Modifies the WWN settings for a server.

Menu Items		Function	
Menu	Submenu		
		Modify Specification	Changes specifications of an L-Server, network resource, or network device.
		Attach Disk	Attaches disks to an L-Server.
		Detach Disk	Detaches disks from an L-Server.
		Network Configuration	Changes the network configuration of an L-Server.
		Definition	Modifies L-Server definition information.
		VM Host Login Account	Modifies the registered login account used to communicate with the VM host.
	L-Server Conversion	Convert	Creates a link between an L-Server and a configured physical server or virtual machine.
		Revert	Cancels the link between an L-Server and a physical server or virtual machine.
	User Accounts	-	Adds, changes, and deletes user accounts.
	User Groups (*1)	-	Creates, modifies, or deletes a user group.
	Change Password	-	Changes the password of the logged-in user.
	Admin LAN Subnet	-	Performs viewing, registration, changing or deletion of the admin LAN subnet information.
	Operation	Update	-
Power		ON	Powers on a server.
		OFF	Powers off a server after shutting down its operating system.
		OFF (Forced)	Powers off a server without shutting down its operating system.
		Reboot	Reboots a server after shutting down its operating system.
		Reboot (Forced)	Reboots a server without shutting down its operating system.
LED (*4)		ON	Turns the maintenance LED on.
		OFF	Turns the maintenance LED off.
Spare Server (*2, *6)		Switchover	Switches over a server with one of its spare servers.
		Failback	Switches back a server to its pre-switchover state.
		Takeover	Accepts a switched over configuration as final (without switching back to the original configuration).
Hardware Maintenance		Re-configure	Detects and re-configures the properties of a replaced server.
		Restore LAN Switch (*8)	Restores a LAN switch configuration.
Maintenance Mode (*2)		Set	Places a server into maintenance mode.
		Release	Sets a server to active mode.
Backup/Restore (*2)		Backup	Backs up a system image from a server.
		Restore	Restores a system image to a server.
		Delete	Deletes backup system images.
Snapshot		Collect	Collects a snapshot of the L-Server.

Menu Items		Function	
Menu	Submenu		
		Restore	Restores a snapshot to the L-Server.
		Delete	Deletes a snapshot.
	Cloning (*2, *9)	Collect	Collects a cloning image from a server.
		Deploy	Deploys a cloning image to a server.
	Migrate VM Guest	-	Migrates a VM guest to a different VM host.
	VM Home Position	Settings	Sets VM Home Position.
		Clear	Clears VM Home Position.
		Back to Home	Migrates a VM guest to VM Home Position.
	Console Screen	-	Opens the L-Server console.
	Install VM Tool	-	Connects the ISO images for installing VMware Tools to an L-Server.
Tools	Topology	Discover LAN switches	Discovers LAN switches within the admin LAN.
		Detect physical links	Acquires physical link data from registered LAN switches.
	Options	-	Modifies client and environmental data settings.
	Environmental Data Graph	-	Displays environmental data graphs.
	Licenses	-	Displays license settings and registered licenses.

\*1: Can only be selected for Basic mode.

\*2: Cannot be selected for a VM guest.

\*3: Cannot be selected for PRIMEQUEST and SPARC Enterprise Partition Models.

\*4: Available only for PRIMERGY BX servers.

\*5: Cannot be set for PRIMERGY BX900/BX400 LAN switch blades operating in IBP mode.

\*6: Cannot be selected for PRIMEQUEST.

\*7: Can only be selected for SPARC Enterprise servers.

\*8: Not available for PRIMERGY BX900/BX400 LAN switch blades operating in IBP mode.

\*9: Cannot be selected for a VM host.

## 1.2.2 Popup Menus

Right-clicking an object displayed in the resource tree or in the [Image List] tab displays a popup menu with a list of options available for that object.

The tables below detail the popup menus provided for each object.

Available menus vary according to user account privileges.

Table 1.1 Popup Menus Available for the "Server Resources" Tree Node

Popup Menu		Function
Menu	Submenu	
Register	Chassis	Registers a chassis.
	Server	Registers a server.
	PRIMEQUEST	Registers the chassis of a PRIMEQUEST.
Export	Environmental Data (Chassis)	Exports environmental data collected from chassis.
	Environmental Data (Servers)	Exports environmental data collected from servers.
Create	Folder	Creates a resource folder.

Table 1.2 Popup Menus Available for Chassis

Popup Menu		Function
Menu	Submenu	
Delete	-	Deletes a chassis.
Update	-	Updates a chassis.
Modify	Registration Settings	Modifies a chassis' registration settings.
External Management Software	-	Opens a Management Blade's Web interface.
Export (*1)	Environmental Data	Exports environmental data collected from chassis.
Move to Folder	-	Moves a chassis to another folder.

\*1: This option is only available for chassis equipped with power monitoring capabilities.

Table 1.3 Popup Menus Available for Servers

Popup Menu		Function
Menu	Submenu	
Register	Server (*1)	Registers a server.
	Agent	Registers an agent.
Delete	-	Deletes a server.
Update	-	Updates a server.
Modify	Registration Settings	Modifies a server's registration settings.
	HBA address rename settings (*2)	Modifies the HBA address rename settings of a server.
	Network Settings (*3, *4)	Modifies the network settings of a server.
	Spare Server Settings (*2)	Modifies a server's recovery settings.
Maintenance Mode	Set	Places a server into maintenance mode.
	Release	Sets a server to active mode.
Power	ON	Powers on a server.
	OFF	Powers off a server after shutting down its operating system.
	OFF (Forced)	Powers off a server without shutting down its operating system.
	Reboot	Reboots a server after shutting down its operating system.
	Reboot (Forced)	Reboots a server without shutting down its operating system.
LED (*3)	ON	Turns the maintenance LED on.
	OFF	Turns the maintenance LED off.
Hardware Maintenance	Re-configure	Detects and re-configures the properties of a replaced server.
Backup/Restore	Restore	Restores a system image to a server.
Cloning	Deploy	Deploys a cloning image to a server.
Console Screen (*5)	-	Opens the server console.
External Management Software (*6)	-	Opens external server management software.

Popup Menu		Function
Menu	Submenu	
Export (*7)	Environmental Data	Exports environmental data collected from servers.
Move to Folder	-	Moves a server to another folder.

\*1: Available only for PRIMERGY BX series and PPRIMEQUEST servers.

\*2: Available only for VM hosts when using PRIMEQUEST.

\*3: Available only for PRIMERGY BX servers.

\*4: Can only be selected for VM guests.

\*5: For physical L-Servers, when opening the L-Server console screen at the second time or later, a window for iRMC management may be opened instead of the console screen. If an iRMC management screen is displayed, close that screen and then start the console screen again.

\*6: Available only for PRIMERGY series, PRIMEQUEST, and SPARC Enterprise M series servers.

\*7: This option is only available for chassis equipped with power monitoring capabilities.

Table 1.4 Popup Menus Available for Physical OS's [Windows/Linux], VM Hosts, and VM Guests

Popup Menu		Function
Menu	Submenu	
Delete (*1)	-	Deletes a physical OS or VM host.
Update	-	Updates a physical OS, VM host, or VM guest.
Modify (*1, *2)	HBA address rename settings (*3, *4)	Modifies the HBA address rename settings of a server.
	Network Settings (*4, *5, *6)	Modifies the network settings of a server.
	Spare Server Settings (*3, *4)	Modifies a server's recovery settings.
	Monitoring Settings	Modifies the monitoring information for a server.
	VM Host Login Account (*7)	Modifies the registered login account used to communicate with the VM host.
Power	ON	Powers on a server.
	OFF	Powers off a server after shutting down its operating system.
	OFF (Forced)	Powers off a server without shutting down its operating system.
	Reboot	Reboots a server after shutting down its operating system.
	Reboot (Forced)	Reboots a server without shutting down its operating system.
Spare Server (*1, *3, *4)	Switchover	Switches over a server with one of its spare servers.
	Failback	Switches back a server to its pre-switchover state.
	Takeover	Accepts a switched over configuration as final (without switching back to the original configuration).
Maintenance Mode (*1, *4)	Configuration	Places a server into maintenance mode.
	Release	Sets a server to active mode.
Backup/Restore (*1, *4)	Backup	Backs up a system image from a server.
	Restore	Restores a system image to a server.
Cloning (*1, *8)	Collect	Collects a cloning image from a server.
	Deploy	Deploys a cloning image to a server.

Popup Menu		Function
Menu	Submenu	
VM Home Position (*1, *7)	Settings	Sets VM Home Position.
	Clear	Clears VM Home Position.
	Back to Home	Migrates a VM guest to VM Home Position.
External Management Software (*1, *9)	-	Opens external server management software.
VM Management Console (*4, *7, *10)	-	Opens the VM management console installed on the client machine.
Migrate VM Guest (*11)	-	Migrates a VM guest to a different VM host.

\*1: Cannot be selected for a VM guest.

\*2: Available only for VM hosts when using PRIMEQUEST.

\*3: Cannot be selected for PRIMEQUEST.

\*4: This option may or may not be available according to the server virtualization software used. For details, refer to "E.1 Common Functions of Server Virtualization Software" of the "Setup Guide VE".

\*5: Available only for PRIMERGY BX servers.

\*6: Cannot be set for PRIMERGY BX900/BX400 LAN switch blades operating in IBP mode.

\*7: This menu is not available for a physical OS.

\*8: Cannot be selected for a VM host.

\*9: Available only for PRIMERGY series, PRIMEQUEST, and SPARC Enterprise M series servers.

\*10: To use this feature, a VM management console must be installed and the admin client must be configured properly.

After installing the VM management console, select this menu item and follow the instructions shown in the displayed dialog.

\*11: Can only be selected for VM guests.

Table 1.5 Popup Menus Available for Physical OS's [Solaris]

Popup Menu		Function
Menu	Submenu	
Delete	-	Deletes a SPARC Enterprise server.
Update	-	Updates a SPARC Enterprise server.
Modify	Spare Server Settings	Modifies a server's recovery settings.
	Monitoring Settings	Modifies a SPARC Enterprise server's monitoring settings.
Power	ON	Powers on a SPARC Enterprise server.
	OFF	Powers off a SPARC Enterprise server after shutting down its operating system.
	OFF (Forced)	Powers off a SPARC Enterprise server without shutting down its operating system.
	Reboot	Reboots a SPARC Enterprise server after shutting down its operating system.
	Reboot (Forced)	Reboots a SPARC Enterprise server without shutting down its operating system.
Spare Server	Switchover	Switches over a server with one of its spare servers.
	Failback	Switches back a server to its pre-switchover state.
	Takeover	Accepts a switched over configuration as final (without switching back to the original configuration).
Maintenance Mode	Set	Places a server into maintenance mode.

Popup Menu		Function
Menu	Submenu	
	Release	Sets a server to active mode.
External Management Software	-	Opens external server management software for SPARC Enterprise servers.

Table 1.6 Popup Menus Available for LAN Switches

Popup Menu		Function
Menu	Submenu	
Register	LAN Switch	Registers a LAN switch.
Delete	-	Deletes a LAN switch.
Update	-	Updates a LAN switch.
Modify	Registration Settings	Modifies a LAN switch's registration settings.
	Network Settings (*1)	Modifies the VLAN settings of a LAN switch's external ports.
Restore (*1)	-	Restores a LAN switch configuration.
External Management Software	-	Opens a LAN switch's Web interface.

\*1: Not available for PRIMERGY BX900/BX400 LAN switch blades operating in IBP mode.

Table 1.7 Popup Menus Available for System Images

Popup Menu		Function
Menu	Submenu	
Restore	-	Restores a system image to a server.
Delete	-	Deletes a system image.

Table 1.8 Popup Menus Available for Cloning Images

Popup Menu		Function
Menu	Submenu	
Deploy	-	Deploys a cloning image to a server.
Delete	-	Deletes a cloning image.

 Note

If ServerView Deployment Manager is used on the admin LAN, the popup menu for cloning images cannot be used.

Table 1.9 Popup Menus Available for Network Devices

Popup Menu		Function
Menu	Submenu	
Topology	Discover LAN switches	Discovers LAN switches within the admin LAN.
	Detect physical links	Acquires physical link data from registered LAN switches.



Table 1.10 Popup Menus Available for the "Power Monitoring Devices" Tree Node

Popup Menu		Function
Menu	Submenu	
Register	Power Monitoring Device	Registers a power monitoring device.
Export	Environmental Data	Exports environmental data.

Table 1.11 Popup Menus Available for Power Monitoring Devices

Popup Menu		Function
Menu	Submenu	
Delete	-	Deletes a power monitoring device (PDU or UPS).
Update (*1)	-	Updates a power monitoring device (PDU or UPS).
Modify	Registration Settings	Modifies a power monitoring device's registration settings.
Hardware Maintenance	Re-configure	Detects and re-configures the properties of a replaced power monitoring device (PDU or UPS).
Export	Environmental Data	Exports environmental data.

\*1: Unlike other resources, the properties of a power monitoring devices are not automatically updated. Use this option to update them manually when necessary.

Table 1.12 Popup Menus Available for Management Software

Popup Menu		Function
Menu	Submenu	
Register	Management Software (vCenter Server)	Registers VM management software (VMware vCenter Server).
	Management Software (SCVMM)	Registers VM management software (System Center Virtual Machine Manager).
	Management Software (OVM Manager)	Registers management software (OVM Manager).
	Management Software (VIOM)	Registers VM management software (VIOM).

Table 1.13 Popup Menus Available for Management Software (vCenter Server/SCVMM/VIOM)

Popup Menu		Function
Menu	Submenu	
Delete	-	Deletes management software.
Update	-	Updates management software information.
Modify	Registration Settings	Modifies registration settings for management software.

Table 1.14 Popup Menus Available for Network Devices

Popup Menu		Function
Menu	Submenu	
Unregister	-	Deregisters the selected network devices from a resource pool.
Update	-	Obtains and updates the information on the selected network devices.

Popup Menu		Function
Menu	Submenu	
Move Resources	-	Moves the selected network devices to another resource pool.
Maintenance Mode	Set	Places a server into maintenance mode.
	Release	Releases maintenance mode.
External Management Software	-	Starts the management screen (Web console) provided by the network device.

Table 1.15 Popup Menus Available for the Orchestration Tree

Popup Menu		Function
Menu	Submenu	
Create	Folder	Creates a resource folder.
	Tenant	Creates a tenant folder.
	Pool	Creates a resource pool.
	L-Server	Creates an L-Server.
Power	ON	Powers on all L-Servers in a resource folder.
	OFF	Powers off all L-Servers in a resource folder.
	Reboot	Reboots all L-Servers in a resource folder.

Table 1.16 Popup Menus Available for Resource Pools (VM Hosts, Servers, Storage, and Images)

Popup Menu		Function
Menu	Submenu	
Register Resources	-	Registers a resource to the selected resource pool.
Unregister Resources	-	Unregisters resources from the selected resource pool.
Move Resources	-	Moves registered resources in the selected resource pool to another resource pool.
Delete	-	Deletes the specified resource pool.
Change Settings	Basic Information	Modifies a resource pool's registration settings.
Move to Folder	-	Moves the specified resource pool and all resources registered there.

Table 1.17 Popup Menus Available for Network Pools

Popup Menu		Function
Menu	Submenu	
Register Resources	-	Registers a resource to the selected resource pool.
Create Network Resource	New	Create a network resource.
	Using existing admin LAN subnet	Creates a network resource from a registered admin LAN subnet as an admin LAN.
Delete	-	Deletes the specified network pool.
Change Settings	Basic Information	Modifies a network pool's registration settings.
Move to Folder	-	Moves the specified network pool and all resources registered there.

Table 1.18 Popup Menus Available for Address Pools

Popup Menu		Function
Menu	Submenu	
Delete	-	Deletes the specified address pool.
Change Settings	Basic Information	Modifies registration settings of an address pool.
Move to Folder	-	Moves the specified address pool and all resources registered there.

Table 1.19 Popup Menus Available for Tenants

Popup Menu		Function
Menu	Submenu	
Create	Folder	Creates a resource folder.
	Pool	Creates a resource pool.
	L-Server	Creates an L-Server.
Delete	-	Deletes the specified tenant.
Change Settings	Basic Information	Modifies a tenant's registration settings.
	Global pool	Modifies the settings of the global pool for the tenant.
Move to Folder	-	Moves the specified tenant and all resources registered there.
Power	ON	Powers on all L-Servers in a resource folder.
	OFF	Powers off all L-Servers in a resource folder.
	Reboot	Reboots all L-Servers in a resource folder.

Table 1.20 Popup Menus Available for Folders

Popup Menu		Function
Menu	Submenu	
Create	Folder	Creates a resource folder.
	Tenant	Creates a tenant.
	Pool	Creates a resource pool.
	L-Server	Creates an L-Server.
Delete	-	Deletes the specified folder.
Change Settings	Basic Information	Modifies a tenant's registration settings.
Move to Folder	-	Moves the specified tenant and all resources registered there.
Power	ON	Powers on all L-Servers in a resource folder.
	OFF	Powers off all L-Servers in a resource folder.
	Reboot	Reboots all L-Servers in a resource folder.

Table 1.21 Popup Menus Available for L-Platforms

Popup Menu		Function
Menu	Submenu	
Move to Folder	-	Moves an L-Platform to another folder.

Table 1.22 Popup Menus Available for L-Servers

Popup Menu		Function
Menu	Submenu	
Register	Agent	Registers an agent.
Delete	-	Deletes the specified L-Server.
Update	-	Updates a resource.
Change Settings	Basic Information	Modifies the basic information of an L-Server.
	Modify Specification	Modifies the specifications of an L-Server.
	Attach Disk	Attaches disks to an L-Server.
	Detach Disk	Detaches disks from an L-Server.
	Network Configuration	Changes the network configuration of an L-Server.
	Definition	Modifies L-Server definition information.
Move to Folder	-	Moves the specified resource.
Power	ON	Powers on an L-Server.
	OFF	Powers off an L-Server.
	OFF (Forced)	Powers off an L-Server forcibly.
	Reboot	Reboots an L-Server.
	Reboot (Forced)	Reboots an L-Server forcibly.
Migrate	-	Moves an L-Server between servers.
Snapshot	Collect	Collects a snapshot of the specified L-Server.
	Restore	Restores a snapshot to the L-Server.
	Delete	Deletes a snapshot.
Backup/Restore	Backup	Backs up a system image from an L-Server.
	Restore	Restores a system image.
	Delete	Deletes a system image.
Cloning	Collect	Collects a cloning image.
Console Screen	-	Opens the L-Server console.
Install VM Tool	-	Connects the ISO images for installing VMware Tools to an L-Server.
Revert	-	<p>Cancel the link between an L-Server and a physical server or virtual machine.</p> <p>Only the L-Servers that were created by linking are displayed.</p>

Table 1.23 Popup Menus Available for VM Hosts

Popup Menu		Function
Menu	Submenu	
Unregister	-	Unregisters the selected resource from a resource pool.
Update	-	Updates a resource.
Move Resources	-	Moves a resource to another resource pool.
Maintenance Mode	Set	Places a server into maintenance mode.
	Release	Sets a server to active mode.

Popup Menu		Function
Menu	Submenu	
External Management Software	-	Opens a VM host's Web interface.
Convert to L-Server	-	Creates a link between an L-Server and a configured virtual machine.

Table 1.24 Popup Menus Available for VM Guests

Popup Menu		Function
Menu	Submenu	
Start Management Software Console	-	Opens a VM host's Web interface. Displayed from the VM guest list when selecting a VM host.

Table 1.25 Popup Menus Available for Physical Servers

Popup Menu		Function
Menu	Submenu	
Unregister	-	Unregisters the selected resource from a resource pool.
Update	-	Updates a resource.
Move Resources	-	Moves a resource to another resource pool.
Maintenance Mode	Set	Places a server into maintenance mode.
	Release	Sets a server to active mode.
External Management Software	-	Opens a server management screen.
Convert to L-Server	-	Creates a link between an L-Server and a configured physical machine.

Table 1.26 Popup Menus Available for Virtual Storage

Popup Menu		Function
Menu	Submenu	
Unregister	-	Unregisters the selected resource from a resource pool.
Update	-	Updates a resource.
Change Settings	Basic Information	Modifies the selected resource's registration settings.
Move Resources	-	Moves a resource to another resource pool.
Start Management Software Console	-	Opens a management console.

The following menus are displayed from the disk list displayed when selecting a storage pool.

Table 1.27 Popup Menus Available for Disks

Popup Menu		Function
Menu	Submenu	
Unregister	-	Unregisters the selected resource from a resource pool.
Update	-	Updates a resource.
Change Settings	Basic Information	Modifies the selected resource's registration settings.
Move to Pool	-	Moves a resource to another resource pool.

The following menus are displayed from the disk list displayed when selecting a virtual storage.

Table 1.28 Popup Menus Available for Disks

Popup Menu		Function
Menu	Submenu	
Update	-	Updates a resource.
Change Settings	Basic Information	Modifies the selected resource's registration settings.

Table 1.29 Popup Menus Available for the "Network Resources" Tree Node

Popup Menu		Function
Menu	Submenu	
Delete	-	Deletes the specified network resource.
Change Settings	Basic Information	Modifies the selected resource's registration settings.
	Modify Specification	Modifies the specifications of the selected network resource (external connection port/subnet settings).
Move Resources	-	Moves a resource to another resource pool.

Table 1.30 Popup Menus Available for Network Devices

Popup Menu		Function
Menu	Submenu	
Unregister	-	Unregisters the selected resource from a resource pool.
Update	-	Updates a resource.
Move Resources	-	Moves a resource to another resource pool.

Table 1.31 Popup Menus Available for Address Sets

Popup Menu		Function
Menu	Submenu	
Delete	-	Deletes the specified network resource.
Move Resources	-	Moves a resource to another resource pool.

The following menus are displayed when selected from the orchestration tree.

Table 1.32 Popup Menus Available for Cloning Images

Popup Menu		Function
Menu	Submenu	
Unregister	-	Unregisters the selected resource from a resource pool.
Update	-	Updates a resource.
Move Resources	-	Moves a resource to another resource pool.

The following menus are displayed when selected from the cloning image list.

Table 1.33 Popup Menus Available for Cloning Images

Popup Menu		Function
Menu	Submenu	
Delete	-	Deletes the specified network resource.
Change Settings	Basic Information	Modifies the selected resource's registration settings.

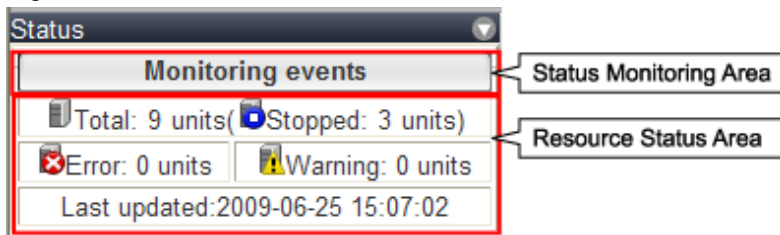
Table 1.34 Popup Menus Available for the Storage Tree (Storage Management Software, Storage Units, Virtual Storage, and Disks)

Popup Menu		Function
Menu	Submenu	
Update	-	Updates a resource.
Change Settings	Basic Information	Modifies the selected resource's registration settings.

## 1.3 Status Panel

This section explains the different statuses that are displayed in the ROR console.

Figure 1.3 Status Panel



### Status Monitoring Area

The Event Log monitors a history of events that have occurred on managed resources.

Based on detected events, the status monitoring area will change color and blink. Clicking the status monitoring area will stop the blinking.

The following table details the different statuses and their associated corrective actions.

Table 1.35 Monitor Status List

Monitoring Status	Background Color	Details	Corrective Action
Monitoring events	Grey	This indicates a normal state. No warning or error-level events have occurred on the displayed resources.	No action is necessary.
Warning event detected	Yellow	This indicates a warning state. A warning-level event has occurred on one or more of the displayed resources.	Click the status monitoring area to stop the blinking and fix the cause of the problem.
Error event detected	Red	This indicates an error state. An error-level event has occurred on one or more of the displayed resources.	Click the status monitoring area to stop the blinking and fix the cause of the problem.

### Resource Status Area

This area displays the number of registered servers experiencing each status.

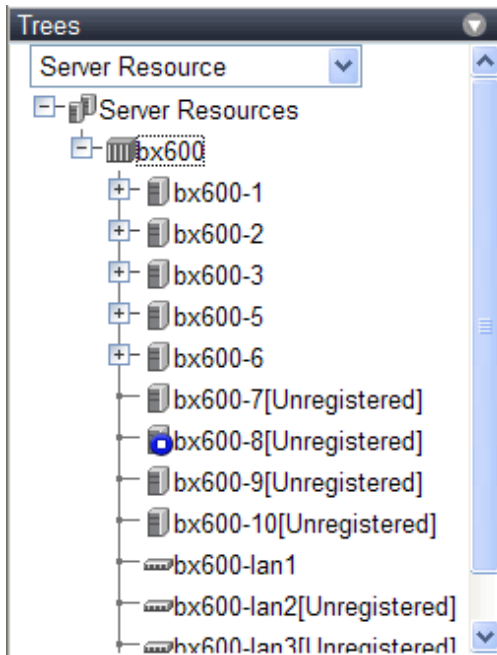
The resource status area lights up when there is at least one server in either "Error" or "Warning" status.

Clicking a lit up status area will display a list of resources with that status in the [Resource List] tab. Double-click a displayed resource to switch to its [Resource Details] tab and open either its external management software or the Management Blade's Web interface to investigate the problem.

## 1.4 Tree Panel

This section describes the trees used in the ROR console.

Figure 1.4 Tree Panel



In the tree panel, clicking the area on the upper-left enables selection and display of the following 5 types of tree: server resources, network devices, power monitoring devices, management software, and VLAN.

### Server Resources

Chassis, servers, physical OS's, VM hosts, VM guests, and LAN switches managed in Resource Orchestrator are displayed in a tree view. Resources are primarily displayed in registration order. However, for blade servers within a common chassis, the order by which Resource Orchestrator detects server blades takes precedence.

Resources displayed in the resource tree are represented by an icon and their resource name. For details on the icons used to indicate different resources, refer to "5.2 Resource Status" of the "Operation Guide VE".

For a non-registered resource, one of the following registration states is displayed at the end of the resource's name.

Table 1.36 Resource Registration States

[Unregistered]	The resource was automatically detected, but has not been registered yet
[Registering]	The resource is being registered
[Admin Server]	This server is the admin server itself

If a label was set for a resource (in BladeViewer), that label is displayed after the resource name.

### Display Format

`resource_name(label)`

Clicking a resource in the resource tree displays information related to that resource in the Main Panel. Right-clicking a resource displays a list of available operations in a popup menu.

For details on popup menus, refer to "1.2.2 Popup Menus".

When a problem occurs on a resource, it is represented by an icon shown on top of the resource icon.

For details on status icons, refer to "5.2 Resource Status" of the "Operation Guide VE".

Clicking a resource icon will show information related to that resource in the Main Panel. Use this information to investigate the problem.

For details on the information displayed in the Main Panel, refer to "1.5 Main Panel".



## Information

For a VM host coordinated with VMware vCenter Server, the name (IP address or host name) entered when registering with VMware vCenter Server will be displayed.

### Network Devices

External LAN switches (those other than LAN switch blades) managed in Resource Orchestrator are shown in a tree view. Resources are sorted and displayed by name in alphabetical order.

Network resources displayed in the resource tree are represented by an icon and their resource name.

For details on the icons used to indicate different resources, refer to "5.2 Resource Status" of the "Operation Guide VE".

For a non-registered resource, one of the following registration states is displayed at the end of the resource's name.

**Table 1.37 Resource Registration States**

[Unregistered]	The resource was automatically detected, but has not been registered yet
[Registering]	The resource is being registered

When a problem occurs on a resource, it is represented by an icon shown on top of the resource icon.

For details on status icons, refer to "5.2 Resource Status" of the "Operation Guide VE".

Clicking a resource icon will show information related to that resource in the Main Panel. Use this information to investigate the problem.

### Power Monitoring Devices

The power monitoring devices (PDU or UPS) used by Resource Orchestrator to monitor power consumption are displayed in a tree view. For details on icons used to represent power monitoring devices, refer to "5.2 Resource Status" of the "Operation Guide VE".

Clicking a power monitoring device displayed in the resource tree will display its attributes in the Main Panel. Right-clicking a power monitoring device will display a list of available operations in a popup menu.

For details on the information displayed in the Main Panel, refer to "[1.2.2 Popup Menus](#)" for details on popup menus, and "[1.5 Main Panel](#)".

### Management Software

Management software (vCenter Server, SCVMM, and VIOM) used in coordination with Resource Orchestrator is displayed in a tree view.

For details on the icons used to indicate different management software, refer to "5.2 Resource Status" of the "Operation Guide VE".

Clicking a management software on the tree displays information related to it in the Main Panel. Right-clicking a management software will display a list of available operations in a popup menu.

For details on the information displayed in the Main Panel, refer to "[1.2.2 Popup Menus](#)" for details on popup menus, and "[1.5 Main Panel](#)".

### VLAN

Resources for which VLAN IDs have been applied are displayed in a tree view. The following resource types are displayed.

- Server
- LAN Switches

For details on the icons used to indicate different resources, refer to "5.2 Resource Status" of the "Operation Guide VE".

## Storage Resource Tree

In the storage resource tree, resources managed by Resource Orchestrator are displayed in a tree view. The following resource types are displayed:

- Storage Management Software
- Storage Units
- RAID Groups
- LUNs
- Virtual Disks of VM Guests

## Orchestration Tree

Manages and operates L-Servers and resource pools.

All resources authorized for access by the logged in user are displayed. The resources displayed differ depending on the role and access rights of the user.

The resources below are shown in a tree view.

- Resource folders and L-Servers
- Resource pools and the resources registered in resource pools

The top-level resource folder of each tree is called a root folder. The standard tree consists of only the root folder.

The orchestration tree displays the following information:

- [Resource List] Tab

Displays information on resources related to the resource selected in the resource tree.

- [Resource Details] Tab

Displays detailed information for the resource selected in the resource tree. Additionally, external software can be opened.

- Available Pool

A list of resource pools available for use is displayed.

- Template List

A list of L-Server templates available for use is displayed.

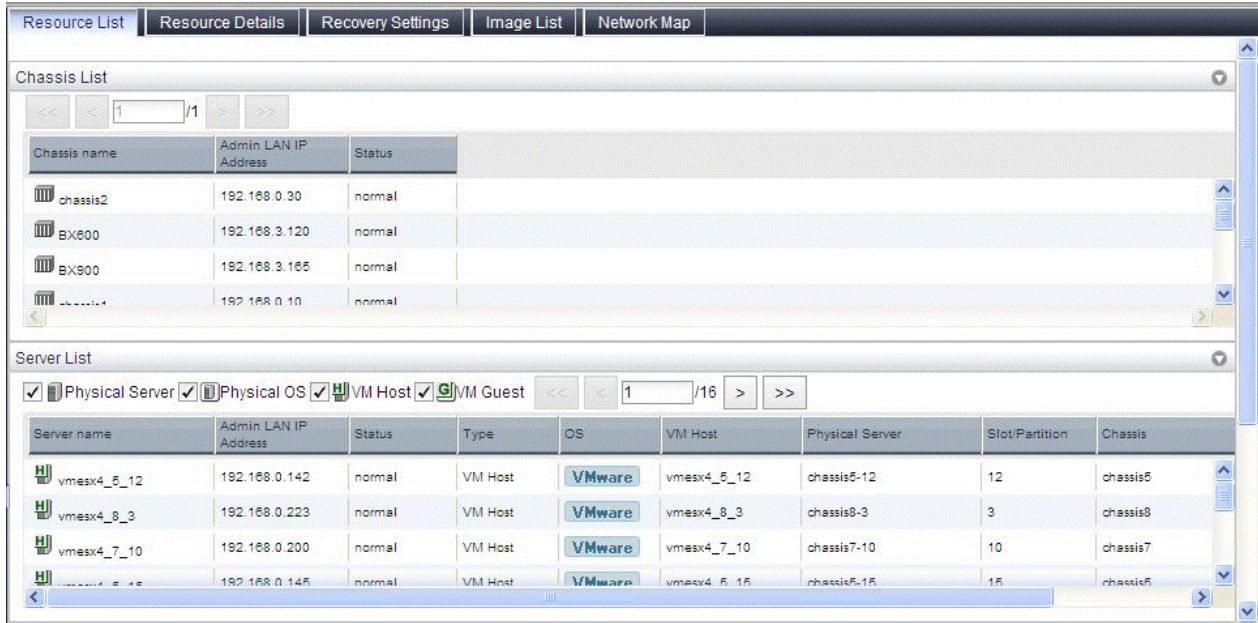
Using an L-Server template, an L-Server can be created.

## 1.5 Main Panel

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This section describes the Main Panel of the ROR console.

Figure 1.5 Main Panel



## 1.5.1 [Resource List] Tab

The [Resource List] tab in the Main Panel displays a list of resources related to the resource that was selected in the resource tree. For details on the icons used to indicate different resources, refer to "5.2 Resource Status" of the "Operation Guide VE".

The table below shows the information displayed in the Resource List for each selectable resource.

### Server Resources

Information on all registered chassis, servers, and LAN switches.

#### Chassis

Information on registered servers and LAN switch blades mounted in the selected chassis is displayed.

For PRIMEQUEST or SPARC Enterprise M4000/M5000/M8000/M9000 servers, information on the partitions configured on the chassis is displayed.

#### Server

Information on the physical OS's, VM hosts, and VM guests running on the selected server.

#### Physical OS

Information on the selected physical OS.

#### VM Host

Information on the VM guests running on the selected VM host.

#### VM Guest

Information on the selected VM guest.

#### Network Devices

Information on the selected network device is displayed.

#### Unregistered Server

Information on the selected unregistered server.

#### Network Resources

Information on all registered network resources is displayed.

#### Power Monitoring Devices

Information on all registered power monitoring devices.

## Management Software

Information on all registered management software.

## Management Software (vCenter Server, SCVMM, OVM Manager, or VIOM)

Information on the selected management software.

## Storage Resources

Information on all registered storage resources is displayed.

## Storage Management Software

Information on storage units, virtual storage, and disk resources that are operating using the selected storage management software is displayed.

## VM Management Software

Information on storage resources that are operating using the selected VM management software is displayed.

## Storage Units

Information on virtual storage and disk resources that are operating on the selected storage unit is displayed.

## Virtual Storage

Information on the disk resources of the selected virtual storage is displayed.

## L-Server

Information on the selected L-Server is displayed.

## L-Platform

Information on the selected L-Platform is displayed.

## Folder

Information on the selected resource folder is displayed.

## Tenant

Information on the selected tenant is displayed.

## VM Pool

Information on all registered VM hosts is displayed.

## Server Pool

Information on all registered server resources is displayed.

## Storage Pool

Information on all registered storage resources is displayed.

## Network Pool

Information on all network resources that have been created is displayed.

## Address Pool

Information on all registered address sets is displayed.

## Image Pool

Information on all registered cloning images is displayed.

## Cloning Image

Information on the selected cloning image is displayed.

Double-clicking a resource in the [Resource List] tab displays its [Resource Details] tab in the Main Panel. This tab shows detailed information on the selected resource.

In the [Resource List] tab, resources experiencing problems are shown with a status icon displayed on top of their resource icon. Switch

to the [Resource Details] tab to check the faulty component or open external management software to investigate the problem. For details, refer to "Chapter 5 Monitoring" of the "Operation Guide VE".

The initial display is not sorted.

Clicking a column heading in the [Resource List] tab will sort the displayed resources in ascending or descending order.

In each page of the list, 10 items can be displayed. It is possible to move forwards and backwards by single pages, and to the first or last page.

Physical servers, physical OS's, VM hosts, and VM guests are displayed under the "Server List".

Resources displayed in the "Server List" can be filtered by selecting or deselecting their corresponding checkboxes.

## 1.5.2 [Resource Details] Tab

---

The [Resource Details] tab displays detailed information on registered resources.

This information is displayed by double-clicking any of the following resources in the resource tree:

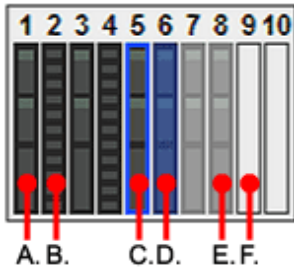
- Chassis
- Server
- Physical OS
- VM Host
- VM Guest
- Network Devices
- PDU or UPS
- Management Software (vCenter Server, OVM Manager, SCVMM, or VIOM)
- Storage Management Software
- Storage Units
- Virtual Storage
- VM Management Software
- Folder
- Tenant
- L-Platform
- L-Server
- VM Pool
- Server Pool
- Storage Pool
- Network Pool
- Address Pool
- Image Pool



For the item which there is no content to display the details for, a hyphen ("-") is displayed.

Selecting a blade server displays the following chassis image in the [Resource Details] tab. This image shows the slot positions of all server blades installed in the chassis.

Figure 1.6 Chassis



The resource images shown in the above chassis image are explained in the table below.

Table 1.38 Meaning of the Resources Shown in the Chassis Image

Image	Meaning
A.	Registered server blade.
B.	Detected storage blade.
C.	Currently displayed server blade.
D.	Server blade selected within the chassis image.
E.	Server blade that has not been registered yet.
F.	Empty slot.

### Attributes of Displayed Resources

The [Resource Details] tab displays different attributes for each resource, as described below.

#### 1.5.2.1 Chassis Attributes

##### General Area

###### Chassis name

The name used to identify a chassis is displayed.

###### Model name

The model name of the chassis is displayed.

###### Admin LAN (IP address)

The chassis admin IP address is displayed.

###### Status

The status of the chassis is displayed.

###### Server blades

The number of server blades mounted in the chassis is displayed.

Displayed only when the chassis of a blade server is selected.

###### Partition count

The number of mounted partitions is displayed.

Displayed only when the chassis of a PRIMEQUEST or SPARC Enterprise M4000/M5000/M8000/M9000 server is selected.

###### LAN Switch blades

The number of LAN switches mounted in the chassis is displayed.

Displayed only when the chassis of a blade server is selected.



Refer to "5.2 Resource Status" of the "Operation Guide VE" for details on resource status.

## Hardware Details Area

### Launch Management Blade Web UI

The link to the management blade's Web interface is displayed.

Not displayed for SPARC Enterprise M4000/M5000/M8000/M9000 servers.

### Launch XSCF Web UI

The link to the remote management controller (XSCF) Web UI is displayed.

Only displayed for SPARC Enterprise M4000/M5000/M8000/M9000 servers.

## Partition Configuration

The following information is displayed only when the chassis of a PRIMEQUEST or SPARC Enterprise M4000/M5000/M8000/M9000 server is selected.

### Partition ID

The partition number is displayed.

### Partition name

The name used to identify a partition is displayed.

### SB

The ID of the system board used to configure a partition is displayed.

### IOB

The ID of the IO board used to configure a partition is displayed.

### GSPB

The ID of the GSPB used to configure a partition is displayed.

### Reserved SB

The ID of the Reserved SB assigned to a partition is displayed.

### LSB

The partition logical system board (LSB) number is displayed.

Only displayed for SPARC Enterprise M4000/M5000/M8000/M9000 servers.

### XSB

The partition eXtended System Board (XSB) number is displayed.

Only displayed for SPARC Enterprise M4000/M5000/M8000/M9000 servers.

## 1.5.2.2 Server Attributes

### General Area

#### Physical Server Name

The name used to identify a server is displayed.

### Model name

The model name of the server is displayed.

When the server has been registered as a managed server and powered on, the server model name obtained from ServerView Operations Manager is displayed. For other servers, no model name is displayed.

### Product name

The product name of the server is displayed.

For PRIMERGY BX servers, the product name obtained from the management blade is displayed. For other servers, the model name is displayed.

### Status

Server status is displayed.

### Slot

A slot number representing the mounted location is displayed.

Displayed only for PRIMERGY BX servers.

### Partition ID

The partition number is displayed.

Displayed only when a PRIMEQUEST or SPARC Enterprise M4000/M5000/M8000/M9000 server is selected.

### Maintenance Mode

The operational status of the server is displayed.

One of the following is displayed:

- active
- maintenance

Not displayed when SPARC Enterprise servers are selected.

### LED status

The illumination status of the maintenance LED is displayed.

Displayed only for PRIMERGY BX servers.

### Admin LAN (MAC address 1)

The MAC address of the NIC used for the admin LAN is displayed.

Not displayed when SPARC Enterprise servers are selected.

### CPU core count

The CPU type of the physical server is displayed.

### CPU type

The type of CPU is displayed.

This attribute is displayed as "-" for servers other than PRIMERGY BX servers or SPARC Enterprise M servers.

### CPU clock speed

CPU clock speed (frequency) is displayed.

This attribute is displayed as "-" for servers other than PRIMERGY BX servers or SPARC Enterprise M servers.

### Memory Size

The total capacity of server memory is displayed.

This attribute is displayed as "-" for servers other than PRIMERGY BX servers or SPARC Enterprise M servers.

For SPARC Enterprise M4000/M5000/M8000/M9000 servers, this is displayed only when the server is powered on.

### Admin LAN (MAC address 2)

The MAC address of the network interface used for the HBA address rename setup service or for admin LAN redundancy is displayed.

Not displayed when SPARC Enterprise servers are selected.

Displayed only for servers other than PRIMERGY BX servers.



## Admin LAN Redundancy

Displayed when NIC redundancy has been configured for admin LANs.

## Hardware Maintenance Mode

The hardware maintenance mode of the server is displayed.  
Displayed only for PRIMEQUEST servers.

## Boot option

The boot option setting specified when registering servers is displayed.

## L-Server

The link to the allocated L-Server information is displayed.



## See

- Refer to the Management Blade's manual for details on management blades' product names.
- Refer to the ServerView Operation Manager manual for details on the server models displayed and obtained from ServerView Operation Manager.
- Refer to "5.2 Resource Status" of the "Operation Guide VE" for details on resource status.

## Hardware Details Area

### Server management software

The link to the web interface of a server management software is displayed.  
Displayed only when PRIMERGY servers, PRIMEQUEST servers, or SPARC Enterprise servers are selected.

### Remote Management Controller IP address

IP address of the remote management controller is displayed.  
Displayed only for servers other than PRIMERGY BX servers.

### I/O Virtualization Management Software

The link to the web interface of external I/O virtualization management software is displayed.  
Displayed only if coordinated up with external I/O virtualization management software.

### VIOM server profile

The assigned VIOM server profile name is displayed.  
Displayed only if managed by VIOM and a server profile has been set.

## Network Properties Area

### Physical Connections

The list of physical connections between the server's network interfaces and LAN switch ports is displayed.  
When a column heading in the list is clicked, the color of the selected column will change and the resources can be sorted in either ascending or descending order.

## Hardware Maintenance Area

### NIC Summary

The MAC addresses and IP addresses of each server are displayed.  
For servers other than PRIMERGY BX servers and PRIMEQUEST servers, only admin LAN information is displayed.  
For SPARC Enterprise servers, only the IP address is displayed.

## Information

---

The IP address displayed is the one set within the server's operating system.

For network interfaces that were made redundant using BACS software, the information set in BACS (within the operating system) is displayed.

---

### Partition Configuration

The following information is displayed only when a PRIMEQUEST or SPARC Enterprise M4000/M5000/M8000/M9000 server is selected.

#### Partition name

The name used to identify a partition is displayed.

#### SB

The ID of the system board used to configure a partition is displayed.

#### IOB

The ID of the IO board used to configure a partition is displayed.

#### GSPB

The ID of the GSPB used to configure a partition is displayed.

#### Reserved SB

The ID of the Reserved SB assigned to a partition is displayed.

#### LSB

The partition logical system board (LSB) number is displayed.

Only displayed for SPARC Enterprise M4000/M5000/M8000/M9000 servers.

#### XSB

The partition eXtended System Board (XSB) number is displayed.

Only displayed for SPARC Enterprise M4000/M5000/M8000/M9000 servers.

## 1.5.2.3 Physical OS, VM Host and VM Guest Attributes

### General Area

#### Server name

The name used to identify a physical OS or VM host is displayed.

#### Admin LAN (IP Address)

The IP address on the admin LAN is displayed.

Not displayed for VM guests.

#### Status

The status of the physical OS, VM host, or VM guest is displayed.

#### Type

The type of the OS running on the server is displayed.

One of the following is displayed:

- Physical OS
- VM Host
- VM Guest

## OS

The type of the OS running on the server is displayed.

## Physical server name

The name of the server on which the physical OS, VM host, or VM guest is operating is displayed.  
Not displayed for VM guests.

## L-Server

The link to the allocated L-Server information.



See

Refer to "5.2 Resource Status" of the "Operation Guide VE" for details on resource status.

## VM Host Information Area

The following information is displayed only for VM Hosts.

### VM type

The type of the VM is displayed.

### VM software name

The name of the VM software used is displayed.

### VM software VL

The version and level of the VM software used is displayed.

### Number of VM guests

The number of VM guests is displayed.

### VM management software

The link to the web interface of a server virtualization software is displayed.

### VM Guest List

A list of hosted VM guests is displayed.

### VM Home Positions (VM Guests)

A list of the VM guests with the selected VM host set as their VM Home Position is displayed.

## VM Guest Information Area

The following information is displayed only for VM guests.

### VM type

The type of the VM is displayed.

### VM host name

The name of the VM host on which the VM guest is stored is displayed.

### VM name

The name of the VM is displayed.

### VM management software

The link to the web interface of a server virtualization software is displayed.

## Hardware Details Area

The following information is not displayed for VM guests.

### Server management software

The link to the web interface of a server management software is displayed.

Displayed only when PRIMERGY servers, PRIMEQUEST servers, or SPARC Enterprise servers are selected.

### Remote Management Controller IP address

IP address of the remote management controller is displayed.

Displayed only for servers other than PRIMERGY BX servers.

## Latest System Image Area

The following information is not displayed for VM guests or SPARC Enterprise servers.

### Version

The latest version of the system image is displayed.

### Backup date

The date and time of the most recent system image backup is displayed.

### Comments

Comments describing the system image are displayed.

## Spare Server Settings Area

The following information is not displayed for VM guests.

### Primary server

Displays the name of the physical server that will be replaced when server switchover occurs.

### Active server

Displays the name of the physical server that is currently running.

### Server switchover method

The method used to perform server switchover is displayed.

### Server boot method

The boot type of the system disk is displayed.

### Automatic server recovery

Shows whether automatic server recovery is enabled or not.

### Network switchover

Shows whether network settings will be automatically adjusted during server switchover.

### Force spare server to power off during switchover

The setting whether the spare server is turned off forcibly when switching over to the spare server is displayed.

### Switch over to spare server running VM guests

The setting whether the server is switched to a VM host on which a VM guest exists is displayed.

### Spare server

Displays the name of the physical server that will replace the current active server when server switchover occurs.

## HBA Address Rename Settings Area

The following information is not displayed for VM guests or SPARC Enterprise servers.

## WWNN

The WWNN set on the HBA is displayed.

## WWPN 1

The first WWPN set on the HBA is displayed.

The WWPN should be set to the I/O address of each HBA (in descending order).

Therefore, for rack mount or tower servers, the order may not correspond with port number order described for the HBA.

## WWPN 2

The second WWPN set on the HBA is displayed.

The WWPN should be set to the I/O address of each HBA (in descending order).

Therefore, for rack mount or tower servers, the order may not correspond with port number order described for the HBA.

## Network Properties Area (VLAN)

The following information is not displayed for VM guests.

### Index

The mounted position (index) of each network interface on the server is displayed.

### Port VLAN

The port VLAN IDs set on the LAN switch ports connected to each network interface are displayed.

When connected to a PRIMERGY BX900/BX400 LAN switch blade operating in IBP mode, "(IBP)" is displayed.

### Tagged VLAN

The tagged VLAN IDs set on the LAN switch ports connected to each network interface are displayed.

When connected to a PRIMERGY BX900/BX400 LAN switch blade operating in IBP mode, "(IBP)" is displayed.

## Port Groups Area (IBP)

### NIC Index

The mounted position (index) of each network interface on the server is displayed.

### Group

The names of the port groups set on the LAN switch ports connected to each network interface (for LAN switch blades operating in IBP mode) are displayed.

Only "-" is displayed under the following conditions.

- The corresponding LAN switch is not registered
- The corresponding LAN switch is not operating in IBP mode
- The corresponding LAN switch port has not been assigned to a port group

## Monitoring Information

### Timeout (sec)

The time-out value (in seconds) for ping monitoring is displayed.

### Recovery method

The recovery performed when an error is detected is displayed.

### Number of reboots

The number of times reboot is performed during recovery is displayed.

## WWN Settings Area

The following information is not displayed for VM guests or servers other than SPARC Enterprise servers.

### WWPN of port $n$ ( $n:1-8$ )

The WWPN value of the port  $n$  is displayed.  
Values set by users are reflected on WWPN.

### Target CA WWPN

The WWPN for the CA connected to the port  $n$  is displayed.

### Target CA AffinityGroup

The AffinityGroup for the CA connected to the port  $n$  is displayed.

## 1.5.2.4 Network Device Attributes

### General Area

#### Network device name

The name used to identify a network device is displayed.

#### System Name (sysName)

The name of the device specified as a network device is displayed.

#### IP address

The IP address on the admin LAN is displayed.

#### Device name (Product name)

The product name of the network device is displayed.

#### Model

The model name of a network device is displayed.

#### Vendor

The vendor name of a network device is displayed.

#### Serial number

The serial number of a network device is displayed.

#### Firmware version

The firmware version of a network device is displayed.

#### Device status

The status of a network device is displayed.

One of the following is displayed:

- normal
- error
- unknown

#### Slot

A slot number representing the mounted location is displayed.  
This is only displayed for LAN switch blades. A hyphen ("-") is displayed in other cases.

#### Maintenance Mode

The status of maintenance mode is displayed.

One of the following is displayed:

- active
- maintenance

#### Type

The type of a network device is displayed.

One of the following is displayed:

- L2-Switch
- Firewall

For network devices with multiple types, all types are displayed separated by commas (",").

Displays the location of the network device.

#### Automatic configuration

Displays whether the network device is set to be automatically set or not.

- true
- false

#### Redundant Configuration

The following attributes are not displayed for PRIMERGY BX900/BX400 LAN switch blades operating in IBP mode.

##### Group ID

The group ID is displayed.

##### Network Devices

Another device in the redundancy configuration is displayed.

When there are multiple devices, the names of those devices are displayed separated by commas (",").

#### Hardware Details Area

##### Launch Network Device Web UI

A link to the Web interface of the network device is displayed.

Clicking the link displays the Web interface of the network device.



#### Note

Links will be displayed even for devices that Web UI does not support, but even if these links are clicked, the Web interface will not be displayed.

Refer to the manual of the network device to confirm whether a Web interface is provided.

#### Port Properties Area

##### Port Number

The number of the port of the selected network device is displayed.

##### Port Name

The name assigned to the port of the selected network device is displayed.

##### Member Port

When the name of a port with link aggregation is displayed for the port name, the port names of the physical port with link aggregation are displayed separated by commas (",").

When the physical port name is displayed as the port name, a hyphen ("-") is displayed.

### Link Status

The operational status of the port is displayed.

One of the following is displayed:

- up
- down
- unknown

### Speed/DuplexMode

The speed and duplex mode of the operating port are displayed.

### Link Aggregation Group

The name of the link aggregation group to which the port of the selected LAN switch belongs.

If it does not belong to link aggregation, a hyphen ("-") is displayed.

### Link aggregation information

The following information is displayed only when the PY CB Eth Switch/IBP 10Gbps 18/8 LAN switch blade is selected.

#### Link aggregation group name

The name of the link aggregation group to which the port of the selected LAN switch blade belongs is displayed.

#### Port Name

The link aggregation port name is displayed.

#### Member port:Link status

The physical port names and the link status (up or down) of the physical ports is displayed for the ports in the link aggregation.

### VLAN Area

#### VLAN ID

A list of VLAN IDs set in the selected LAN switch is displayed.

#### Untagged Port(s)

A list of ports set with a port VLAN ID is displayed.

The logical port for link aggregation is only displayed for PY CB Eth Switch/IBP 10Gb 18/8 LAN switch blades.

#### Tagged Port(s)

A list of ports set with tagged VLAN ID(s) is displayed.

The logical port for link aggregation is only displayed for PY CB Eth Switch/IBP 10Gb 18/8 LAN switch blades.

### Link Data Area

#### Resource Name (left side)

The name of the selected network device is displayed.

#### I/F (left side)

The port name of the network device is displayed.

#### I/F (right side)

The interface name of the resource connected to the network device is displayed.

#### Resource Name (right side)

The name of the resource connected to the network device is displayed.



## Note

For LAN switch blades, connection information of network devices is not displayed.

### Ruleset

#### Name

The name of the ruleset is displayed.  
Displayed only when the type of a network device is "Firewall".

#### Description

A description of the ruleset is displayed.

### Login Information

#### Tenant

Displays the name of the tenant that can be used as login information for the network device.  
If the network device type is "L2-Switch", a hyphen ("-") is displayed.

#### IP address

The IP address which the network device logs into is displayed.

#### Port Number

The port number which the network device logs into is displayed.

#### Protocol

The name of the protocol used to login to the network device is displayed.

#### User Name

The user name used to login to the network device is displayed.

#### Authority

The privileges of the user used to login to the network device are displayed.

#### Authentication

The user authentication method for the network device is displayed.

#### Login Check

An account information check result is displayed.

One of the following is displayed:

- successful
- failed
- unchecked

### Monitoring Settings Area

#### SNMP community name

Displays the community name used for SNMP communications with the network device.

#### Monitoring method

The type of monitoring used on the network device is displayed.

One of the following is displayed:

- None
- ping
- SNMP
- ping+SNMP

#### Monitoring interval (sec)

Displays the monitoring interval (in seconds) for the network device.

#### Retry count

Displays the number of retries when monitoring of the network device fails (no response before timeout).

#### Timeout(sec)

Displays the time (in seconds) a response is waited for before it is determined monitoring of the network device has failed.

## 1.5.2.5 Power Monitoring Devices (PDU or UPS) Attributes

### Registration Settings

#### Device name

The name used to identify a PDU or UPS is displayed.

#### Admin LAN (IP address)

The IP address on the admin LAN is displayed.

#### Device type

The device type (PDU or UPS) is displayed.

#### Model

The model name of the PDU or UPS is displayed.

#### Comments

Comments entered when registering a PDU or UPS are displayed.

### Hardware Details Area

#### Serial number

The serial number of the PDU or UPS is displayed.

#### Voltage

The voltage supplied to the PDU or UPS is displayed.

#### Hardware version

The hardware version of the PDU is displayed.

This is not displayed for UPSs.

#### Firmware version

The firmware version of the device (PDU or UPS) is displayed.

#### Date of manufacture

The date of manufacture of the PDU or UPS is displayed.

#### Outlets

The number of outlets provided by the PDU is displayed.

This is not displayed for UPSs.

#### Intended orientation

The intended orientation (horizontal or vertical) of the PDU is displayed.  
This is not displayed for UPSs.

### 1.5.2.6 Management Software Attributes

#### General Area

##### Management software name

The name used to identify the management software is displayed.

##### Type

The type of the management software is displayed.

One of the following is displayed:

- vCenter Server
- SCVMM
- OVM Manager
- VIOM

##### IP address

The IP address used to connect to the management software is displayed.

##### Status

The status of the management software is displayed.

##### Management software

A link to the web interface of the management software is displayed.

### 1.5.2.7 Storage Management Software Attributes

#### General Area

##### Name

The name of the resource is displayed.

##### Type

The type of the resource is displayed.

##### Label

The label set for the resource is displayed.

##### Comments

Comments set for the resource are displayed.

#### Configuration Information

##### Management Software Type

The management software type of the storage management software is displayed.

##### Version

The version of the storage management software is displayed.

#### IP Address

The IP address used to access the storage management software is displayed.

#### Port Number

The port number used to access the storage management software is displayed.

#### User Name

The user name of the storage management software is displayed.

#### Management software

A link to the management software for the storage management software is displayed.

### Physical Storage Unit List

#### Name (Label)

The name of the storage unit is displayed.

#### Model

The model name of the storage unit is displayed.

#### Storage Management Software

The storage management software for the storage unit is displayed.

## 1.5.2.8 Storage Unit Attributes

### General Area

#### Name

The name of the resource is displayed.

#### Type

The type of the resource is displayed.

#### Model

The model name of the storage device is displayed.

### Configuration Information

#### Management software

A link to the management software for the storage management software is displayed.

#### Serial Number

Information used to identify the chassis of the storage unit is displayed.

#### IP address

The IP address used to access the storage management software is displayed.

### Virtual Storage List

#### Status

The status of the registered virtual storage is displayed.

#### Capacity (Unused Capacity/Total Capacity)

The capacity of the registered virtual storage is displayed.

### Storage Type

The type of the registered virtual storage is displayed.

### Attributes

The type of the virtual storage is displayed.

### Storage Management Software

The storage management software for the virtual storage is displayed.

### Physical Storage Unit

The storage unit for the virtual storage is displayed.

## 1.5.2.9 VM Management Software Attributes

### General Area

#### Name

The name of the resource is displayed.

#### Resource Type

The resource type of the virtual storage is displayed.

#### Label

The label is displayed.

#### Comments

Comments set for the resource are displayed.

### Configuration Information

#### Management Software Type

The management software type of the storage management software is displayed.

#### Version

The version of the storage management software is displayed.

#### IP Address

The IP address used to access the storage management software is displayed.

#### Port Number

The port number used to access the storage management software is displayed.

#### User Name

The user name of the storage management software is displayed.

#### Management software

A link to the web interface of the management software is displayed.

### Virtual Storage List

#### Status

The status of the registered virtual storage is displayed.

#### Capacity (Unused Capacity/Total Capacity)

The capacity of the registered virtual storage is displayed.

### Storage Type

The type of the registered virtual storage is displayed.

### Attributes

The type of the virtual storage is displayed.

### Storage Management Software

The storage management software for the virtual storage is displayed.

### Physical Storage Unit

The storage unit for the virtual storage is displayed.

## 1.5.2.10 Virtual Storage Attributes

### General Area

#### Name

The name of the resource is displayed.

#### Type

The type of the resource is displayed.

#### Label

The label set for the resource is displayed.

#### Comments

Comments set for the resource are displayed.

### Configuration Information

#### Management software

A link to the web interface of the storage management software is displayed.

#### Status

The status of the resource is displayed.

#### Storage Type

The type of the resource is displayed.

#### Thin Provisioning

Thin provisioning configuration information is displayed.

- When thin provisioning is configured  
"yes" is displayed.
- When thick provisioning is configured or no attribute is specified  
"no" is displayed.

#### Total Capacity

The total storage capacity is displayed.

#### Unused Capacity

The free storage capacity is displayed.

## 1.5.2.11 Folder Attributes

### General Area

#### Name

The name of the resource is displayed.

#### Type

The type of the resource is displayed.

#### Label

The label set for the resource is displayed.

#### Comments

Comments set for the resource are displayed.

### Tenant Folder/L-Platform/Folder List

#### Name (Label)

The name used to identify a tenant folder is displayed.

#### Type

The type of a tenant folder is displayed.

#### Stored Resource Number

The number of stored resources is displayed.

### Pool List

#### Name (Label)

The name used to identify the resource pool is displayed.

#### Type

The type of the resource pool is displayed.

#### Priority

The priority of the resource pool is displayed.

#### Stored Resource Number

The number of resources registered in the resource pool is displayed.

### L-Server List

#### Name (Label)

The name of the L-Server directly under the root/folder/tenant is displayed.

#### Status

L-Server status is displayed.

#### Server type

The server type of the L-Server is displayed.

- For Physical L-Servers

"Physical" is displayed.

- For Virtual L-Servers

The VM type of the L-Server is displayed.

## OS

The OS type of the L-Server is displayed.

## Current Resource

The following information is displayed according to the L-Server allocation status.

- When resources are already allocated (allocated)

The name of the physical server or VM host that has been allocated is displayed.

- When servers have been released (preserved)

The name of the physical server or VM host that was used the last time the L-Server was started is displayed. The name is followed by "(preserved)".

- When only the configuration definitions have already been created (defined)

"(defined)" is displayed.

## Preserved resource

The information set for "Physical server" or "VM host" during L-Server creation is displayed.

- When neither server nor host is specified (Automatic)

"Automatic" is displayed.

- When a resource pool is specified

The server pool icon or VM pool icon and resource pool name are displayed.

- For physical servers

The server pool icon and resource pool name are displayed.

- For a VM host

The VM host icon and VM host name are displayed.

## CPU performance (Defined)

The CPU performance value defined during L-Server creation is displayed.

## CPU performance (Allocated)

The CPU performance value of the physical server actually allocated to the L-Server is displayed.

## Number of CPUs (Defined)

The number of CPUs defined during L-Server creation is displayed.

## Number of CPUs (Allocated)

The number of CPUs of the physical server actually allocated to the L-Server is displayed.

## Memory (Defined)

The memory capacity defined during L-Server creation is displayed.

## Memory Capacity (Allocated)

The memory capacity of the physical server actually allocated to the L-Server is displayed.

## Number of NICs

The number of NICs on the L-Server is displayed.

## The Number of Disks

The number of disks on the L-Server is displayed.

## Model(Defined)

The model name defined during L-Server creation is displayed.



#### Model(Allocated)

The model name of the physical server actually allocated to the L-Server is displayed.

### 1.5.2.12 L-Server Attributes

#### General Area

##### Name

The name of the resource is displayed.

##### Type

The type of the resource is displayed.

##### Label

The label set for the resource is displayed.

##### Comments

Comments set for the resource are displayed.

#### Server Information(Server Specification)

##### Name

The name of the L-Server template used for the L-Server is displayed.

##### CPU performance

The CPU performance defined for the L-Server is displayed.

##### Defined Value

The CPU performance of the physical server actually allocated to the L-Server is displayed.

##### Allocated Value

The CPU performance defined during L-Server creation is displayed.

##### Number of CPUs(Allocated Value/Define Value)

The number of CPUs defined for the L-Server is displayed.

##### Defined Value

The CPU performance of the physical server actually allocated to the L-Server is displayed.

##### Allocated Value

The number of CPUs defined during L-Server creation is displayed.

##### Memory(Allocated Value/Define Value)

The memory capacity defined for the L-Server is displayed.

##### Defined Value

The memory capacity of the physical server actually allocated to the L-Server is displayed.

##### Allocated Value

The memory capacity defined during L-Server creation is displayed.

##### Model(Allocated Value/Define Value)

The model name defined for the L-Server is displayed.

##### Defined Value

The model name of the physical server actually allocated to the L-Server is displayed.

#### Allocated Value

The model name defined during L-Server creation is displayed.

#### Type

The server type of the L-Server is displayed.

#### Disk type

The type of disks on the physical L-Server is displayed.

One of the following is displayed:

- iSCSI
- SAN

#### PXE boot

One of the following is displayed:

- When PXE boot is configured for the physical L-Server  
"Enable" is displayed.
- When PXE boot is not configured  
"Disable" is displayed.

### Server Properties (VM Management Software Specific Information)

#### CPU Reserve

The minimum size of CPU resources (minimum reserved value) to be allocated for the VM guest is displayed.

#### CPU Share

The relative proportion of CPU resources to be allocated when CPU resources run out is displayed.

#### Memory Reserved

The minimum size of memory resources (minimum reserved value) to be allocated for the VM guest is displayed.

#### Memory Buffer

The proportion of memory to be allocated to the VM guest as a buffer is displayed.

#### Memory Share

The relative proportion of memory resources to be allocated when memory resources run out is displayed.

#### Dynamic Memory

One of the following is displayed: Only displayed for virtual L-Servers.

- When Dynamic Memory is "true"  
"on" is displayed.
- When Dynamic Memory is "false"  
"off" is displayed.

### Server Information(Advanced Setting)

#### Server recovery

L-Server redundancy settings are displayed.

#### Spare server specs

The method to select a spare server of the L-Server is displayed.

## Spare server pool

The spare server pool for the L-Server is displayed.

## Alive Monitoring

The alive monitoring configuration status is displayed.

- When Alive Monitoring is Configured  
"on" is displayed.
- When Alive Monitoring is not Configured  
"off" is displayed.



## Note

For virtual L-Servers upgraded from earlier versions, or virtual L-Servers linking with already configured virtual machines, a hyphen ("-") is displayed for the alive monitoring configuration status.

## Boot Location

The L-Server's physical location change status is displayed.

## Releasing Resources

Resource release settings are displayed.

- When Repurpose is Configured  
"on" is displayed.
- When Repurpose is not Configured  
"off" is displayed.

## Current resource

The information set for "Physical server" or "VM host" during L-Server creation is displayed.

- When neither server nor host is specified (Automatic)  
"Automatic" is displayed.
- When a resource pool is specified  
The server pool icon or VM pool icon and resource pool name are displayed.
- For physical servers  
The server pool icon and resource pool name are displayed.
- For a VM host  
The VM host icon and VM host name are displayed.

## Last allocated resource

The name of the physical server or VM host that was started by the L-Server last time is displayed.

## Exclusion

The exclusive operation settings of the L-Server are displayed.

## Startup priority

The startup priority of the L-Server is displayed.

When the startup priority is "0", "Exclude from batch power operations" is displayed.

## FC Single path mode

For physical L-Servers, whether only one path has been configured for VIOM or HBAar is displayed.

- When single path mode is set  
"on" is displayed.
- When single path mode is not set  
"off" is displayed.

#### Status

##### OS Type

The OS type of the L-Server is displayed.

##### Status

The resource status of the L-Server is displayed.

##### Allocation status

The resource allocation status of the L-Server is displayed.

##### Controlled resources

The management status of the resources allocated to the L-Server is displayed.

Displays the resource types being managed. When there are multiple resource types being managed, they are displayed separated by commas (").

- When server resources are being managed  
"Server" is displayed.
- When storage resources are being managed  
"Storage" is displayed.
- When no resources are being managed  
A hyphen ("-") is displayed.  
For the L-Servers that were created in Resource Orchestrator, a hyphen ("-") is displayed.

#### Allocated Resource Information(Resource)

##### Resource name

A link to the resource details for the related physical server is displayed.

##### Guest name

A link to the resource details for the related VM guest is displayed.

##### VM type

The VM type of the L-Server is displayed.

##### Management software

The management software for the L-Server is displayed.

#### Allocated Resource Information(Cloning image information)

##### Deployed image name

The name of the cloning image specified during L-Server creation is displayed.

##### Version

The version of the cloning image specified during L-Server creation is displayed.

#### Allocated Resource Information(Virtual WWN address information)

##### WWNN

The information of the WWNN allocated to the L-Server is displayed.

## WWPN

The information of the WWPN allocated to the L-Server is displayed.

When single path mode is set, one of the displayed addresses is set for the WWPN address.

## Disk Information

### No.

The disk number set for the L-Server is displayed.

### Size

The disk size set for the L-Server is displayed.

### Device Path

The type of the disk allocated to the L-Server is displayed.

When a device path cannot be obtained, a hyphen ("-") is displayed.

### Usage

The usage of the disk set for the L-Server is displayed.

### Resource name

The disk name set for the L-Server is displayed.

- When a Disk is Allocated

A link to the detailed information of the allocated disk is displayed.

- When No Disk is Allocated

The name of the resource to be used is displayed.

### Type

The type of the disk allocated to the L-Server is displayed.

When type information cannot be obtained, a hyphen ("-") is displayed.

### Share

The shared disk status is displayed.

- When the disk is allocated to multiple L-Servers

"yes" is displayed.

- In other cases

"no" is displayed.

## Network Properties Area

### No.

The network number configured for the L-Server is displayed.

### IP address

The IP address of the network configured for the L-Server is displayed.

### MAC address

The MAC address of the network configured for the L-Server is displayed.

### Network resource name

The network name configured for the L-Server is displayed.

## VLAN

The VLAN ID for the network resource is displayed.

When "Untagged VLAN" is configured for the physical L-Server, "-" is displayed.

## Snapshots/System images

### Version

The version of the snapshot image collected from the L-Server is displayed.

### Collection Date

The date and time the snapshot image was collected from the L-Server is displayed.

### Comments

Comments set for the snapshot image collected from the L-Server are displayed.

## 1.5.2.13 L-Platform Attributes

### General Area

#### Name

The name of the resource is displayed.

#### Type

The type of the resource is displayed.

#### Label

The label set for the resource is displayed.

#### Comments

Comments set for the resource are displayed.

### L-Server List

#### Name (Label)

The name of the L-Server directly under the root/folder/tenant is displayed.

#### Status

L-Server status is displayed.

#### Server type

The server type of the L-Server is displayed.

- For Physical L-Servers

"Physical" is displayed.

- For Virtual L-Servers

The VM type of the L-Server is displayed.

#### OS

The OS type of the L-Server is displayed.

#### Current Resource

The following information is displayed according to the L-Server allocation status.

- When resources are already allocated (allocated)

The name of the physical server or VM host that has been allocated is displayed.

- When servers have been released (preserved)

The name of the physical server or VM host that was used the last time the L-Server was started is displayed. The name is followed by "(preserved)".

- When only the configuration definitions have already been created (defined)

"(defined)" is displayed.

#### Preserved resource

The information set for "Physical server" or "VM host" during L-Server creation is displayed.

- When neither server nor host is specified (Automatic)

"Automatic" is displayed.

- When a resource pool is specified

The server pool icon or VM pool icon and resource pool name are displayed.

- For physical servers

The server pool icon and resource pool name are displayed.

- For a VM host

The VM host icon and VM host name are displayed.

#### CPU performance (Defined)

The CPU performance value defined during L-Server creation is displayed.

#### Number of CPUs (Allocated)

The CPU performance value of the physical server actually allocated to the L-Server is displayed.

#### Memory (Defined)

The memory capacity defined during L-Server creation is displayed.

#### Memory Capacity (Allocated)

The memory capacity of the physical server actually allocated to the L-Server is displayed.

#### Number of NICs

The number of NICs on the L-Server is displayed.

#### The Number of Disks

The number of disks on the L-Server is displayed.

#### Model(Defined)

The model name defined during L-Server creation is displayed.

#### Model(Allocated)

The model name of the physical server actually allocated to the L-Server is displayed.

#### Firewall List

##### Name

The name of the firewall resource allocated to the L-Platform is displayed along with its icon.

##### Type

The type of the resource allocated to the L-Platform is displayed.

"Firewall" is displayed.

##### Ruleset

The name of the directory containing the ruleset used by the resources allocated to the L-Platform is displayed.

## Use Resource

The name and status of the network device configuring the resources allocated to the L-Platform are displayed in the following format.

When multiple network devices are configured, network device names and statuses will be displayed separated by commas (",").

<i>Name( Status),Name( Status)</i>
------------------------------------

## Firewall Attributes

### General Area

#### Name

The name of the resource is displayed.

#### Type

The type of the resource is displayed.  
"Firewall" is displayed.

### Network Device Basic Information

#### Name

The name of the directory containing the ruleset used by the resources allocated to the L-Platform is displayed.

#### Description

A description of the ruleset is displayed.

#### Parameter File Name

The name of the parameter file set for the ruleset is displayed.

### Network Devices

#### - Preserved resource

The name of the network device that configures the resource allocated to the L-Platform.

Clicking the link displays the [Resource Details] tab of the network device.

#### - Status

The status of the resource to be used is displayed.

## Tenant Attributes

### General Area

#### Name

The name of the resource is displayed.

#### Type

The type of the resource is displayed.

### Global Pool List

#### Name (Label)

The name (label) of the global pool is displayed.

#### Type

The resource pool type of the global pool is displayed.



#### Priority

The priority of the resource pool for automatically selecting a resource when creating an L-Server is displayed.

#### Stored Resource Number

The number of resources stored in the global pool is displayed.

#### Tenant Folder/L-Platform/Folder List

##### Name (Label)

The name used to identify the folder is displayed.

##### Type

The type of the folder is displayed.

##### Stored Resource Number

The number of stored resources is displayed.

#### Pool List

##### Name (Label)

The name used to identify the resource pool is displayed.

##### Type

The type of the resource pool is displayed.

##### Priority

The priority of the resource pool is displayed.

##### Stored Resource Number

The number of resources registered in the resource pool is displayed.

#### L-Server List

##### Name (Label)

The name of the L-Server directly under the root/folder/tenant is displayed.

##### Status

L-Server status is displayed.

##### Server type

The server type of the L-Server is displayed.

- For Physical L-Servers

"Physical" is displayed.

- For Virtual L-Servers

The VM type of the L-Server is displayed.

##### OS

The OS type of the L-Server is displayed.

##### Current Resource

The following information is displayed according to the L-Server allocation status.

- When resources are already allocated (allocated)

The name of the physical server or VM host that has been allocated is displayed.

- When servers have been released (preserved)

The name of the physical server or VM host that was used the last time the L-Server was started is displayed. The name is followed by "(preserved)".

- When only the configuration definitions have already been created (defined)

"(defined)" is displayed.

#### Preserved resource

The information set for "Physical server" or "VM host" during L-Server creation is displayed.

- When neither server nor host is specified (Automatic)

"Automatic" is displayed.

- When a resource pool is specified

The server pool icon or VM pool icon and resource pool name are displayed.

- For physical servers

The server pool icon and resource pool name are displayed.

- For a VM host

The VM host icon and VM host name are displayed.

#### CPU performance (Defined)

The CPU performance value defined during L-Server creation is displayed.

#### CPU performance (Allocated)

The CPU performance value of the physical server actually allocated to the L-Server is displayed.

#### Number of CPUs (Defined)

The number of CPUs defined during L-Server creation is displayed.

#### Number of CPUs (Allocated)

The number of CPUs of the physical server actually allocated to the L-Server is displayed.

#### Memory (Defined)

The memory capacity defined during L-Server creation is displayed.

#### Memory Capacity (Allocated)

The memory capacity of the physical server actually allocated to the L-Server is displayed.

#### Number of NICs

The number of NICs on the L-Server is displayed.

#### The Number of Disks

The number of disks on the L-Server is displayed.

#### Model(Defined)

The model name defined during L-Server creation is displayed.

#### Model(Allocated)

The model name of the physical server actually allocated to the L-Server is displayed.

## 1.5.2.14 VM Pool Attributes

### General Area

#### Name

The name of the resource is displayed.

#### Type

The type of the resource is displayed.

#### Label

The label set for the resource is displayed.

#### Comments

Comments set for the resource are displayed.

#### Priority

The priority of the VM pool is displayed.

### Capacity

#### CPU Capacity

##### Total Capacity

The total CPU capacity of the VM host is displayed.

##### Unused Capacity

The free CPU capacity of the VM host is displayed.

#### Memory Size

##### Total Capacity

The total memory capacity of the VM host is displayed.

##### Unused Capacity

The free memory capacity of the VM host is displayed.

### VM Host List

#### Name (Label)

The name of the registered VM host is displayed.

#### Status

The status of the registered VM host is displayed.

#### VM Type

The VM type of the registered VM host is displayed.

#### Cluster Group

Displayed when using cluster configurations.

#### CPU Capacity (Unused/Total)

The CPU capacity of the registered VM host is displayed.

#### Memory Capacity (Unused/Total)

The memory capacity of the registered VM host is displayed.

## VM Host Attributes

### General Area

#### Name

The name of the resource is displayed.

#### Type

The type of the resource is displayed.

### Capacity

#### CPU Capacity

##### Total Capacity

The total CPU capacity of the VM host is displayed.

##### Unused Capacity

The free CPU capacity of the VM host is displayed.

#### Memory Size

##### Total Capacity

The total memory capacity of the VM host is displayed.

##### Unused Capacity

The free memory capacity of the VM host is displayed.

### VM Host Information Area

#### Status

The status of the VM host is displayed.

#### VM type

The VM type of the VM host is displayed.

#### Cluster Group

Displayed when using cluster configurations.

#### Number of VM guests

The number of VM guests belonging to the VM host is displayed.

#### Management software

The link to the web interface of the VM management software for the VM host is displayed.

#### Physical Server Name

The name of the physical server to which the VM host belongs is displayed.

### VM Management Software Specific Information

#### VMware HA

The ON/OFF status of VMware HA is displayed.

One of the following is displayed:

- on
- off

Displayed when the VM host is VMware.

When not in a cluster configuration, a hyphen ("-") is displayed.

#### VMware DRS

The ON/OFF status of VMware DRS is displayed.

One of the following is displayed:

- on
- off

Displayed when the VM host is VMware.

When not in a cluster configuration, a hyphen ("-") is displayed.

#### VMware DPM

The ON (manual or automatic)/OFF status of VMware DPM is displayed.

One of the following is displayed:

- on
- off

Displayed when the VM host is VMware.

When not in a cluster configuration, a hyphen ("-") is displayed.

#### Admission Control

The enabled/disabled status of the admission control function provided by VMware is displayed.

One of the following is displayed:

- on
- off

Displayed when the VM host is VMware.

When not in a cluster configuration, a hyphen ("-") is displayed.

#### Standby Mode

The values based on the status of VMware standby mode and VMware DPM are displayed.

One of the following is displayed:

- on
- off

Displayed when the VM host is VMware.

When not in a cluster configuration, a hyphen ("-") is displayed.

Even in a cluster configuration, if both standby mode and VMware DPM are disabled, "off" is displayed.

#### Maintenance Mode

The maintenance mode setting of VMware/Hyper-V is displayed.

One of the following is displayed:

- on
- off

Displayed when the VM host is VMware or Hyper-V.

When not in a cluster configuration, a hyphen ("-") is displayed.

## VM Guest List

### Name (Label)

The name of the VM guest is displayed.

### Status

The status of the VM guest is displayed.

### VM Type

The VM type of the VM guest is displayed.

### VM host name

The name of the VM host associated with the VM guest is displayed.

### OS Type

The OS type of the VM guest is displayed.

### CPU Capacity

The CPU capacity of the VM guest is displayed.

### Memory Capacity

The memory capacity of the VM guest is displayed.

### Allocated L-Server

The name of the L-Server allocated to the VM guest is displayed.

## 1.5.2.15 Server Pool Attributes

### General Area

#### Name

The name of the resource is displayed.

#### Type

The type of the resource is displayed.

#### Label

The label set for the resource is displayed.

#### Comments

Comments set for the resource are displayed.

#### Priority

The priority of the server pool is displayed.

### Capacity

#### Number of Servers

##### Total Units

The total number of servers registered in the server pool is displayed.

##### Unused Units

The number of available servers registered in the server pool is displayed.

## Physical Server List

### Physical Server Name

The name of the physical server is displayed.

### Status

The status of the physical server is displayed.

### Model

The model name of the physical server is displayed.

### OS

The OS of the physical server is displayed.

### CPU Type

The CPU type of the physical server is displayed.

### CPU clock speed

The CPU clock speed (frequency) of the physical server is displayed.

### Number of CPUs

The memory capacity of the physical server is displayed.

### Memory Capacity

The memory capacity of the registered server is displayed.

### Allocated L-Server

The L-Server name allocated to the physical server is displayed.

## Server Attributes

### General Area

#### Physical Server Name

The name of the server on which the physical OS, VM host, or VM guest is operating is displayed.

When the server has been registered as a managed server and powered on, the server model name obtained from ServerView Operations Manager is displayed. For other servers, no model name is displayed.

#### Product name

The product name of the physical server is displayed.

For PRIMERGY BX servers, the product name obtained from the management blade is displayed. For other servers, the model name is displayed.

#### Status

The status of the physical server is displayed.

#### Slot

The slot number of the physical server is displayed.

Displayed only for PRIMERGY BX servers.

#### Partition ID

The partition number is displayed.

Displayed only when a PRIMEQUEST or SPARC Enterprise M4000/M5000/M8000/M9000 server is selected.

#### Maintenance Mode

The maintenance mode of the physical server is displayed.

Not displayed when SPARC Enterprise servers are selected.

#### LED status

The illumination status of the maintenance LED for the physical server is displayed.  
Displayed only for PRIMERGY BX servers.

#### Admin LAN (MAC address)

The admin LAN address (MAC address) of the physical server is displayed.  
Not displayed when SPARC Enterprise servers are selected.

#### CPU core count

The CPU core count is displayed.

#### CPU Type

The CPU type of the physical server is displayed.

#### CPU clock speed

The CPU clock speed (frequency) of the physical server is displayed.  
This attribute is displayed as "-" for servers other than PRIMERGY BX servers or SPARC Enterprise M servers.

#### Memory Size

The memory capacity of the physical server is displayed.  
This attribute is displayed as "-" for servers other than PRIMERGY BX servers or SPARC Enterprise M servers.  
For SPARC Enterprise M4000/M5000/M8000/M9000 servers, this is displayed only when the server is powered on.

#### Admin LAN Redundancy

Displayed when NIC redundancy has been configured for admin LANs.

#### HBAAR LAN (MAC address)

The MAC address used for the HBA address rename setup service is displayed.  
Not displayed when SPARC Enterprise servers are selected.  
Displayed only for servers other than PRIMERGY BX servers.

#### Hardware Maintenance Mode

The hardware maintenance mode of the server is displayed.  
Displayed only for PRIMEQUEST servers.

#### Boot option

The boot option setting specified when registering servers is displayed.  
Displayed only for PRIMEQUEST servers.

### Hardware Details Area

#### I/O Virtualization Management Software

The link to the web interface of external I/O virtualization management software is displayed.  
Displayed only if coordinated up with external I/O virtualization management software.

#### VIOM server profile

The assigned VIOM server profile name is displayed.  
Displayed only if managed by VIOM and a server profile has been set.

### Network Properties (Physical Connections)

#### Index

The network number that belongs to the physical server is displayed.

#### LAN Switch

The name of the LAN switch that belongs to the physical server is displayed.



#### Port Name

The name of the port that belongs to the physical server is displayed.

#### hardware maintenance(NIC Summary)

For servers other than PRIMERGY BX servers and PRIMEQUEST servers, only admin LAN information is displayed.  
For SPARC Enterprise servers, only the IP address is displayed.

#### MAC address

The list of MAC addresses for hardware maintenance of the physical server.

#### IP address

The list of IP addresses for hardware maintenance of the physical server.

#### Admin LAN

The MAC addresses and IP addresses of each server are displayed.

#### L-Server Properties

##### Allocated L-Server

L-Server name allocated to the physical server is displayed.

### 1.5.2.16 Storage Pool Attributes

#### General Area

##### Name

The name of the resource is displayed.

##### Type

The type of the resource is displayed.

##### Label

The label set for the resource is displayed.

##### Comments

Comments set for the resource are displayed.

##### Priority

The priority of the storage pool is displayed.

#### Capacity

##### Disk Capacity

###### Total Capacity

The total disk capacity of the storage pool is displayed.

###### Unused Capacity

The free disk capacity of the storage pool is displayed.

#### Virtual Storage List

##### Name (Label)

The name of the registered virtual storage is displayed.

### Status

The status of the registered virtual storage is displayed.

### Capacity (Unused Capacity/Total Capacity)

The capacity of the registered virtual storage is displayed.

### Storage Type

The type of the registered virtual storage is displayed.

### Attributes

The type of the virtual storage is displayed.

## Disk Resource List

### Name (Label)

The disk name is displayed. A link to the detailed information of the allocated disk is displayed.

### Status

The disk status is displayed.

### Size

The disk size is displayed.

### Virtual Storage

The disk allocation destination is displayed.

### Share

The shared settings of the disk are displayed.

### Attributes

The attributes that have been set are displayed.

- When thin provisioning is configured

"Thin Provisioning" is displayed.

- When thick provisioning is configured

"Thick Provisioning" is displayed.

### Allocated L-Server

The name of the L-Server to which a disk has been allocated is displayed.

## Virtual Storage Attributes

### General Area

#### Name

The name of the resource is displayed.

#### Type

The type of the resource is displayed.

#### Label

The label set for the resource is displayed.

#### Comments

Comments set for the resource are displayed.

## Configuration Information

### Status

The status of the resource is displayed.

### Storage Type

The storage type of the resource is displayed.

### Thin Provisioning

Thin provisioning configuration information is displayed.

- When thin provisioning is configured  
"yes" is displayed.
- When thick provisioning is configured or no attribute is specified  
"no" is displayed.

### Total Capacity

The total storage capacity is displayed.

### Unused Capacity

The free storage capacity is displayed.

## Disk Resource List

### Name (Label)

The disk name is displayed. A link to the detailed information of the allocated disk is displayed.

### Status

The disk status is displayed.

### Size

The disk size is displayed.

### Virtual Storage

The disk allocation destination is displayed.

### Share

The shared settings of the disk are displayed.

### Attributes

The attributes that have been set are displayed.

- When thin provisioning is configured  
"Thin Provisioning" is displayed.
- When thick provisioning is configured  
"Thick Provisioning" is displayed.

### Allocated L-Server

The name of the L-Server to which a disk has been allocated is displayed.

## Disk Details Attributes

### General Area

#### Name

The disk name is displayed.

## Type

The disk status is displayed.

## Label

The label set for the disk is displayed.

## Comments

Comments set for the disk are displayed.

## Configuration Information

### Status

The disk status is displayed.

### Size

The disk size is displayed.

### Allocation

The disk allocation status is displayed.

### L-Server that was last used

If a disk is unallocated, the name of the L-Server that the disk was last allocated to is displayed.

If it is an L-Server located in the tenant folder or resource folder, the name of the tenant folder or resource folder is also displayed.

The information from when the disk is deleted is displayed even if the L-Server is changed or deleted after reducing disks in the L-Server.

A hyphen ("-") is displayed in the following cases:

- If the disk has already been allocated to an L-Server
- If the disk has never been allocated to an L-Server

### Virtual Storage

The disk allocation destination is displayed.

### Share

Whether the disk is allocated to multiple L-Servers is displayed.

- When the disk has been allocated to 2 or more L-Servers  
"yes" is displayed.
- When the disk is preserved or has been allocated to only one L-Server  
"no" is displayed.

### Thin Provisioning

Thin provisioning configuration information is displayed.

- When thin provisioning is configured  
"yes" is displayed.
- When thick provisioning is configured  
"no" is displayed.

### Alias

If the disk type is ETERNUS, the alias name set in LUN is displayed.

A hyphen ("-") is displayed in the following cases:

- When the disk type is one other than ETERNUS
- If an alias name has not been set in LUN



## Information

If the alias name of LUN has been changed with the ETERNUS WebGUI, it will be updated a certain time later.

### L-Server Properties

#### Allocated L-Server

The name of the L-Server to which a disk has been allocated is displayed.

#### Disk No.

The disk number is displayed.

#### Disk Usage

The usage of the disk is displayed.

## 1.5.2.17 Network Pool Attributes

### General Area

#### Name

The name used to identify the network pool is displayed.

#### Type

The type of the network pool is displayed.

#### Priority

The priority for automatic selection of resources when multiple network pools are available is displayed.

#### Label

The label for the network pool is displayed.

#### Comments

Comments for the network pool are displayed.

### Capacity

#### IP address

##### Total Number

The total number of IP addresses registered in the network pool is displayed.

##### Unused Number

The number of unused IP addresses registered in the network pool is displayed.

### Network Resource List

#### Name (Label)

The network resource name is displayed.

#### Admin LAN

Whether it is being used as an admin LAN is displayed.

- When used as an admin LAN

"yes" is displayed.

- When not used as an admin LAN

"no" is displayed.

#### iSCSI boot

The LAN for iSCSI boot is displayed.

#### VLANID

The VLAN ID for the network resource is displayed.

#### Subnet Address

The subnet address of the network resource is displayed.

#### Subnet Mask

The subnet mask of the network resource is displayed.

#### Address Number (Unused Number/Total Number)

The total number and number of unused IP addresses registered in the network resource are displayed.

#### Network Device List

##### Network Device Name

The network device name is displayed.

##### Model

The model name is displayed.

##### Status

The operational status of the network device is displayed.

##### Usage

The available usage for the network device is displayed.

##### Ruleset

The ruleset name is displayed.

##### Current Resource

The name of the network device that has been allocated is displayed.

### **Network Device Attributes**

For details, refer to "[1.5.2.4 Network Device Attributes](#)".

### **Network Resource Attributes**

#### General Area

##### Name

The network resource name is displayed.

##### Type

The network resource is displayed.

##### Label

The label for the network resource is displayed.

##### Comments

Comments for the network resource are displayed.

## Capacity

### IP address

#### Total Number

The total number of IP addresses registered in the network pool is displayed.

#### Unused Number

The number of unused IP addresses registered in the network pool is displayed.

## Attribute Information

### Admin LAN

Whether it is to be used as an admin LAN is displayed.

- When used as an admin LAN  
"yes" is displayed.
- When not used as an admin LAN  
"no" is displayed.

### iSCSI boot

The LAN for iSCSI boot is displayed.

### use configured virtual switches.

If no virtual network, virtual switch, or port group corresponding to the network resource exists, information on whether those resources will be automatically configured is displayed.

- If the checkbox is not selected  
Configuration is performed automatically.  
This option is not selected by default.
- If the checkbox is selected  
Resources that have already been created are configured for the network resource.

### Automatically configure VLANs for the uplink ports

Whether automatic VLAN configuration for uplink ports is performed is displayed.

- When automatic configuration is performed  
"yes" is displayed.
- When automatic configuration is not performed  
"no" is displayed.

### Start Address

The start address of the IP addresses to be automatically configured is displayed.

### End Address

The end address of the IP addresses to be automatically configured is displayed.

### Subnet address

The subnet address of the network resource is displayed.

### Subnet Mask

The subnet mask of the network resource is displayed.

### Gateway

The default gateway is displayed.

## VLAN ID

The VLAN ID for the network resource is displayed.

## Excluded IP List

### Start address

The start address of the IP addresses to be excluded from automatic configuration is displayed.

### End address

The end address of the IP addresses to be excluded from automatic configuration is displayed.

## External Connection List

### Chassis name

The chassis name is displayed.

### Switch Name

The switch name is displayed.

### Port Number

The external connection port number of the LAN switch blade is displayed.

For link aggregation, the physical port numbers of the member ports that constitute the link aggregation are displayed.

A hyphen ("-") is displayed if the link aggregation configuration has been released.

### Link Aggregation Group

If link aggregation, then the link aggregation group name is displayed.

A hyphen ("-") is displayed if a physical port.

## VLAN Type

The VLAN type is displayed.

- When used as Tagged VLAN

"tagged" is displayed.

- When used as Untagged VLAN

"untagged" is displayed.

- When VLAN is not used

"none" is displayed.

## 1.5.2.18 Address Pool Attributes

### General Area

#### Name

The name of the resource is displayed.

#### Type

The type of the resource is displayed.

#### Label

The label set for the resource is displayed.

#### Comments

Comments set for the resource are displayed.



#### Priority

The priority of the address pool is displayed.

#### Capacity

##### Number Of Address

###### Total Number

The total number of IP addresses stored in the address pool is displayed.

###### Unused Number

The number of unused IP addresses stored in the address pool is displayed.

#### General Area

##### Name (Label)

The name of the address set is displayed.

##### Address Type

The address type of the address set is displayed.

##### Start Address

The start address of the address set is displayed.

##### End Address

The end address of the address set is displayed.

##### Address Number (Unused Number/Total Number)

The unused number and total number of IP addresses in the address set are displayed.

### **Address Set Attributes**

#### General Area

##### Name

The name of the resource is displayed.

##### Type

The type of the resource is displayed.

##### Label

The label set for the resource is displayed.

##### Comments

Comments set for the resource are displayed.

#### Attribute Information

##### Start Address

The start address of the address set is displayed.

##### End Address

The end address of the address set is displayed.

##### Address Type

The address type of the address set is displayed.

## Excluded Address List

### Address

The list of IP addresses to be excluded from the address set is displayed.

## 1.5.2.19 Image Pool Attributes

### General Area

#### Name

The name of the resource is displayed.

#### Type

The type of the resource is displayed.

#### Label

The label set for the resource is displayed.

#### Comments

Comments set for the resource are displayed.

#### Priority

The priority of the image pool is displayed.

### Cloning Image List

#### Name

The name of the image is displayed.

#### Version

The version of the image is displayed.

#### Collection Date

The date and time the image was collected is displayed.

#### Image Type

The image type of the image is displayed.

#### VM type

The VM type of the image is displayed.

#### Comment

Comments for the image are displayed.

## Cloning Image Attributes

### General Area

#### Name

The name of the resource is displayed.

#### Type

The type of the resource is displayed.

## Image Information

### Image Type

The image type of the cloning image is displayed.

### OS

The name of the operating system stored in the cloning image is displayed.

## Version List

### Name

The name of the image is displayed.

### Version

The version of the image is displayed.

### Collection Date

The date and time the image was collected is displayed.

### Image Type

The image type of the image is displayed.

### VM type

The VM type of the image is displayed.

### Comment

Comments for the image are displayed.

## 1.5.3 [Recovery Settings] Tab

---

The [Recovery Settings] tab displays a list of spare servers assigned to the resource selected in the server resource tree. The table below shows the information displayed in the [Recovery Settings] tab.

### [Recovery Settings] Tab

#### Server Name

The name used to identify a physical OS or VM host is displayed.

#### Admin LAN IP Address

The IP address on the admin LAN is displayed.

#### Primary Server

The name of the server on which the physical OS or VM host is operating is displayed.

#### Switchover State

The current switchover state is displayed.

#### Spare Server

The configured spare server is displayed.

The switchover state is indicated by an arrow shown next to the currently active Primary Server. The messages "Switchover in progress", "Failback in progress", or "Takeover in progress" are displayed respectively during a server switchover, failback, or takeover process. If more than one spare server has been set, the first server listed is the one that is currently running.

Clicking a column heading in this list will change the color of the selected column and sort the displayed recovery settings in either ascending or descending order.

In each page of the list, 10 items can be displayed. It is possible to move forwards and backwards by single pages, and to the first or last page.

## 1.5.4 [Image List] Tab

---

The [Image List] tab displays information regarding available images. Those lists can be used to manage both system images and cloning images.

The following two tables list the items that are displayed in System Image List and Cloning Image List.

### System Image List Area

#### Server Name

The name used to identify a physical OS or VM host is displayed.

#### Version

The latest version of the system image is displayed.

#### Backup Date

The date and time of the most recent system image backup is displayed.

#### Comments

Comments describing the system image are displayed.

### Cloning Image List Area

#### Cloning Image Name

The name used to identify a cloning image is displayed.

#### Version

The version of the cloning image is displayed.

#### Collection Date

The name used to identify a cloning image is displayed.

#### OS

The name of the operating system stored in the cloning image is displayed.

#### Comments

Comments describing the cloning image are displayed.

Right-clicking a resource in the list displays a list of available operations in a popup menu.

Refer to "[1.2.2 Popup Menus](#)" for details on the operations available from popup menus.

Clicking a column heading in this list will change the color of the selected column and sort images in either ascending or descending order.

In each page of the list, 10 items can be displayed. It is possible to move forwards and backwards by single pages, and to the first or last page.

## 1.5.5 [Network Map] Tab

---

Resource Orchestrator displays the following information.

- Network configuration of physical and virtual servers (virtual switches and VM guests)
- Link state of each resource connection
- VLAN settings applied to physical and virtual servers

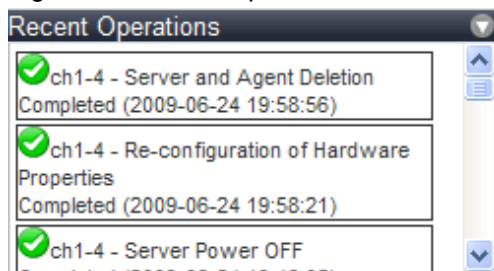
 See

.....  
For details on the Network Map, refer to "Chapter 12 Network Map" of the "Operation Guide VE".  
.....

## 1.6 Recent Operations

This section describes the recent operations area of the ROR console.

Figure 1.7 Recent Operations

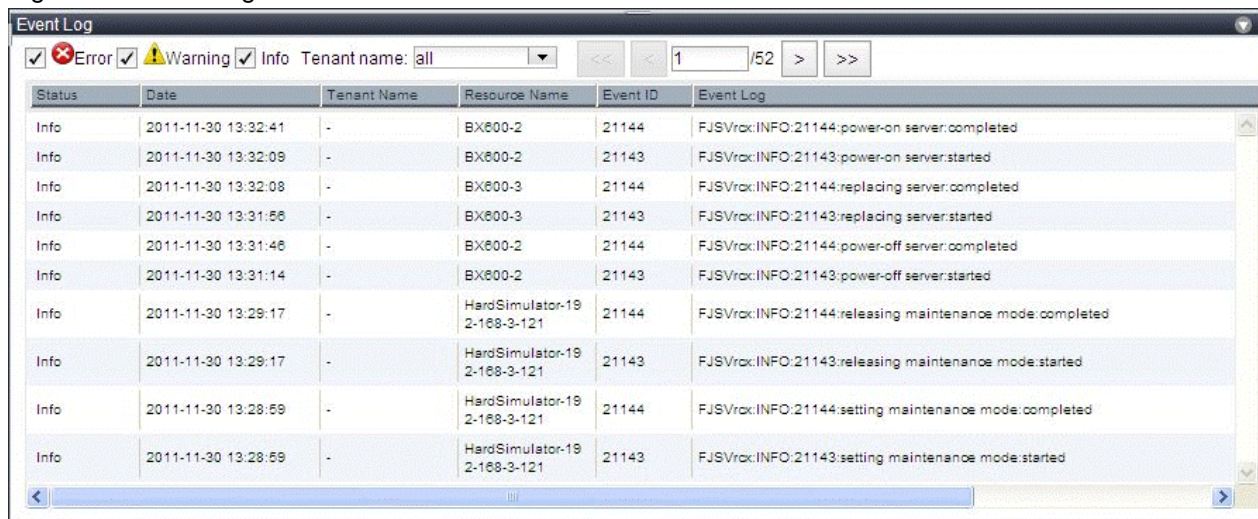


The recent operations area shows the status of operations that were recently performed. The result of a completed operation shows the operation's completion time and the related resource name. For operations that are still running, a progress bar is shown to indicate the current progress state.

## 1.7 Event Log

This section describes the event log displayed in the ROR console.

Figure 1.8 Event Log



The event log displays a history of events that have occurred on managed resources. These events are added to the log automatically. Each event displayed in the event log provides the following information.

### Information Displayed in the Event Log

#### Status

Displays the level of the event.

There are three levels: "Error", "Warning", or "Info".

#### Date

Date and time at which the event occurred.

#### Resource Name

Name of the resource associated with the event.

## Event ID

Identifier related to the event.

No event ID is displayed for network resources.

## Event Log

Content of the event.

The event log can be filtered using the event log checkboxes.

Selecting a checkbox will show the events whose status corresponds to that of the selected checkbox. Clearing a checkbox will hide such events.

Select a tenant in the [Tenant name] list in the event log to show only those event logs related to that tenant.

Clicking a column heading will change the color of the selected column and sort events in either ascending or descending order.

In each page of the list, 10 items can be displayed. It is possible to specify the page number to display, move forwards and backwards by single pages, and move to the first or last page.



When a resource's status becomes "fatal", its related event shows an "Error" status in the event log. For this reason, the actual status of a resource should be confirmed from either the resource tree or the [Resource List] tab.



For the SPARC Enterprise T series, the following levels are displayed for SEVERITY values of hardware SNMP Trap MIBs (SUN-HW-TRAP-MIB.mib).

- When SEVERITY is Critical or Major:  
"Error" is displayed.
- When SEVERITY is Minor:  
"Warning" is displayed.
- When SEVERITY is Informational:  
"Info" is displayed.

## Chapter 2 Registering Resources

This chapter explains how to register resources used by Resource Orchestrator. The Resource Orchestrator manager must be completely installed beforehand.

In addition to the usual way of registering each resource individually, it is also possible to register or change registration settings of multiple resources together using the pre-configuration function.

- Registering or modifying resources individually

This method is used when the number of servers to be installed is small (from one to four), or when adding a similar number of servers to an existing environment.

- Registering or modifying multiple resources collectively

This method is used when there are many (five or more) servers to be installed.

For information on registering multiple resources together, refer to "[Chapter 6 Pre-configuration](#)".



### Information

- **User Accounts**

When creating new user accounts, changing passwords, or modifying permission levels during setup, refer to "Chapter 4 User Accounts" of the "Operation Guide VE".

- **Backing up the Admin Server**

The admin server should be backed up after the entire system has been completely set up, or after registering, changing, or deleting resources.

For information about backing up the admin server, refer to "8.1.2 Backing Up the Admin Server" of the "Operation Guide CE".

## 2.1 Registering VIOM Coordination

Use the following procedure to configure management software settings:

1. From the ROR console menu, select [Settings]-[Register]-[Management Software (VIOM)].

The [Register Management Software(VIOM)] dialog is displayed.

2. To use this feature, the following settings must first be defined:

User name

Enter the name of a VIOM user account.

Password

Enter the password of the above VIOM user account.

3. Click <OK>.

### 2.1.1 Registering VIOM Server Profiles

Use the following procedure to configure VIOM server profiles:

1. Select Management Software(VIOM) from the ROR console, then select the [Resource Details] tab.
2. In General of the [Resource Details] tab, click the link for the Management software.  
The Web interface of ServerView Virtual-IO Manager starts up.
3. Refer to the ServerView Virtual-IO Manager manual to configure server profiles.

## Note

HBA address rename and VIOM cannot be used together within the same chassis.

When using backup and restore or cloning, prioritize the following two boot operations:

1. Booting from the Network Interface Used by the Admin LAN (NIC1(Index1))
2. Booting from the Network Interface Used by the Admin LAN (NIC2(Index2))

## 2.2 Registering VM Management Software

This section explains how to register VM management software.

Registration of VM management software (such as VMware vCenter Server) enables use of virtual L-Servers that include resource pool management provided by server virtualization software. Registration of multiple VM management softwares (VMware vCenter Server) is possible.

For details on the required VM management software settings, refer to "Appendix E Design and Configuration For Creating Virtual L-Servers" in the "Setup Guide CE".

Resource Orchestrator manages a server (with storage and networks) with defined logical specifications (number of CPUs, memory capacity, disk capacity, number of NICs, etc.) as an L-Server. In order to manage a virtual machine as an L-Server, VM management software must be registered in Resource Orchestrator.

Use the following procedure to register VM management software:

1. From the ROR console menu, select [Settings]-[Register], and then select the type of the VM management software to use.

The [Register Management Software(*name*)] dialog is displayed.

In *name*, the type of the VM management software is displayed.

2. To use this feature, the following settings must first be defined:

### Management software name

Enter a VM management software name for the managed servers.

Enter up to 15 characters, including alphanumeric characters and hyphens ("-"). This name should start with an alphabet character.

### Location

Select the location where the VM management software to register is operating.

- If VM management software is installed on the admin server

Select "Admin Server".

- In other cases

Select "Other Server".

Selecting this option activates the IP address field. Enter the IP address of the server on which VM management software is installed.

By default, "Admin Server" is selected.

### IP address

Enter the IP address of VM management software. If "Admin Server" was selected, this field is disabled and shows the IP address of the admin server.

Use standard period notation.

## Note

When receiving SNMP traps from VM management software (VMware vCenter Server), the configured IP address and the SNMP trap source IP address of the VM management software (VMware vCenter Server) should be the same. The SNMP trap source IP address is the IP address of the protocol with the highest priority of protocol binding. When changing the SNMP trap source IP address, change the order of protocol binding.



### User name

Enter the name of a VM management software user account with administrative authority.

Enter up to 84 characters, including alphanumeric characters and symbols (ASCII characters 0x20 to 0x7e).

### Password

Enter the password of the above VM management software user account.

Enter up to 128 characters, including alphanumeric characters and symbols (ASCII characters 0x20 to 0x7e).

3. Click <OK>.

VM management software is registered with the entered information.

### Information

Registration and management of multiple VM management softwares (VMware vCenter Server) are possible.

The following VM management software can be registered in Resource Orchestrator.

- VMware vCenter Server
- System Center Virtual Machine Manager
- Oracle VM Manager

### Note

In Disaster Recovery environments, multiple occurrences of the same virtual machine name may cause failures of the import of configuration information.

Avoid setting the same virtual machine name for machines.

[Hyper-V]

An administrator account registered in Resource Orchestrator is not a local account on a server on which SCVMM is installed, but a domain administrator account that the server belongs to. Specify the account to register in the following format:

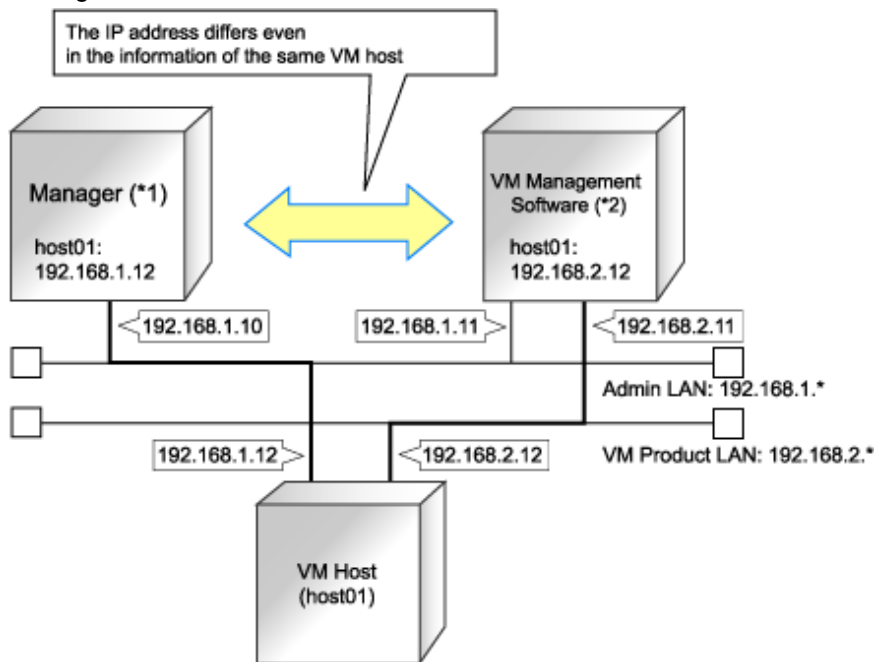
*Domain\_name\Administrator\_account\_name*

### Information

#### VM Host Relation Definition File

Depending on the network configuration and network settings of VM management software and VM hosts, the VM host IP address retained by Resource Orchestrator may not match the VM host IP address retained by VM management software. If those IP addresses differ, the functions for coordinating with VM management software will be unavailable because Resource Orchestrator cannot associate the VM management software with the VM host. A definition file must be created to associate VM management software with a VM host. Use the UTF-8 character code for definition files.

Figure 2.1 Configuration When the IP Address Information of VM Hosts Differ Between the Manager and VM Management Software



\*1: When the VM host is a rack mount server or another maker's server, only the admin LAN IP address of the VM host can be obtained.

\*2: Depending on the VM management product, an IP address that differs from that of the admin LAN of the VM host may be obtained.

#### Location of the Definition File

[Windows]

*Installation\_folder*\Manager\etc\customize\_data

[Linux]

/etc/opt/FJSVrcvnr/customize\_data

#### Definition File Name

vmhost\_ip\_addresses.rcxprop

#### Definition File Format

In the definition file, information for a single VM host is entered on each line. Each line is entered in the following format.

```
admin_lan_ip = other_lan_ip[,other_lan_ip...]
```

#### Definition File Items

- *admin\_lan\_ip*

Specify the IP address of the admin LAN of the VM host.

- *other\_lan\_ip*

Specify an IP address other than the IP address of the admin LAN of a VM host that has been registered with VM management software. Multiple IP addresses can be specified, separated using commas (",").

[Oracle VM]

When specifying a host name instead of an IP address for IP address specification during registration of an Oracle VM Server with Oracle VM Manager, specify the host name.

#### Example Definition File

An example definition file is indicated below.

```
# Oracle VM Server
192.168.0.10 = 192.168.10.10
```

192.168.0.11 = 192.168.10.11,172.16.0.11 192.168.0.12 = 192.168.10.12,host01
---

---

## 2.3 Storage Management Software

---

In the following cases, it is necessary to register storage management software with Resource Orchestrator for coordination.

- When the server type is "Physical"
- When using RHEL5-Xen as server virtualization software



For storage management software, only PRIMECLUSTER GDS can be coordinated, when using RHEL5-Xen.

Use the following procedure to register storage management software:

1. Decide the storage environment.
2. Configure the storage environment using storage management software which can be registered.

The following storage management software can be registered with Resource Orchestrator:

- ETERNUS SF Storage Cruiser
- Data ONTAP
- PRIMECLUSTER GDS
- EMC Navisphere Manager
- EMC Solutions Enabler

For details on configuration of storage environments, refer to "D.1 System Configuration" of the "Setup Guide CE".

3. When registering EMC Navisphere Manager or EMC Solutions Enabler as storage management software, it is necessary to specify the installation folder of Navisphere CLI or SYMCLI in the definition file for EMC storage.

emcpath.conf

4. Register storage management software for coordination with Resource Orchestrator.

Execute the `rcxadm storagemgr register` command to register storage management software with Resource Orchestrator.

For details on the `rcxadm storagemgr register` command, refer to "1.7.1 rcxadm storagemgr" in the "Reference Guide (Resource Management) CE".

---

## 2.4 When using Blade Servers

---

This section explains how to register resources when using blade servers.

When using blade servers, use the following procedure to register resources:

- Register chassis
- Register blade servers
- Register LAN switch blades
- Configure VLANs on LAN switch blades

---

### 2.4.1 Registering Chassis

---

This section explains how to register a chassis.

Registering chassis makes it possible to use the optional power monitoring settings.

When collecting power data, perform the power data collection settings according to ["3.9.1 Changing Environmental Data Settings"](#).

For details on devices supporting power monitoring, refer to ["1.5 Hardware Environment"](#) of the ["Setup Guide CE"](#).

By registering a chassis, every server blade mounted in the chassis will be automatically detected and displayed as an unregistered server in the server resource tree. Register these managed servers individually.

For details on registering servers to manage, refer to ["2.4.2 Registering Blade Servers"](#).

Use the following procedure to register a chassis:

1. In the ROR console server resource tree, right-click "Server Resources", and select [Register]-[Chassis] from the popup menu.

The [Register Chassis] dialog is displayed.

2. To use this feature, the following settings must first be defined:

**Admin LAN (IP address)**

Enter the IP address that was set on the chassis management blade.

Use standard period notation.

**Chassis name**

Enter a name to assign to this chassis.

Enter up to 10 characters, including alphanumeric characters and hyphens ("-"). This name should start with an alphabet character.

**SNMP Community**

Enter the SNMP community that was set on the chassis management blade.

Either select "public" or enter an arbitrary string.

Enter up to 32 characters, including alphanumeric characters, underscores ("\_"), and hyphens ("-").

3. Click <OK>.

The mounted chassis will be displayed under the server resource tree.

Any server blade mounted within this chassis will be detected automatically and shown as: "*chassis\_name-Slot\_number*[Unregistered]".

The only operation available for those unregistered server blades is server registration, while the ROR console can only display their hardware statuses and properties.

If the manager is installed on one of those server blades, this blade will be shown as: "*chassis\_name-Slot\_number*[Admin Server]".

In that case, server registration will not be available for the admin server, but its hardware status and properties will be displayed in the ROR console.

## 2.4.2 Registering Blade Servers

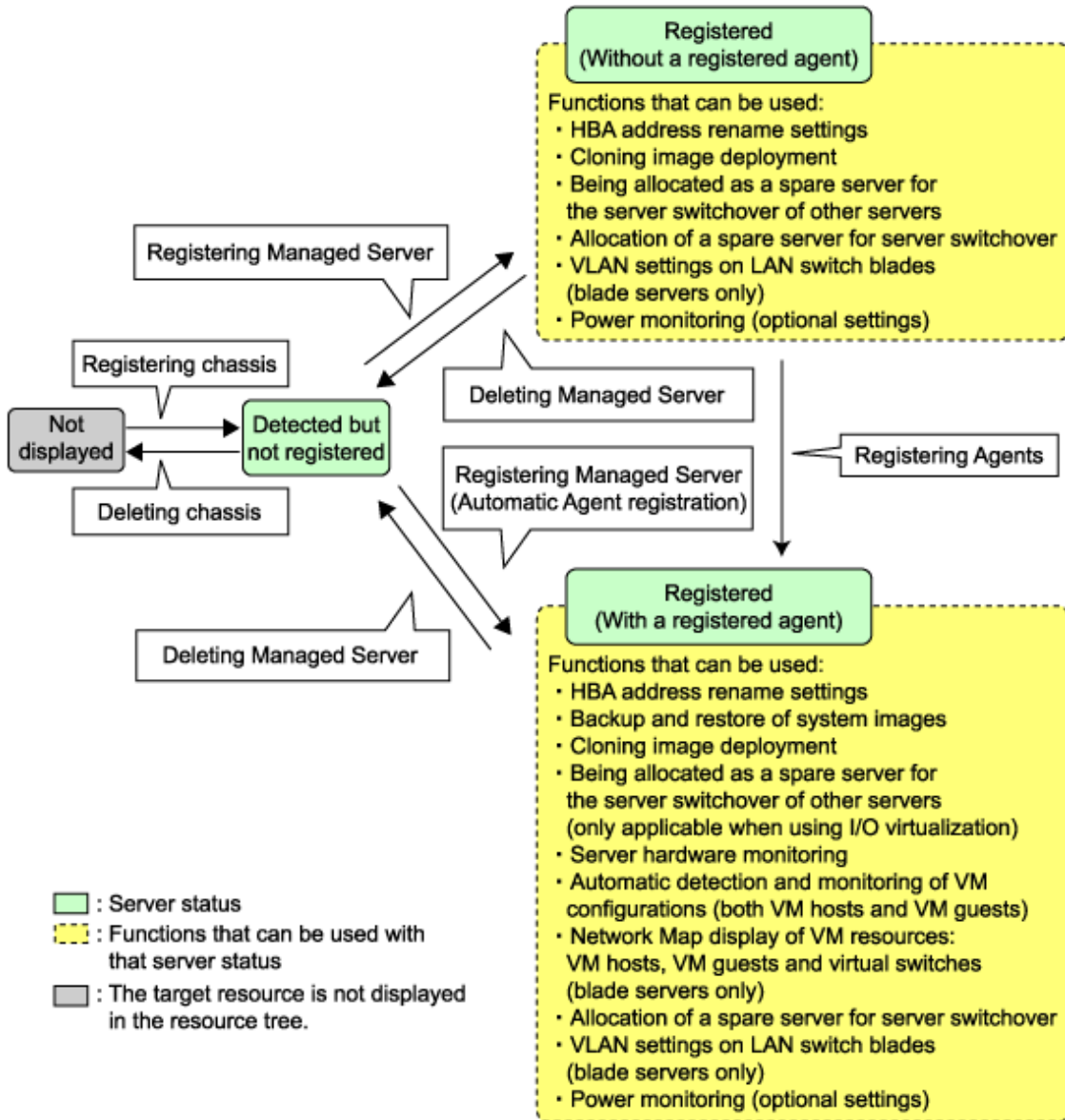
---

To register a blade server (PRIMERGY BX series), a PRIMEQUEST server or a SPARC Enterprise M4000/M5000/M8000/M9000 server, its enclosing chassis must be registered first.

When using VIOM for I/O virtualization, VIOM server profiles should be registered in advance according to the procedure described in ["2.1.1 Registering VIOM Server Profiles"](#).

To register blade servers other than PRIMERGY BX servers, refer to ["2.5 When using Rack Mount and Tower Servers"](#).

Figure 2.2 Status Transition Diagram for Managed Servers



Use the following procedure to register blade servers.

1. In the ROR console server resource tree, right-click an unregistered server blade or partition in the target chassis, and select [Register]-[Server] from the popup menu.

The [Register Server] dialog is displayed.

2. To use this feature, the following settings must first be defined:

#### Physical Server Name

Enter a name to assign to this physical server.

Enter up to 15 characters, including alphanumeric characters and hyphens ("-"). This name should start with an alphabet character.

#### "Register agent" checkbox

Only displayed for SPARC Enterprise M4000/M5000/M8000/M9000 servers.

- Without Agent Registration

Automatic registration of agents is not performed after server registration.

After registering servers, register agents as required.

- With Agent Registration

Agents are automatically registered after server registration is completed.

#### Admin LAN (IP address)

Enter the IP address used by this server on the admin LAN.

##### **When IP address is displayed**

Entering an admin LAN (IP address) is not required.

Agents are automatically registered.



#### Note

- If ServerView Agents (mandatory software) is not running, "Message number 67231" will be displayed. In this case, server registration succeeds but the agent is not registered.

For details on the appropriate corrective action, refer to "Message number 67231" in the "Messages VE".

- If the admin LAN (IP address) of servers not running a physical OS or a VM host are displayed, old information may have been being displayed. After cancelling registration of the server, right-click the chassis on the server resource tree and select [Update] from the popup menu to request an update of hardware properties. The IP address is updated to the correct value (it takes several seconds to obtain the information and to update).

##### **When IP address is not displayed**

Enter the IP address of this server's admin LAN network interface.

The Agent will not be registered automatically, but can be manually registered after server registration if necessary. After registering servers, register agents as required.



#### Information

- When a physical OS and VM host are running on this server, the admin LAN (IP address) may be obtained automatically. After cancelling registration of the server, right-click the chassis on the server resource tree and select [Update] from the popup menu to request an update of hardware properties.

If the IP address is not shown after going through the above procedure, set it by manually entering the IP address and registering the server.

- IP addresses cannot be collected automatically, when the server is a SPARC Enterprise M4000/M5000/M8000/M9000 server. After entering the IP addresses manually, register the servers.

#### Server OS category

This option is displayed if the target server runs a physical OS or VM host.

Select the appropriate server OS category (Physical OS or VM host).

Selecting "VM Host" activates the user name and password input fields. Those refer to the user name and password entered during installation of this VM host.

- For a Physical OS

Select "Windows/Linux" or "Solaris"(only SPARC Enterprise M4000/M5000/M8000/M9000 servers).

- For a VM host

Select "VM Host", and enter the VM host login account information.

This login account information will be used by Resource Orchestrator to control and communicate with the registered VM host.

#### User name

Enter the user name to log in to the VM host. Specify a user name that has VM host administrator authority.

#### Password

Enter the password of the user to log in to the VM host.

## Boot option

Only set this when the manager is Windows and the targets of operations are PRIMEQUEST servers. Specify the boot option configured from BIOS when installing the OS.

- For UEFI  
Select "UEFI".
- For Legacy Boot  
Select "Legacy boot".

By default, "UEFI" is selected.

These settings can be changed after server registration.  
For details on how to modify these settings, refer to "[3.2.10 Changing Boot Options](#)".

## "Use Admin LAN redundancy" checkbox

Check this when performing redundancy for the NIC on the admin LAN.

## "Apply Admin LAN NIC settings" checkbox

- When not changing the Admin LAN NIC settings  
NIC1 (Index1) and NIC2 (Index2) are used, without changing the NICs used for the admin LAN, the HBA address rename setup service, or for redundancy of the admin LAN.
- When changing the Admin LAN NIC settings  
NIC1 (Index1) and NIC2 (Index2) are used as the NICs for the admin LAN, the HBA address rename setup service, and redundancy of the admin LAN.  
Select the NICs to use from Admin LAN (MAC address1) and Admin LAN (MAC address2).

## Admin LAN (MAC address 1)

Displayed when the "Apply Admin LAN NIC settings" checkbox is selected.  
Select the NIC to use for the admin LAN. The IP address allocated to the selected NIC is displayed in "Admin LAN (IP address)".  
When an IP address is not allocated, specify the admin LAN (IP address) of the server to register.

## Admin LAN (MAC address 2)

Displayed when the "Apply Admin LAN NIC settings" checkbox is selected.  
Select the NICs used for the HBA address rename setup service or for admin LAN redundancy.  
For the following cases, select the "Disable MAC address 2".

- When not using the HBA address rename setup service
- When not performing admin LAN redundancy

## Note

- For details about the network interface(s) used on the admin LAN, refer to "4.2.1.1 Admin LAN Network Design" of the "Setup Guide CE".  
If an incorrect network interface is used, Resource Orchestrator will not be able to detect the correct admin LAN IP address from the operating system running on the target server.  
An admin LAN IP address is required even when registering a spare server.  
Enter an IP address that does not conflict with the IP address of any other managed server on the admin LAN.
- When registering a newly-mounted PRIMERGY BX900 server, as recognition of this server's admin LAN MAC address will take time, the error message "Message number 61142" may be displayed.  
In this case, after registration has been canceled, right-click the chassis on the server resource tree and select [Update] from the popup menu to request an update of hardware properties. This will update the MAC address to the correct value. This may also take a few minutes to obtain hardware information and update internal properties.  
Confirm that the correct MAC address is displayed correctly before registering the server again.  
For details on the appropriate corrective action, refer to "Message number 61142" in the "Messages VE".

- A server running a VM host can still be registered as a physical OS if its "Server OS category" is set to "Windows/Linux". A VM host server that was mistakenly registered as a physical OS should be deleted and re-registered as a VM host.
- The same NIC cannot be selected for "Admin LAN (MAC address 1)" and "Admin LAN (MAC address 2)".
- For the following cases, after selecting "Disable MAC address 2" for "Admin LAN (MAC address 2)", the lowest numbered NIC which is not used for "Admin LAN (MAC address 1)" is used for Admin LAN2.
  - When using the HBA address rename setup service
  - When performing admin LAN redundancy

3. Click <OK>.

The registered server will be displayed in the server resource tree.

### Note

- When an agent is registered on a VM host, all VM guests running on that VM host are also registered automatically. Whenever a VM guest is created, modified, deleted, or moved on a registered VM host, the changes are automatically updated in the server resource tree.
- The VM guest name displayed in the ROR console is either the VM name defined in its server virtualization software or the host name defined in the guest OS.  
The timing at which the host name of a guest OS is detected and displayed varies according its server virtualization software. For details, refer to "E.3 Functional Differences between Products" of the "Setup Guide VE".
- It is recommended not to use duplicate names for physical OS's, VM hosts and VM guests. If duplicated names are used, those resources cannot be managed from the command-line.
- When registering a server on which the agent was installed, it is necessary to either reboot the server or restart its related services (explained in the "7.3 Starting and Stopping the Agent" of the "Setup Guide CE") after server registration. This step has to be done before running any image operation (system image backup or cloning image collection).  
For details on how to restart the agent, refer to "7.3 Starting and Stopping the Agent" of the "Setup Guide CE".

## 2.4.3 Registering LAN Switch Blades

To register a LAN switch blade, its enclosing chassis must be registered first.

Use the following procedure to register a LAN switch blade.

1. In the ROR console server resource tree, right-click an unregistered LAN switch blade from the target chassis, and select [Register]-[LAN Switch] from the popup menu.

The [Register LAN Switch] dialog is displayed.

2. To use this feature, the following settings must first be defined:

#### LAN switch name

Enter the name to assign to this LAN switch blade.

Enter up to 15 characters, including alphanumeric characters (upper or lower case), underscores ("\_"), and hyphens ("-").

#### Admin LAN (IP address)

Enter the admin LAN IP address that was set on this LAN switch blade.

Use standard period notation.

#### User name

Enter the name of a telnet user account that can log in to this LAN switch blade.

#### Password

Enter the password of the above telnet user account.



### Administrative password

Enter the password of this LAN switch blade's telnet administrator account.

If the user name and the password of the administrator account for the LAN switch blade were set in "User name" and "Password", simply re-enter the same password in this field. In this case, Resource Orchestrator does not check whether the password entered here matches the password set on the LAN switch blade.

### SNMP Community

Enter the SNMP community that was set on this LAN switch blade.

Either select "public" or enter an arbitrary string.

Enter up to 32 characters, including alphanumeric characters, underscores (" \_"), and hyphens (" -").

3. Click <OK>.

The registered LAN switch blade will be displayed in the server resource tree.



A telnet connection is made when registering a LAN switch blade.

When telnet connection is disabled, enable it.

Refer to the manual of the relevant product.

Some models may have restrictions regarding the number of simultaneous connections. In this case, log out from other telnet connections.

If telnet is unavailable, the following features are also unavailable.

- Registration of LAN switch blades
- Changing of LAN switch blade settings
- Changing and setting the VLAN for LAN switch blades (internal and external connection ports)
- Restoration of LAN switch blades
- Server switchover (changing network settings while a server is switched over)

## 2.4.4 Configuring VLANs on LAN Switches

On managed LAN switch blades, VLANs should be set on both the ports (external connection ports) connected with the adjacent managed network devices (such as L2 switches) and the ports (internal connection ports) connected to the NIC on the managed servers.



VLANs cannot be configured on PRIMERGY BX 900 and BX 400 LAN switch blades operating in IBP mode.

## 2.4.5 Configuring VLANs on External Connection Ports

When not performing automatic VLAN configuration, use the following procedure to configure VLANs on a LAN switch blade's external connection ports.

1. In the ROR console server resource tree, right-click the target LAN switch blade and select [Modify]-[Network Settings] from the popup menu.

The [VLAN Settings] dialog is displayed.

2. To use this feature, the following settings must first be defined:

### VLAN

Specify the VLAN ID to assign to a LAN switch blade port.

#### Adding a new VLAN ID

- a. Under VLAN, select "Create new".

- b. Enter a VLAN ID number.  
For details on VLAN IDs, refer to the manual of the LAN switch blade to be used.

#### **Modifying an existing VLAN ID**

- a. Under VLAN, select "Change".
- b. Select a VLAN ID.

#### **Physical Port and Link Aggregation**

Select port numbers to configure or VLAN types of link aggregation group names ("Untagged" or "Tagged").

3. Click <OK>.

Check that the VLAN has been set.

4. Select the LAN switch blade in the server resource tree of the ROR console and display the "Resource Details Tab" window. Check in "VLAN Area" in the "Resource Details Tab" window that it displays the VLAN information.

## **2.4.6 Configuring VLANs on Internal Connection Ports**

---

Use the following procedure to configure VLANs on a LAN switch blade's internal ports.

1. In the ROR console server resource tree, right-click the target server (or the physical OS or VM host on the server), and select [Modify]-[Network Settings] from the popup menu.

The [Network Settings] dialog is displayed.

2. Select the index of the network interface for which to assign a VLAN ID, and click <Setting>.

The [VLAN Configuration] dialog is displayed.

3. To use this feature, the following settings must first be defined:

#### **Port VLAN**

##### **VLAN ID**

Enter the VLAN ID to assign to the LAN switch blade port that is connected to the network interface selected in step 2.

#### **Tagged VLAN**

##### **VLAN ID**

Enter the tagged VLAN ID(s) to assign to the LAN switch blade port that is connected to the network interface selected in step 2.

Multiple VLAN IDs can be entered by separating them with commas (",").

4. Click <OK>

Note that the VLAN settings are not applied onto the LAN switch blade at this stage. To configure VLANs for multiple network interfaces, repeat 2 through 4.

5. Confirm the configuration set in the [Network Settings] dialog.

6. Click <OK>.

VLAN settings are applied to the related LAN switch blade.



### **Note**

The VLAN configuration of a registered LAN switch blade should be set from the ROR console instead of the LAN switch's own Web-based and command-based interfaces.

If the Port VLAN ID field is left blank and a value is entered for Tagged VLAN ID in the [VLAN Configuration] dialog, the tagged LAN only will be enabled. To enable a port VLAN, enter a value for Port VLAN ID.

When only a tagged VLAN is configured, the value for the port VLAN is not displayed on the ROR console even if it has been configured on the switch. For the devices for which port VLANs cannot be deleted, it is necessary to limit the frames that let ports pass through to

the tagged frames only.

If the port VLAN ID is unspecified or 1, a tagged VLAN ID cannot be set to 1.

## 2.5 When using Rack Mount and Tower Servers

This section explains how to register resources when using rack mount or tower servers.

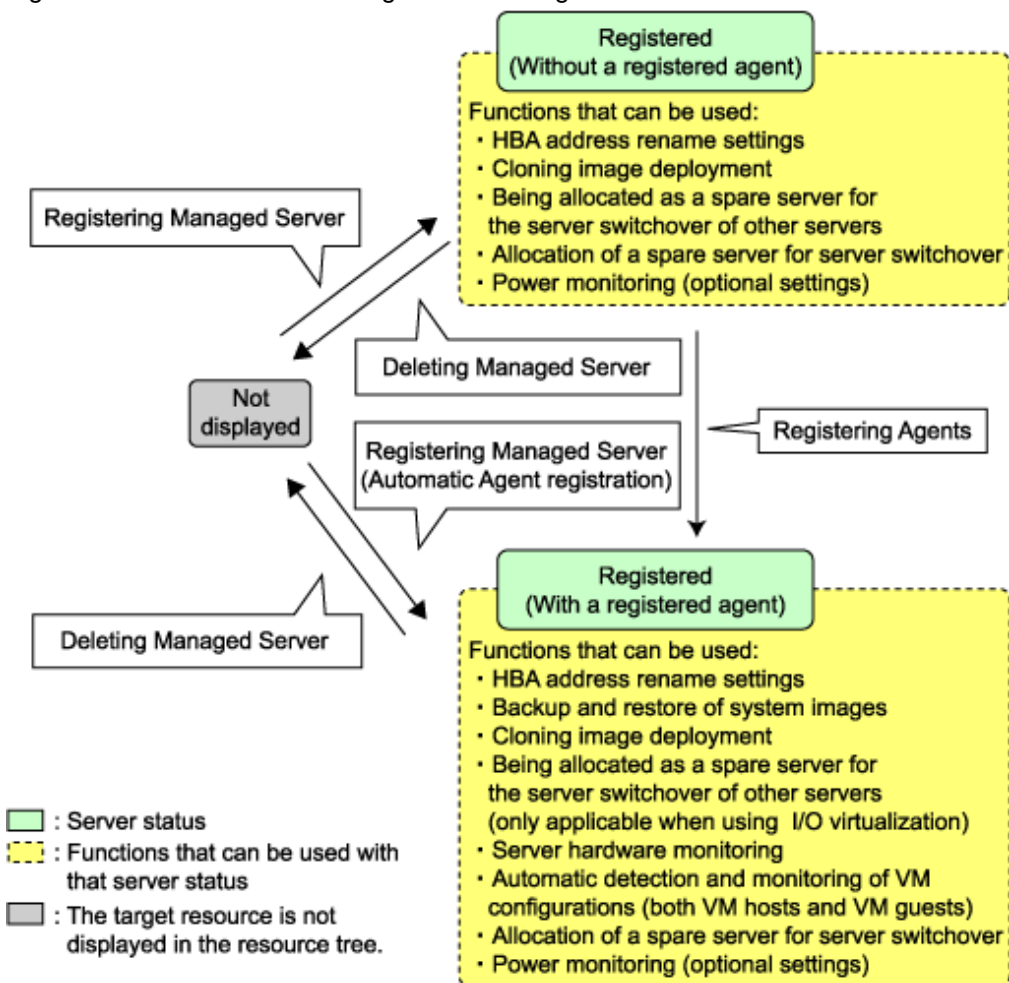
When using rack mount or tower servers, use the following procedure to register resources:

- Register Rack Mount or Tower Servers
- Register LAN switches

### 2.5.1 Registering Rack Mount or Tower Servers

This section explains how to register a rack mount or tower server.

Figure 2.3 Status Transition Diagram for Managed Servers



Use the following procedure to register rack mount or tower servers:

1. In the ROR console server resource tree, right-click "Server Resources", and select [Register]-[Server] from the popup menu.  
The [Register Server] dialog is displayed.
2. To use this feature, the following settings must first be defined:  
Enter items differ depending on whether the "Register agent" checkbox is selected, as described below.  
If this checkbox is checked, agents will be registered after server registration.

If this checkbox is not checked, registration of agents will not be performed, so register agents after server registration when necessary.

#### **Without Agent Registration**

- Physical server name
- Remote management controller
  - IP address
  - User name
  - Password
- Association with server management software (ServerView)
  - Enable/Disable
  - SNMP Community
- Admin LAN
  - IP address
  - MAC address (NIC1)  
For physical L-Servers, specify MAC address of the second specified NIC decided in "4.2.1.1 Admin LAN Network Design" of the "Setup Guide CE".
- SAN Boot/Admin LAN Redundancy
  - "Use Admin LAN redundancy" checkbox
  - MAC address (NIC2)  
For physical L-Servers, specify MAC address of the second specified NIC decided in "4.2.1.1 Admin LAN Network Design" of the "Setup Guide CE".

Automatic registration of agents is not performed after server registration. After registering servers, register agents as required.

#### **With Agent Registration**

- Physical server name
- Remote management controller
  - IP address
  - User name
  - Password
- Association with server management software (ServerView)
  - Enable/Disable
  - SNMP Community
- Admin LAN
  - IP address
- Admin LAN Redundancy
  - "Use Admin LAN redundancy" checkbox
  - MAC address (NIC2)  
For physical L-Servers, specify MAC address of the second specified NIC decided in "4.2.1.1 Admin LAN Network Design" of the "Setup Guide CE".
- Server OS
  - Category

Agents are automatically registered after server registration is completed.

#### Physical Server Name

Enter a name to assign to this physical server.

Enter up to 15 characters, including alphanumeric characters and hyphens ("-"). This name should start with an alphabet character.

#### Remote management controller

##### IP address

Enter the IP address of this server's remote management controller.

##### User name

Enter the name of a remote management controller user account with administrative authority over this server.

Enter up to 16 characters, including alphanumeric characters and symbols (ASCII characters 0x20 to 0x7e).

##### Password

Enter the password of the above remote management controller user account.

Enter up to 16 characters, including alphanumeric characters and symbols (ASCII characters 0x20 to 0x7e).

This field can be omitted if no password has been set for this user account.

#### Association with server management software (ServerView)

##### Enable/Disable

###### **For PRIMERGY BX servers**

Select "Enable" and enter an "SNMP Community".

###### **For servers other than PRIMERGY servers**

Select "Disable".

By default, "Enable" is selected.

##### SNMP Community

Enter the SNMP community that was set on this server.

Either select "public" or enter an arbitrary string.

Enter up to 32 characters, including alphanumeric characters, underscores ("\_"), and hyphens ("-").

#### Admin LAN

##### IP address

Enter the IP address used by this server on the admin LAN.

##### MAC address (NIC1)

Enter the MAC address of this server's admin LAN network interface.

Enter a MAC address in either one of the following two formats: hyphen-delimited ("xx-xx-xx-xx-xx-xx"), or colon-delimited ("xx:xx:xx:xx:xx:xx").

MAC addresses will be automatically detected when the "Register agent" checkbox is selected.

#### SAN Boot/Admin LAN Redundancy

##### "Use Admin LAN redundancy" checkbox

Check this when performing redundancy for the NIC on the admin LAN.

##### MAC address (NIC2)

Enter the MAC address of the second admin LAN network interface. This network interface is to be used by the HBA address rename setup service, or to enable admin LAN redundancy on the registered server.

Enter a MAC address in either one of the following two formats: hyphen-delimited ("xx-xx-xx-xx-xx-xx"), or colon-delimited ("xx:xx:xx:xx:xx:xx").

This field can be omitted in the following cases.

- When not using the HBA address rename setup service
- When not using GLS for admin LAN redundancy on the managed server
- For a spare server whose primary servers are not using admin LAN redundancy

## Admin LAN Redundancy

### "Use Admin LAN redundancy" checkbox

Check this when performing redundancy for the NIC on the admin LAN.

### MAC address (NIC2)

Enter the MAC address of the second admin LAN network interface. This network interface will be used to enable admin LAN redundancy on the registered server.

Enter a MAC address in either one of the following two formats: hyphen-delimited ("xx-xx-xx-xx-xx-xx"), or colon-delimited ("xx:xx:xx:xx:xx:xx").

This field can be omitted in the following cases.

- When not using GLS for admin LAN redundancy on the managed server
- For a spare server whose primary servers are not using admin LAN redundancy

## Server OS

### Category

This option is displayed if the target server runs a physical OS or VM host.

Select the appropriate server OS category (Physical OS or VM host).

Selecting "VM Host" activates the user name and password input fields. Those refer to the user name and password entered during installation of this VM host.

#### **For a Physical OS**

Select "Windows/Linux".

#### **For a VM host**

Select "VM Host", and enter the VM host login account information.

This login account information will be used by Resource Orchestrator to control and communicate with the registered VM host.

### User name

Enter the user name to log in to the VM host. Specify a user name that has VM host administrator authority.

### Password

Enter the password of the user to log in to the VM host.



### Note

- For details about the network interface(s) used on the admin LAN, refer to "4.2.1.1 Admin LAN Network Design" of the "Setup Guide CE".  
If an incorrect network interface is used, Resource Orchestrator will use a wrong MAC address for the admin LAN.  
An admin LAN IP address is required even when registering a spare server.  
Enter an IP address that does not conflict with the IP address of any other managed server on the admin LAN.
- A server running a VM host can still be registered as a physical OS if its "Category" of "Server OS" is set to "Windows/Linux".  
A VM host server that was mistakenly registered as a physical OS should be deleted and re-registered as a VM host.
- When registering rack mount servers on which VMware ESXi is operating, select "Disable" for "Association with server management software (ServerView)" even when using PRIMERGY servers, and do not select "Register agent" checkbox.  
After registering servers, register agents as required.

### 3. Click <OK>.

The registered server will be displayed in the server resource tree.

## Note

- After registering the server, please verify that the information registered for the remote management controller is correct. This can be verified by trying out power operations (from Resource Orchestrator) against that server. Refer to "Chapter 6 Power Control" in the "Operation Guide VE" for details on power operations.
- When using HBA address rename setup service, please confirm that the registered server can boot properly using the HBA address rename setup service.  
If the server cannot be booted properly, ensure that the specified MAC address (NIC2) is correct.
- When an agent is registered on a VM host, all VM guests running on that VM host are also registered automatically. Whenever a VM guest is created, modified, deleted, or moved on a registered VM host, the changes are automatically updated in the server resource tree.
- The VM guest name displayed in the ROR console is either the VM name defined in its server virtualization software or the host name defined in the guest OS.  
The timing at which the host name of a guest OS is detected and displayed varies according its server virtualization software. For details, refer to "E.3 Functional Differences between Products" of the "Setup Guide VE".
- It is recommended not to use duplicate names for physical OS's, VM hosts and VM guests. If duplicated names are used, those resources cannot be managed from the command-line.
- When registering a server on which the agent was installed, it is necessary to either reboot the server or restart its related services (explained in the "7.3 Starting and Stopping the Agent" of the "Setup Guide CE") after server registration. This step has to be done before running any image operation (system image backup or cloning image collection).  
For details on how to restart the agent, refer to "7.3 Starting and Stopping the Agent" of the "Setup Guide CE".

## 2.5.2 Registering LAN Switches

Use the following procedure to register LAN switches:

1. Discover LAN switches. For instructions, refer to "[Discovery](#)".
2. Register LAN switches displayed in the network device tree. For instructions, refer to "[Registration](#)".

## Note

When using "auto-configuration of network devices" function on a LAN switch, register it as a network device using the method described in "[2.7 Registering Network Devices](#)" instead of re-executing LAN switch discovery.

LAN switches registered using the registration method described here will only be monitored.

## Discovery

1. From the ROR console menu, select [Tools]-[Topology]-[Discover LAN switches].

The [Discover LAN Switches] dialog is displayed.

2. To use this feature, the following settings must first be defined:

### Start address

Enter the start IP address of the network where to discover LAN switches.  
Use standard period notation.

### Subnet mask

Enter the subnet mask of the network where to discover LAN switches.  
Use standard period notation.

### Addresses in range

Enter the number of addresses to scan for LAN switches.

Enter a number greater than 1.

The maximum number of addresses is determined by the number of hosts allowed by the subnet mask.

### Example

.....  
If subnet mask is "255.255.255.0", the number of addresses in the specified range could be any value between 1 and 256.  
.....

### SNMP Community

Enter the SNMP community that was set on this LAN switch.

Either select "public" or enter an arbitrary string.

Enter up to 32 characters, including alphanumeric characters, underscores ("\_"), and hyphens ("-").

3. Click <OK>.

Resource Orchestrator starts scanning for LAN switches within the specified network range.

Discovered LAN switches will be displayed under the network device tree with the status "[Unregistered]".

## Registration

1. In the ROR console network device tree, right-click a discovered LAN switch, and select [Register]-[LAN Switch] from the popup menu.

The [Register LAN Switch] dialog is displayed.

2. To use this feature, the following settings must first be defined:

### LAN switch name

Enter the name to assign to this LAN switch blade.

Enter up to 32 characters, including alphanumeric characters (upper or lower case), underscores ("\_"), hyphens ("-"), or periods (".").

By default, the name of a discovered LAN switch will be set to its system name or to its IP address if the system name could not be detected.

### SNMP Community

Enter the SNMP community that was set on this LAN switch.

Either select "public" or enter an arbitrary string.

Enter up to 32 characters, including alphanumeric characters, underscores ("\_"), and hyphens ("-").

3. Click <OK>.

The registered LAN switch will be displayed in the network device tree.

### Note

.....  
It is possible to set an automatically detected IP address to another unregistered LAN switch. However, this will result in the Resource Orchestrator configuration being inconsistent with the actual network configuration.

If a LAN switch was registered with the IP address of another network device, delete the registered LAN switch following the instructions given in "[5.4.2 Deleting LAN Switches and Network Devices](#)", then perform Discover and Register again.  
.....

## 2.6 Registering Network Resources

---

To register a network resource, specify a network pool when creating the network resource.

Configuration is necessary for each network of the destination for connection.



For physical L-Servers, network resources for the admin LAN and public LAN are necessary.  
For virtual L-Servers, network resources for the public LAN are necessary.

For details, refer to "[7.3 Network Resources](#)".

## Prerequisites for Resource Orchestrator Operation

The prerequisites for the network environment, VM host, and physical server used to run Resource Orchestrator differ depending on the L-Server used.

- For Physical L-Servers

Refer to "D.4 Pre-setup Preparations (Network)" in the "Setup Guide CE".

- For Virtual L-Servers

Refer to the setup section of "Appendix E Design and Configuration for Creating Virtual L-Servers" in the "Setup Guide CE".

## Automatic Network Configuration

By creating network resources in advance and connecting NIC and network resources when creating an L-Server, the following settings matching the network resource definition will be registered automatically.

Configuration of a physical NIC (hereinafter a physical LAN segment) used by each blade server model and VM host must be defined in the server NIC definitions. Specifying the physical LAN segment defined in the server NIC definitions from the network resource allows the users to select a physical NIC for each network resource.

- When using VMware as server virtualization software

By entering the name of the port group to exclude from automatic network configuration in the "VMware excluded port group definition file", creation of an L-Server is possible even when the service console and port group use the same VLAN.

- When using blade servers and LAN switch blades in switch mode or end-host mode

Tagged VLANs can be automatically configured for external connection ports of LAN switch blades.

Details of auto configuration differ depending on L-Server type.

- For Physical L-Servers

When using physical L-Servers, refer to "D.6.1 Automatic Network Configuration" in the "Setup Guide CE".

- For Virtual L-Servers

Refer to the setup section for the server virtualization software to use in "Appendix E Design and Configuration for Creating Virtual L-Servers" in the "Setup Guide CE".

## Manual Network Configuration

When using a port group on a virtual switch [VMware], a virtual network [Hyper-V], or a virtual bridge [Xen/KVM] that has been manually configured with a physical NIC selected beforehand, use one of the following procedures to create a network resource:

- The Procedure From the GUI

In the dialog displayed when creating a new network resource, check "Use configured virtual switches." checkbox and then create a network resource (manually configured network resource).

- The Procedure From the Command Line

Create a network resource (manually configured network resource) with auto="false" specified for the "<Network>" element in the XML definition file.

To perform auto-configuration of a network device (an L2 switch) when creating a network resource, specify auto="true" for the "<SwitchConfiguration>" element and the ruleset name to use for auto-configuration for the "<Ruleset>" element in the XML definition file.

## 2.7 Registering Network Devices

---

This section explains how to register network devices.

The devices that need to be registered as network devices must meet the following conditions:

- Network devices to be automatically configured using the "auto-configuration for network device" function

Resource Orchestrator supports the following types of network devices for auto-configuration using the "auto-configuration for network device" function:

- Firewalls
- LAN Switches

Use the following procedure to register a network device:

1. Create network configuration information for the network device to register.
2. Register the network device using the network configuration information created in 1.

### 2.7.1 Creating the Network Configuration Information (XML Definition)

---

Create the network configuration information (XML definition) necessary for registering the network device to be managed by Resource Orchestrator.



See

For how to create network configuration information (XML definitions), refer to "2.6 Network Configuration Information" of the "Reference Guide (Resource Management) CE".

### 2.7.2 Registering Network Devices

---

This section explains how to register network devices.

#### When registering individual network devices

Use the `rcxadm netdevice create` command.

#### When batch registering multiple network devices

Use the `rcxadm netconfig import` command.



See

- For details on the `rcxadm netdevice` command, refer to "1.3.6 `rcxadm netdevice`" in the "Reference Guide (Resource Management) CE".
- For details on the `rcxadm netconfig` command, refer to "1.3.7 `rcxadm netconfig`" in the "Reference Guide (Resource Management) CE".



Note

- When registering network devices, if multiple network devices are registered with the same resource name, the following problems will occur. Make sure to use a name that is unique on the system when registering a network device.
  - Network devices cannot be identified by name in the resource list.

- Modification of a network device using the rcxadm netdevice modify command is not possible because the target network device cannot be identified.

Change the name of the network device to modify the settings of, referring to "[3.5 Changing LAN Switch Settings](#)" and then modify the settings using the rcxadm netdevice modify command.

- Deletion of a network device using the rcxadm netdevice delete command is not possible because the target network device cannot be identified.

Refer to "[5.4 Deleting LAN Switches and Network Devices](#)" to delete the target network device.

- The intended network device may not be automatically configured.
- Disaster Recovery may fail.
- Under redundancy configuration, it is only enabled for the same vendor and model. For this reason, registration should be made specifying the same group ID as the network device that has been already registered for redundancy configuration. During the registration confirmation process, if the network device has a different vendor name and device name from the registered one, registration as a network device will fail.

---

## 2.8 When using PRIMEQUEST Servers

---

This section explains how to register resources when using PRIMEQUEST servers.

- Registering Chassis (For PRIMEQUEST Servers)
- Registering PRIMEQUEST Servers

### 2.8.1 Registering Chassis (For PRIMEQUEST Servers)

---

By registering a chassis, every partition mounted in the chassis will be automatically detected and displayed as an unregistered server in the server resource tree. Register these managed servers individually.

For details on registering servers, refer to "[2.8.2 Registering PRIMEQUEST Servers](#)".

Use the following procedure to register a chassis:

1. In the ROR console server resource tree, right-click "Server Resources", and select [Register]-[PRIMEQUEST] from the popup menu.

The [Register Chassis] dialog is displayed.

2. To use this feature, the following settings must first be defined:

#### Admin LAN (IP address)

Enter the virtual IP address that was set on the chassis management board.

Use standard period notation.

#### Chassis name

Enter a name to assign to this chassis.

Enter up to 10 characters, including alphanumeric characters and hyphens ("-"). This name should start with an alphabet character.

#### SNMP Community

Enter the SNMP community that was set on the chassis management board.

Either select "public" or enter an arbitrary string.

Enter up to 32 characters, including alphanumeric characters, underscores ("\_"), and hyphens ("-").

#### Remote server management

##### User name

Enter the name of a remote server management user account with administrative authority over this managed server.

This user name must be between 8 and 16 alphanumeric characters long.

A user name with at least administrator privileges within the remote server management must be specified.

## Password

Enter the password of the above remote server management user account.  
This password must be between 8 and 16 alphanumeric characters long.

### Note

The "User name" and "Password" of "Remote server management" are different from the user name and password used to log in on the Web-UI for management board.

3. Click <OK>.

The mounted chassis will be displayed under the server resource tree.

Any partition mounted within this chassis will be detected automatically and shown as: "*chassis\_name-partition\_number*[Unregistered]".

The only operation available for those unregistered partitions is server registration, while the ROR console can only display their hardware statuses and properties.

If the manager is installed on one of those partitions, this partition will be shown as: "*chassis\_name-partition\_number*[Admin Server]".

In that case, server registration will not be available for the admin server, but its hardware status and properties will be displayed in the ROR console.

## 2.8.2 Registering PRIMEQUEST Servers

---

For details on PRIMEQUEST server registration, refer to "[2.4.2 Registering Blade Servers](#)".

## 2.9 Registering Power Monitoring Devices

---

This section explains how to register power monitoring devices.

Registering power monitoring devices (PDU or UPS) enables monitoring of power consumption.

Use the following procedure to register power monitoring devices.

1. In the ROR console power monitoring device tree, right-click "Power Monitoring Devices" and select [Register]-[Power Monitoring Device] from the popup menu.

The [Register Power Monitoring Device] dialog is displayed.

2. To use this feature, the following settings must first be defined:

### Device name

Enter a name to assign to this power monitoring device. When exporting power consumption data, use this name to select power monitoring devices for which to export data.

Enter up to 15 characters, including alphanumeric characters and hyphens ("-"). This name should start with an alphabet character.

### Admin LAN (IP address)

Enter the IP address that was set on this power monitoring device. This IP address will be used to collect power consumption data from this power monitoring device.

### SNMP Community

Enter the SNMP community that was set on this power monitoring device.

Either select "public" or enter an arbitrary string.

Enter up to 32 characters, including alphanumeric characters, underscores ("\_"), and hyphens ("-").

This SNMP community will be used to collect power consumption data from this power monitoring device (via SNMP protocol).

### Voltage

Enter the voltage (V) supplied to this power monitoring device. Enter a number between 10 and 999. Power consumption data is calculated using the electrical current value obtained from this power monitoring device and its specified voltage.

## Comments

Enter a comment that describes this power monitoring device.

Enter up to 128 alphanumeric characters or symbols (ASCII characters 0x20 to 0x7e).

### Note

A line break is counted as one character.

3. Click <OK>.

The registered power monitoring device will be displayed under the power monitoring devices tree.

If collection of power data is disabled in the option settings, data will not be collected even if power monitoring devices are registered. Change power data collection settings according to "[3.9.1 Changing Environmental Data Settings](#)".

### Note

Resource Orchestrator is not aware of the relationship between power monitoring devices and actual server resources. Make sure to register the power monitoring devices that are connected to the server resources for which you want to monitor power consumption.

## 2.10 Registering Admin LAN Subnets

---

This section explains how to perform admin LAN subnet registration.

Registering admin LAN subnets enables management of managed servers belonging to subnets other than that of the admin LAN.

Use the following procedure to register an admin LAN subnet.

1. From the ROR console menu, select [Settings]-[Admin LAN Subnet].

The [Admin LAN Subnet] dialog is displayed.

2. Click <Add>.

The [Add Admin LAN Subnet] dialog is displayed.

3. To use this feature, the following settings must first be defined:

#### Subnet name

Set the subnet name for registration.

Enter a character string beginning with an alphabetic character and containing up to 16 alphanumeric characters, underscores ("\_"), hyphens ("-"), and periods (".").

#### Network address

Configure the network address of the subnet used as the admin LAN.

Enter valid values for the network address.

#### Subnet mask

Enter valid values for the subnet mask.

#### Gateway

Enter the settings for the gateway used for communication with the admin server on the admin LAN.

4. Click <OK>.

### Information

When registering an admin LAN subnet for the first time, change the simplified DHCP service for Resource Orchestrator to the OS standard DHCP Service.

Resource Orchestrator takes exclusive possession of the OS standard DHCP Service.

## Note

- It is necessary to perform network settings for each admin LAN subnet so that managed servers belonging to subnets other than the admin LAN can communicate with the admin server.  
For details on how to configure the network settings, refer to "4.2 Defining and Configuring the Network Environment" of the "Setup Guide CE".
- In a clustered manager configuration, when registering an admin LAN subnet for the first time, perform "[Settings for Clustered Manager Configurations](#)".
- When managing a managed server in a separate subnet from the admin server, an OS standard DHCP server is necessary.  
For details, refer to "2.1.1.1 Software Preparation and Checks" in the "Installation Guide CE".

## Settings for Clustered Manager Configurations

The following configuration is necessary only when registering an admin LAN subnet for the first time.

[Windows]

## Information

When configuring a cluster system in an environment that already has an admin LAN registered, perform steps 5. to 10. and 13.

1. Allocate the shared disk to the primary node.

In the Failover Cluster Management tree, right-click [Services and Applications]-[RC-manager], and select [Move this service or application to another node]-[1 - Move to node *node\_name*].

The name of the primary node is displayed in *node\_name*.

2. Delete the registry replication settings from the following "Services and Applications" of the manager.

Based on the following table, delete registry replication for the resources.

- For x64 Architectures

Resources for Deletion	Registry Key
Deployment Service	[HKEY_LOCAL_MACHINE]\SOFTWARE\Wow6432Node\Fujitsu\SystemcastWizard\ResourceDepot
	[HKEY_LOCAL_MACHINE]\SOFTWARE\Wow6432Node\Fujitsu\SystemcastWizard\DatabaseBroker\Default
PXE Services	[HKEY_LOCAL_MACHINE]\SOFTWARE\Wow6432Node\Fujitsu\SystemcastWizard\DHCP
	[HKEY_LOCAL_MACHINE]\SOFTWARE\Wow6432Node\Fujitsu\SystemcastWizard\PXE\ClientBoot\

- For x86 Architectures

Resources for Deletion	Registry Key
Deployment Service	[HKEY_LOCAL_MACHINE]\SOFTWARE\Fujitsu\SystemcastWizard\ResourceDepot

Resources for Deletion	Registry Key
	[HKEY_LOCAL_MACHINE]\SOFTWARE\Fujitsu\SystemcastWizard\ \DatabaseBroker\Default
PXE Services	[HKEY_LOCAL_MACHINE]\SOFTWARE\Fujitsu\SystemcastWizard\DHCP
	[HKEY_LOCAL_MACHINE]\SOFTWARE\Fujitsu\SystemcastWizard\PXE\ \ClientBoot\

Perform the above settings for each resource.

- a. In the [Failover Cluster Management] window, right-click the target resource in "Summary of RC-manager"- "Other Resources", and select [Properties] from the popup menu.  
The [ *Target\_resource* Properties] window is displayed.
  - b. From the "Root Registry Key" displayed on the [Registry Replication] tab, select the above registry keys and click <Remove>.  
The selected key is removed from "Root Registry Key".  
When deleting the second registry key, repeat step b.
  - c. Click <Apply>.  
The settings are applied.
  - d. Click <OK> to close the dialog.
3. Take the following services of the "Services and Applications" for the manager offline.
    - Deployment Service
    - TFTP Service
    - PXE Services
  4. Register an admin LAN subnet.
  5. On the primary node, bring the shared disk of the manger online, and take all other cluster resources offline.
  6. From the Windows Control Panel, open "Administrative Tools". Then, open the [Services] window and set the startup type of the DHCP Server to "Manual".
  7. From the [Services] window, stop the DHCP Server service.
  8. Using Explorer, copy the following folder from the local disk of the primary node to the folder on the shared disk.

Local Disk (Source)	Shared Disk (Destination)
%SystemRoot%\System32\dhcp	<i>Drive_name</i> :Fujitsu\ROR\SVROR\dhcp

### Example

When the OS has been installed on the C drive, it is %SystemRoot% C:\Windows.

9. Configure access rights for the folder for the DHCP Server that was copied to the shared disk. Run the following command from the command prompt on the primary node.

```
>cacls Drive_name:Fujitsu\ROR\SVROR\dhcp /T /P "NT AUTHORITY\SYSTEM:F" "BUILTIN\Administrators:F" "NT SERVICE\DHCPServer:F" <RETURN>
```

10. Add the DHCP Server to "Services and Applications" for the manager.
  - a. Right-click [Services and Applications]-[RC-manager], and select [Add a resource]-[Other Resources]-[1 - Add a DHCP Service] from the displayed menu.  
A "New DHCP Service" will be created in the "DHCP Service" in "Summary of RC-manager".

- b. Right-click the "New DHCP Service", and select [Properties] from the popup menu.

The [New DHCP Service Properties] window is displayed.

- c. Change the "Resource Name" on the [General] tab, and set the paths given in the following table.

Item	Values to Set in the Dialog
Database path	<i>Drive_name</i> :\\Fujitsu\ROR\SVROR\dhcp\
Monitoring file path	<i>Drive_name</i> :\\Fujitsu\ROR\SVROR\dhcp\
Backup path	<i>Drive_name</i> :\\Fujitsu\ROR\SVROR\dhcp\backup\

After making the settings, click <Apply>.

From here, the explanation is made assuming that "Resource Name" was set as "DHCP Server".

- d. On the "Resource" of the [Dependencies] tab, select the following name, and select AND from "AND/OR".

- Shared Disk
- Network Name
- Admin LAN (IP Address)

- e. Click <Apply>.

- f. Click <OK>.

11. Configure the registry replication settings from the following "Services and Applications" of the manager.

Following the table in step 2., set replication of the registry of the resource.

Perform the following procedure for each resource.

- a. In the [Failover Cluster Management] window, right-click the target resource in "Summary of RC-manager"- "Other Resources", and select [Properties] from the popup menu.

The [*Target\_resource* Properties] window is displayed.

- b. In the [Registry Replication] tab, click <Add>.

The [Registry Key] dialog is displayed.

- c. Configure the above registry key in "Root registry key".

- d. Click <OK>.

When configuring the second registry key as well, repeat steps b. - d.

- e. After completing registry key settings, click <Apply>.

- f. Click <OK> to close the dialog.

12. Configure the dependencies of the resources under the "Services and Applications".

Configure the resource dependency based on the following table.

If some resources have been configured, select AND from "AND/OR" and add the dependent resource.

Resource for Configuration	Dependent Resource
PXE Services	DHCP Server

13. Restart the manager.

In the Failover Cluster Management tree, right-click [Services and Applications]-[RC-manager], and select [Bring this service or application online] from the displayed menu.

[Linux]



## Information

When configuring a cluster system in an environment that already has an admin LAN registered, in addition to the installation procedure for the cluster system, perform steps 1 to 2 and 4 to 11.

In that case, set the manager that is operating now as the primary node of the cluster system.

### 1. Stop cluster applications.

Use the cluster system's operation management view (Cluster Admin) and stop the manager cluster service (cluster application).

### 2. Mount the shared disk (Primary node)

Mount the shared disk for managers on the primary node.

### 3. Stop automatic startup of the dhcpd service (Primary node and Secondary node)

Disable automatic startup of the dhcpd service by executing the following command.

```
# chkconfig dhcpd off <RETURN>
```

### 4. Copy dynamic disk files (Primary node)

#### a. Copy the files and directory on the local disk of the primary node to the shared disk for managers.

Execute the following command:

```
# tar cf - copy_target | tar xf - -C Shared_disk_mount_point/Fujitsu/ROR/SVROR <RETURN>
```

- Files and Directory to Copy

- /etc/dhcpd.conf (\*1)

- /etc/dhcp/dhcpd.conf (\*2)

- /var/lib/dhcpd

\*1: When using Red Hat Enterprise Linux 5

\*2: When using Red Hat Enterprise Linux 6

#### b. After copying the files, change source\_file\_name by executing the following command.

Make sure a name like "*source\_file\_name\_old*" is specified for the *target\_file\_name*.

```
# mv -i source_file_name target_file_name <RETURN>
```

### 5. Configure symbolic links for the shared disk (Primary node)

Configure symbolic links from the files and directory on the local disk of the primary node for the files on the shared disk.

Execute the following command:

```
# ln -s shared_disk local_disk <RETURN>
```

Table 2.1 Files to Link

Shared Disk	Local Disk
<i>Mount_destination_of_shared_disk</i> /Fujitsu/ROR/SVROR/etc/dhcpd.conf (*1)	/etc/dhcpd.conf
<i>Mount_destination_of_shared_disk</i> /Fujitsu/ROR/SVROR/etc/dhcp/dhcpd.conf (*2)	/etc/dhcp/dhcpd.conf
<i>Mount_destination_of_shared_disk</i> /Fujitsu/ROR/SVROR/var/lib/dhcpd	/var/lib/dhcpd

\*1: When using Red Hat Enterprise Linux 5

\*2: When using Red Hat Enterprise Linux 6

6. Change the settings of the DHCP service (Primary node)

Change the following files when registering the admin LAN subnet, and set the takeover logical IP address after the change to the DHCP server.

File name

- Red Hat Enterprise Linux 5  
/etc/dhcpd.conf
- Red Hat Enterprise Linux 6  
/etc/dhcp/dhcpd.conf

Add the following lines, and set the takeover logical IP address.

```
option dhcp-server-identifier takeover logical IP address;
```

 **Example**

**When the takeover logical IP address is 192.168.4.100**

```
#  
# DHCP Server Configuration file.  
# see /usr/share/doc/dhcp*/dhcpd.conf.sample  
#  
ddns-update-style none;  
option vendor-class-identifier "PXEClient";  
option dhcp-server-identifier 192.168.4.100; # This line is added.  
subnet 192.168.4.0 netmask 255.255.255.0 {
```

7. Unmount the shared disk. (Primary node)

Unmount the shared disk for managers from the primary node.

8. Mount the shared disk (Secondary node)

Mount the shared disk for managers on the secondary node.

9. Back up files and configure symbolic links for the shared disk (Secondary node)

- a. Perform step b. of step 4 and back up the files on the local disk.
- b. Perform step 5 and configure symbolic links for the shared disk.

10. Unmount the shared disk. (Secondary node)

Unmount the shared disk for managers from the secondary node.

11. Start cluster applications.

Use the cluster system's operation management view (Cluster Admin) and start the manager cluster service (cluster application).

12. Register the admin LAN subnet.

# Chapter 3 Changing Resources

This section explains how to change settings for the admin server or resources registered on the admin server.

## 3.1 Changing Admin Server Settings

This section explains how to change the settings for the admin server.

### 3.1.1 Changing Admin IP Addresses

Use the following procedure to change the IP address used on the admin LAN by the admin server.

1. Log on to the admin server as the administrator.
2. Stop manager services.  
Stop the manager, referring to "7.2 Starting and Stopping the Manager" in the "Setup Guide CE".
3. Change the SNMP trap destination set for the management blade and LAN switch blades.  
Set the SNMP trap destination to the new IP address of the admin server.



Depending on the LAN switch blade used, setting an SNMP trap destination may restrict SNMP access to that switch blade. In a clustered manager configuration, set the physical IP addresses of both the primary and secondary nodes as SNMP trap destinations.

If the LAN switch blade is set to only grant access from known IP addresses, be sure to give permissions to the physical IP addresses of both the primary and secondary cluster nodes, as is done with trap destination settings.

For details, refer to the manual of the LAN switch blade to be used.

4. Change the IP address set within the operating system.

Change the IP address following the instructions given in the operating system's manual.

If the admin LAN has been made redundant, change the admin IP address set in the following tools or products.

- PRIMECLUSTER GLS
- BACS
- Intel PROSet

Refer to the manual of each product for usage details.

In a clustered manager configuration, change the cluster IP address according to the instructions given in "[Changing the IP Address of a Clustered Manager](#)".

5. Change the IP address registered as the manager's admin IP address.

Use the `rcxadm mgrctl modify` command to set a new IP address.

[Windows]

```
>"Installation_folde\Manager\bin\rcxadm" mgrctl modify -ip IP_address <RETURN>
```

[Linux]

```
# /opt/FJSVrcvmr/bin/rcxadm mgrctl modify -ip IP_address <RETURN>
```

In a clustered manager configuration, for details on how to change the admin IP address registered for the manager, refer to "[Settings for Clustered Manager Configurations](#)".

6. Log in to the managed server with an OS administrator account.

7. Change ServerView Agents settings on the managed server.

Change the SNMP trap destination of the ServerView Agents. Refer to the ServerView Agent manual for details on changing SNMP trap settings.

8. Stop the agents on managed servers. [Windows/Hyper-V] [Linux/Xen/KVM]

Stop the agent referring to "7.3 Starting and Stopping the Agent" in the "Setup Guide CE".

9. Change Agent settings. [Windows/Hyper-V] [Linux/Xen/KVM]

Use the rcxadm agtctl modify command to set the new manager IP address.

[Windows/Hyper-V]

```
>"Installation_folder\Agent\bin\rcxadm" agtctl modify -manager IP_address <RETURN>
```

[Linux/Xen/KVM]

```
# /opt/FJSVrcxat/bin/rcxadm agtctl modify -manager IP_address <RETURN>
```

10. Restart the agents on managed servers. [Windows/Hyper-V] [Linux/Xen/KVM]

Start the agent referring to "7.3 Starting and Stopping the Agent" in the "Setup Guide CE".

11. Restart the manager.

Start the manager referring to "7.2 Starting and Stopping the Manager" in the "Setup Guide CE".

Repeat steps 6 to 11 for each managed server on which an agent is running.

12. Re-configure the HBA address rename setup service.

When using the HBA address rename function, change the IP address of the admin server that is set for the HBA address rename setup service according to "8.2.1 Settings for the HBA address rename Setup Service" of the "Setup Guide CE".

13. Back up managed servers.

If system image backups have already been collected from managed servers, it is recommended to update those images in order to reflect the changes made above. For details on system image backup, refer to "8.2 Backup" in the "Operation Guide VE".

System images backed up before changing the admin IP address of the admin server cannot be restored anymore after the change. It is recommended to delete all system images collected before change, unless those images are specifically needed.

14. Collect a cloning image. [Windows/Linux]

If cloning images have already been collected from managed servers, it is recommended to update those images to reflect the changed made above. For details on cloning image collection, refer to "7.2 Collecting a Cloning Image" of the "User's Guide VE".

Cloning images collected before changing the admin IP address of the admin server cannot be deployed anymore after the change. It is recommended to delete all cloning images collected before change, unless those images are specifically needed.

### Note

- IP addresses belonging to registered admin LAN subnets cannot be changed.
- When a managed server belongs to the same subnet as the admin server, either delete the managed server or manually change the admin IP address of the managed server. Without changing the IP address of the managed server, it is not possible to register the information of the subnet the managed server belongs to, or change the information of the subnet.

## Changing the IP Address of a Clustered Manager

In a clustered manager configuration, use the following procedure to change the IP address set within the operating system.

[Windows]

Change the IP address using the [Failover Cluster Management] window.

[Linux]

1. Stop the manager's cluster service.

Stop the manager's cluster service from the cluster administration view (Cluster Admin).

2. Log in to the admin server's primary node.

Log in to the operating system of the admin server's primary node with administration privileges.

3. Mount the shared disk on the primary node.

Mount the admin server's shared disk on the primary node.

4. Change takeover the logical IP address.

Release PRIMECLUSTER GLS virtual interface settings from the PRIMECLUSTER resource, then change the PRIMECLUSTER GLS configuration.

For details, refer to the PRIMECLUSTER Global Link Services manual.

5. Activate the takeover logical IP address.

Use the PRIMECLUSTER GLS command-line to activate the takeover logical IP address.

For details, refer to the PRIMECLUSTER Global Link Services manual.

## Settings for Clustered Manager Configurations

In a clustered manager configuration, use the following procedure to register an IP address as the manager's admin LAN IP address.

[Windows]

1. Cancel registry replication settings.

On the primary node, bring online the shared disk and IP address, and take all other resources offline.

Next, remove the following registry key from the registry replication settings set for the "PXE Services" cluster resource.

- For x64 Architectures  
SOFTWARE\Wow6432Node\Fujitsu\SystemcastWizard\DHCP
- For x86 Architectures  
SOFTWARE\Fujitsu\SystemcastWizard\DHCP

Use the following procedure to remove the registry key.

- a. In the [Failover Cluster Management] window, right-click the "PXE Services" resource in "Summary of RC-manager"-"Other Resources", and select [Properties] from the popup menu.  
The [PXE Services Properties] window is displayed.
  - b. In the [Registry Replication] tab, select the above registry key.
  - c. Click <Remove>.  
The selected key is removed from the "Root registry key" list.
  - d. After removing the registry key, click <Apply>.
  - e. Click <OK> to close the dialog.
2. Change the manager IP address on the primary node.

On the primary node, use the rcxadm mgrctl modify command to set the new IP address.

```
>"Installation_folder\Manager\bin\rcxadm" mgrctl modify -ip IP_address <RETURN>
```

3. Restore registry replication settings.

Restore the registry key deleted in step 1. to the registry replication settings of the "PXE Services" resource.  
Use the following procedure to restore the registry key.

- a. In the [Failover Cluster Management] window, right-click the "PXE Services" resource in "Summary of RC-manager"- "Other Resources", and select [Properties] from the popup menu.

The [PXE Services Properties] window is displayed.

- b. In the [Registry Replication] tab, click <Add>.

The [Registry Key] dialog is displayed.

- c. Configure the above registry key in "Root registry key".

- d. Click <OK>.

- e. After completing registry key settings, click <Apply>.

- f. Click <OK> to close the dialog.

4. Assign the manager's shared disk and IP address to the secondary node.

In the Failover Cluster Management tree, right-click [Services and Applications]-[RC-manager], and select [Move this service or application to another node]-[1 - Move to node *node\_name*].

The name of the secondary node is displayed in *node\_name*.

5. Change the manager IP address on the secondary node.

On the secondary node, use the `rcxadm mgrctl modify` command to set the new IP address.

Use the same IP address as the one set in step 2.

6. Assign the manager's shared disk and IP address to the primary node.

In the Failover Cluster Management tree, right-click [Services and Applications]-[RC-manager], and select [Move this service or application to another node]-[1 - Move to node *node\_name*].

The name of the primary node is displayed in *node\_name*.

7. On the primary node, take the manager's shared disk and IP address offline.

[Linux]

1. Change the IP address set for the admin LAN.

Set a new IP address on the primary node using the following command.

```
# /opt/FJSVrcvmr/bin/rcxadm mgrctl modify -ip IP_address <RETURN>
```

2. De-activate the admin server's takeover logical IP address.

Use the PRIMECLUSTER GLS command-line interface to de-activate the takeover logical IP address.

For details, refer to the PRIMECLUSTER Global Link Services manual.

3. Register the takeover logical IP address as a PRIMECLUSTER resource.

Use the PRIMECLUSTER GLS command-line interface to register the virtual interface as a PRIMECLUSTER resource.

For details, refer to the PRIMECLUSTER Global Link Services manual.

4. Mount the shared disk

Mount the shared disk for managers on the primary node.

5. Change the settings of the DHCP service (When registering the admin LAN subnet)

When registering an admin LAN subnet, change the file below and set the DHCP server for the takeover logical IP address.

- File name

- Red Hat Enterprise Linux 5

/etc/dhcpd.conf

- Red Hat Enterprise Linux 6

/etc/dhcp/dhcpd.conf

Change the takeover logical IP address in the following line to the new takeover logical IP address.

option dhcp-server-identifier *takeover logical IP address*;

## Example

When the takeover logical IP address is 192.168.4.100 before being changed

```
#
# DHCP Server Configuration file.
# see /usr/share/doc/dhcp*/dhcpd.conf.sample
#
ddns-update-style none;
option vendor-class-identifier "PXEClient";
option dhcp-server-identifier 192.168.4.100; (*)
subnet 192.168.4.0 netmask 255.255.255.0 {
```

\* Note: Change the IP address in this line to the new takeover logical IP address.

### 6. Unmount the shared disk.

Un-mount the shared disk from the primary node.

### 7. Log in to the admin server's secondary node.

Log in to the operating system of the admin server's secondary node with administration privileges.

### 8. Change takeover the logical IP address.

Use the PRIMECLUSTER GLS command-line interface to remove virtual interface settings from the PRIMECLUSTER resource, register the resource, and change the PRIMECLUSTER GLS configuration.

For details, refer to the PRIMECLUSTER Global Link Services manual.

### 9. Change the cluster configuration.

Use the cluster RMS Wizard to change the GLS resource set in the cluster service of either one of the cluster nodes.

After completing the configuration, save it and execute the following operations.

- Configuration-Generate
- Configuration-Activate

### 10. Start the Manager's cluster service.

Use the cluster administration view (Cluster Admin) to start the Manager's cluster service.

## 3.1.2 Changing Port Numbers

---

This section explains how to change the ports used by the Manager services and related services of Resource Orchestrator.

Resource Orchestrator requires the following services to be running. When starting these services, ensure that the ports they are using do not conflict with the ports used by other applications or services. If necessary, change the ports used by Resource Orchestrator services.

[Windows]

- Manager Services
  - Resource Coordinator Manager
  - Resource Coordinator Task Manager
  - Resource Coordinator Web Server (Apache)

- Resource Coordinator Sub Web Server (Mongrel)
- Resource Coordinator Sub Web Server (Mongrel2)
- Resource Coordinator Sub Web Server(Mongrel3) (\*1)
- Resource Coordinator Sub Web Server(Mongrel4) (\*1)
- Resource Coordinator Sub Web Server(Mongrel5) (\*1)
- Resource Coordinator DB Server (PostgreSQL)
- Related Services
  - Deployment Service
  - TFTP Service
  - PXE Services
  - DHCP Server (\*2)

[Linux]

- Manager Services
  - rcxmanager
  - rcxtaskmgr
  - rcxmongrel1
  - rcxmongrel2
  - rcxmongrel3 (\*1)
  - rcxmongrel4 (\*1)
  - rcxmongrel5 (\*1)
  - rcxhttpd
  - rcxdb
- Related Services
  - scwdepsvd
  - scwpxesvd
  - scwtftpd
  - dhcpd (\*2)

\*1: In Basic mode, these services are not supported.

\*2: Necessary when managing a managed server in a separate subnet to the admin server.

Change the ports used by the above services if there is a possibility that they will conflict with other applications or services.

For Windows operating systems, an ephemeral port may conflict with a Resource Orchestrator service if the maximum value allowed for ephemeral ports (5000 by default) was changed. In this case, change the port numbers used by Resource Orchestrator services to values greater than the maximum ephemeral port value.

For information on how to change the ports used by ServerView Operations Manager, refer to the ServerView Operations Manager manual. The ports used for SNMP communication and server power control are defined by standard protocols and fixed at the hardware level, and thus cannot be changed.

For the port numbers used by Resource Orchestrator, refer to "Appendix A Port List" of the "Setup Guide CE".

When using a firewall on the network, firewall settings should be updated to match the new port definitions and allow communications for any modified port.



## Manager Services

Use the following procedure to change the admin server ports used by manager services:

1. Stop manager services.

Stop the manager, referring to "7.2 Starting and Stopping the Manager" in the "Setup Guide CE".

2. Change the port numbers.

Use the rcxadm mgrctl modify command to set a new port number for a given service name.

[Windows]

```
>"Installation_folder\Manager\bin\rcxadm" mgrctl modify -port name=number <RETURN>
```

[Linux]

```
# /opt/FJSVrcvnr/bin/rcxadm mgrctl modify -port name=number <RETURN>
```

In a clustered manager configuration, bring offline all cluster resources except for the manager's shared disk and IP address, move all cluster resources from the primary node to the secondary node, then execute the rcxadm mgrctl modify command on all the nodes that are hosting cluster resources.

3. Restart manager services.

Start the manager referring to "7.2 Starting and Stopping the Manager" in the "Setup Guide CE".



- When changing the "rcxweb" port, the following ports should be set to the same value.

- Admin client

Enter the "rcxweb" port in the Web browser URL used to log into Resource Orchestrator.

If this URL is bookmarked in the Web browser "Favorites", change the port set in the bookmark's URL.

- HBA address rename setup service

If the HBA address rename setup service is running, change the port number used to communicate with the admin server to the "rcxweb" port according to ["3.3.2 Changing the Port Number Used to Communicate with the Admin Server"](#).

[Windows]

- Change the ROR console shortcut on the manager

1. Open the following folder on the admin server.

*Installation\_folder\Manager*

2. Right-click the "ROR Console" icon, and select [Properties] from the popup menu.

3. In the [Web Document] tab, change the port number set in the "URL" field (as shown below).

```
URL: https://localhost:23461/
```

4. Click <OK>.

- When changing the "nfagent" port, the following ports on managed servers should be set to the same value.

Set the "nfagent" port set on each managed server to the same value, according to the instructions given in ["3.2.6 Changing Port Numbers"](#).

The system image and cloning images collected before the change can no longer be used, and should be deleted.

If necessary, re-collect system images and cloning images.

## Related Services

Use the following procedure to change the port numbers used for the related services: However, the port numbers of the DHCP server and the dhcpd service cannot be changed.

[Windows]

1. Change the port numbers.
  - a. Open the Windows Registry Editor, and search for the following subkey:
    - When using a 32-bit version of Windows:  
Key name: HKEY\_LOCAL\_MACHINE\SOFTWARE\Fujitsu\SystemcastWizard\CLONE
    - When using a 64-bit version of Windows:  
Key name: HKEY\_LOCAL\_MACHINE\SOFTWARE\Wow6432Node\Fujitsu\SystemcastWizard\CLONE
  - b. Select "PortBase" from the registry entries under this subkey.
  - c. From the menu, select [Edit]-[Modify].  
The [Edit DWORD Value] dialog is displayed.
  - d. Select "Decimal" and click <OK>.

This port value will define the first port of the range used by deployment services.

However, because the related services can use up to 16 port numbers, ensure that all ports included between "PortBase" (defined here) and "PortBase+15" do not conflict with any other applications or services. Moreover, be sure to set a value lower than 65519 for "PortBase" so that the highest port number ("PortBase+15") does not exceed the largest valid port number (65534).

In a clustered manager configuration, change port numbers on both the primary and secondary node.

2. Restart the server on which the port number has been changed.

[Linux]

1. Change the port numbers.

Edit the following file: /etc/opt/FJSVscw-common/scwconf.reg.

In PortBase (under HKEY\_LOCAL\_MACHINE\SOFTWARE\Fujitsu\SystemcastWizard\CLONE), set the first value of the port number to be used by deployment services. This value should be entered in hexadecimal format. To avoid conflicts with ephemeral ports, use a value not included in the ephemeral port range defined by "net.ipv4\_local\_port\_range".

However, as a maximum of 16 port numbers are used for image file creation and deployment, ensure that the port numbers for PortBase to PortBase +15 do not conflict with ephemeral or well-known ports.

This ensures that deployment services will use ports outside of the range defined by net.ipv4\_ip\_local\_port\_range for image operations.

Moreover, be sure to set a value lower than 65519 for "PortBase" so that the highest port number ("PortBase+15") does not exceed the largest valid port number (65534).

In a clustered manager configuration, change port numbers on both the primary and secondary node.

2. Restart the server on which the port number has been changed.

### Information

The related services allow managed servers to boot from the network using a dedicated module stored on the admin server during backup, restore or cloning.

Note that changing port numbers on the admin server alone is enough to support communication during the above image operations. Therefore, no additional configuration is required on the managed servers.

## 3.1.3 Changing the Maximum Number of System Image Versions

Use the following procedure to change the maximum number of system image versions.

1. Change the maximum number of system image versions.
2. Confirm the maximum number of system image versions.

For details of the methods for changing and checking the generations of system images, refer to "5.5 rcxadm imagemgr" of the "Command Reference".

#### Note

---

If the specified limit is smaller than the number of existing system image versions, older versions will not be deleted automatically. In this case, backing up a new system image, will only delete the oldest version.

Delete unused versions of system images manually if they are no longer necessary. For details, refer to "8.5 Deleting System Images" in the "Operation Guide VE".

If the ROR console has been already opened, refresh the Web browser after changing the maximum number of system image versions.

---

### 3.1.4 Changing the Maximum Number of Cloning Image Versions (Physical Servers)

---

Use the following procedure to change the maximum number of cloning image versions.

1. Change the maximum number of cloning image versions.
2. Check the maximum number of cloning image versions.

For details of the methods for changing and checking the generations of cloning images, refer to "5.5 rcxadm imagemgr" of the "Command Reference".

#### Note

---

If the specified limit is smaller than the number of existing cloning image versions, older versions will not be deleted automatically. In this case, collecting a new cloning image version will require selecting a previous image version for deletion.

Delete unused image versions manually if they are no longer necessary. For details, refer to "11.5.4 Deleting a Cloning Image".

If the ROR console has been already opened, refresh the Web browser after changing the maximum number of system image versions.

---

### 3.1.5 Changing the Maximum Number of Cloning Image Versions (Virtual Servers)

---

Use the following procedure to change the maximum number of cloning image versions.

1. Change the maximum number of cloning image versions.
2. Check the maximum number of cloning image versions.

For details, refer to "1.7.2 rcxadm imagemgr" of the "Reference Guide (Resource Management) CE".

#### Note

---

If the specified limit is smaller than the number of existing cloning image versions, older versions will not be deleted automatically. In this case, collecting a new cloning image version will abort the operation.

When a new cloning image version, delete the old cloning versions beforehand. For details, refer to "11.5.4 Deleting a Cloning Image".

If the ROR console has been already opened, refresh the Web browser after changing the maximum number of system image versions.

---

### 3.1.6 Changing the Maximum Number of Snapshot Image Versions

---

Use the following procedure to change the maximum number of snapshot versions.

1. Change the maximum number of snapshot versions.
2. Confirm the maximum number of snapshot versions.

For details, refer to "1.7.2 rcxadm imagemgr" of the "Reference Guide (Resource Management) CE".

### Note

If the specified limit is smaller than the number of existing snapshot versions, older versions will not be deleted automatically. In this case, collecting a new snapshot on the same server will only delete the oldest version.

Delete any old snapshot versions manually if they are no longer necessary. For details on the deletion procedure, refer to "Deletion" in "11.6.1 Snapshot".

If the ROR console has been already opened, refresh the Web browser after changing the maximum number of system image versions.

## 3.1.7 Changing the Image Folder Location

---

Use the following procedure to change the location (path) of the image files folder.

1. Select the [Image List] tab in the ROR console and confirm the current image list.
2. Log on to the admin server as the administrator.
3. Stop manager services.

Stop the manager, referring to "7.2 Starting and Stopping the Manager" in the "Setup Guide CE".

4. Change the location of the image file storage folder.

Change the location of the image file storage folder according to the instructions given in "5.5 rcxadm imagemgr" of the "Command Reference".

Because image files are actually copied over to the new location, this step may take some time to complete.

In a clustered manager configuration, for details on how to change the image file storage folder location, refer to "Settings for Clustered Manager Configurations".

5. Restart the manager.

Start the manager referring to "7.2 Starting and Stopping the Manager" in the "Setup Guide CE".

6. Select the [Image List] tab in the ROR console and confirm the image list is same as before.

## Settings for Clustered Manager Configurations

Settings differ depending on the operating system used for the manager.

[Windows]

1. Cancel registry replication settings.

Bring the manager's shared disk online, and take all other resources offline.

Next, remove the following registry key from the registry replication settings set for the "Deployment Service" cluster resource.

- For x64 Architectures

SOFTWARE\Wow6432Node\Fujitsu\SystemcastWizard\ResourceDepot

- For x86 Architectures

SOFTWARE\Fujitsu\SystemcastWizard\ResourceDepot

Use the following procedure to remove the registry key.

- a. In the [Failover Cluster Management] window, right-click the "Deployment Service" resource in "Summary of RC-manager"->"Other Resources", and select [Properties] from the popup menu.

The [Deployment Service Properties] window is displayed.

- b. In the [Registry Replication] tab, select the above registry key.
- c. Click <Remove>.

The selected key is removed from the "Root registry key" list.

- d. After removing the registry key, click <Apply>.
- e. Click <OK> to close the dialog.

2. Change the location of the image file storage folder.

Change the location of the image file storage folder according to the instructions given in "5.5 rcxadm imagemgr" of the "Command Reference".

Because image files are actually copied over to the new location, this step may take some time to complete.

Run the rcxadm imagemgr command from either node of the cluster resource.

The new location should be a folder on the shared disk.

3. Restore registry replication settings.

Restore the registry key deleted in step 1 to the registry replication settings of the "Deployment Service" resource.

Use the following procedure to restore the registry key.

- a. In the [Failover Cluster Management] window, right-click the "Deployment Service" resource in "Summary of RC-manager"->"Other Resources", and select [Properties] from the popup menu.

The [Deployment Service Properties] window is displayed.

- b. In the [Registry Replication] tab, click <Add>.

The [Registry Key] dialog is displayed.

- c. Configure the above registry key in "Root registry key".
- d. Click <OK>.
- e. After completing registry key settings, click <Apply>.
- f. Click <OK> to close the dialog.

[Linux]

1. Mount the shared disk on the primary node.

Log in to the primary node with OS administrator privileges and mount the admin server's shared disk.

2. Change the location of the image file storage directory.

Change the location of the image file storage directory according to the instructions given in "5.5 rcxadm imagemgr" of the "Command Reference".

Because image files are actually copied over to the new location, this step may take some time to complete.

Run the rcxadm imagemgr command on the primary node.

The new location should be a directory on the shared disk.

3. Un-mount the shared disk from the primary node.

Un-mount the shared disk (for which settings were performed in step 1) from the primary node.

## 3.1.8 Changing Admin LAN Subnets

---

Use the following procedure to change an admin LAN subnet.

1. From the ROR console menu, select [Settings]-[Admin LAN Subnet].

The [Admin LAN Subnet] dialog is displayed.

2. Select the subnet to change.

The [Change Admin LAN Subnet] dialog is displayed.

3. In the [Change Admin LAN Subnet] dialog, set the following items.

**Subnet name**

Enter a character string beginning with an alphabetic character and containing up to 16 alphanumeric characters, underscores (" \_"), hyphens ("-"), and periods (" .").

**Network address**

Enter valid values for the network address.

**Subnet mask**

Enter valid values for the subnet mask.

**Gateway**

Enter the settings for the gateway used for communication with the admin server on the admin LAN.

4. Click <Change>.
5. Click <OK>.



When changing the information for a subnet other than the one the admin server belongs to, if there is even 1 managed server belonging to the target subnet, the "Network address" and "Subnet mask" cannot be changed. When changing the "Network address" or "Subnet mask", refer to the ["Modification Procedure when there are Managed Servers Belonging to Different Subnets"](#).

### Modification Procedure when there are Managed Servers Belonging to Different Subnets

When there are managed servers in the target subnet, change the network address or the subnet mask using the following procedure.

1. Register the subnet information using the new network address or subnet mask.
2. Use the following procedure to change the admin LAN IP addresses of all managed servers belonging to the subnet before modification.  
For details on how to configure these settings, refer to ["3.2.3 Changing Admin IP Addresses"](#).
3. Delete the subnet used before modification.

## 3.1.9 Changing the Password for the Resource Orchestrator Database

---

Use the following procedure to change the password for the Resource Orchestrator database:

1. Log on to the admin server as the administrator.
2. Stop manager services.  
Stop the manager, referring to "7.2 Starting and Stopping the Manager" in the "Setup Guide CE".
3. Change the password for the Resource Orchestrator database.

Execute the `rcxadm dbctl modify` command.  
Enter the new password interactively.

[Windows]

```
>"Installation_folder\Manager\bin\rcxadm" dbctl modify -passwd <RETURN>
```

[Linux]

```
# /opt/FJSVrcvmr/bin/rcxadm dbctl modify -passwd <RETURN>
```

In a clustered manager configuration, bring offline all manager resources except for the shared disk, move all cluster resources from the primary node to the secondary node, then execute the `rcxadm dbctl modify` command on all the nodes that are hosting cluster resources.

4. Restart the manager.

Start the manager referring to "7.2 Starting and Stopping the Manager" in the "Setup Guide CE".

## 3.2 Changing Chassis and Managed Servers Settings

---

This section explains how to change the settings for the chassis and managed servers.

If collecting the system images and cloning images of the managed server, collect system images and cloning images after completing changes to the managed server settings.

For details on backing up system images, refer to "8.2 Backup" in the "Operation Guide VE".

For details on how to collect cloning images, refer to "11.5.1 Collecting and Registering Cloning Images".



- To change VM guest settings, use the management console of the server virtualization software used.
- A managed server that has already been registered cannot be moved to a different slot.  
To move a managed server to a different slot, first delete the managed server, then move it to the new slot and register it again.

### 3.2.1 Changing Chassis Names

---

This section explains how to change chassis names.

Use the following procedure to change the name of a registered chassis.

1. In the ROR console server resource tree, right-click the target chassis and select [Modify]-[Registration Settings] from the popup menu.

The [Modify Chassis Settings] dialog is displayed.

2. Modify the values for the following items:

Chassis name

Enter up to 10 characters, including alphanumeric characters and hyphens ("-"). This name should start with an alphabet character.

3. Click <OK>.

The chassis name is changed.

### 3.2.2 Changing Server Names

---

This section explains how to change physical server names.

Names of physical OS's, VM hosts, and VM guests can be changed by a user with administrative authority. Once changed, new names are automatically reflected in the ROR console.

Use the following procedure to change the name of a physical server.

1. In the ROR console server resource tree, right-click the target server, and select [Modify]-[Registration Settings] from the popup menu.

The [Modify Server Settings] dialog is displayed.

2. Modify the values for the following items:

Physical Server Name

Enter up to 15 characters, including alphanumeric characters and hyphens ("-"). This name should start with an alphabet character.

3. Click <OK>.

The server name is changed.

4. If the network parameter auto-configuration function is used in the deployment of the cloning images, the "Physical Server Name" set in the definition file must also be changed.

For details on the network parameter auto-configuration function, refer to "7.6 Network Parameter Auto-Configuration for Cloning Images" in the "User's Guide VE".

### 3.2.3 Changing Admin IP Addresses

---

This section explains how to change admin IP addresses.

To change the IP addresses of remote management controllers, refer to ["3.2.5 Changing Server Management Unit Configuration Settings"](#).

#### Chassis

Use the following procedure to change the IP address of a chassis.

1. Change the IP address of the management blade.
2. In the ROR console server resource tree, right-click the target chassis and select [Modify]-[Registration Settings] from the popup menu.  
The [Modify Chassis Settings] dialog is displayed.
3. Change "Admin LAN (IP address)".
4. Click <OK>.

The chassis admin IP address is changed.

#### Managed Servers

Use the following procedure to change the IP address of a managed server.

However, it is still required when using the same address for both the admin and public IP address. This procedure is not required when changing only the public IP address of a server.

1. Log in to the managed server with an OS administrator account.
2. Change the IP address set within the operating system.

Change the IP address according to the OS manual.

If the admin LAN has been made redundant, change the admin IP address set in the following tools or products.

Refer to the manual of each product for usage details.

[Windows]

PRIMECLUSTER GLS

BACS

Intel PROSet

[Linux/Solaris]

PRIMECLUSTER GLS: "NIC switching mode (Physical IP address takeover function)"

3. Restart the managed server.
4. In the ROR console server resource tree, right-click the target server, and select [Modify]-[Registration Settings] from the popup menu.  
The [Modify Server Settings] dialog is displayed.
5. Change "Admin LAN (IP address)".
6. Click <OK>.

The admin IP address of the managed server is changed.





## Note

It is not possible to change IP address settings of a managed server (primary server) with a spare server configured to a different subnet from the spare server.

### 3.2.4 Changing SNMP Communities

---

This section explains how to change SNMP community settings.

- For blade servers, PRIMEQUEST servers, or SPARC Enterprise M4000/M5000/M8000/M9000 servers

Use the following procedure to change SNMP community used by chassis and managed servers.

1. Change the SNMP community set on the management blade, management board, or XSCF.

The new SNMP community should have Read-Write permission.

For details on changing SNMP communities, refer to the manual of the management blade, management board, or XSCF.

2. Change the SNMP community set on the managed server.

Use the same name for the SNMP community of the managed server on the management blade, the management board, and the XSCF.

Follow the instructions in the ServerView Agents manual to change the SNMP community used by a managed server.

The new SNMP community should have Read-Write permission.

3. In the ROR console server resource tree, right-click the target chassis and select [Modify]-[Registration Settings] from the popup menu.

The [Modify Chassis Settings] dialog is displayed.

4. Change "SNMP Community".

5. Click <OK>.

The SNMP community is changed.

- For rack mount or tower servers

Use the following procedure to change the SNMP community used by PRIMERGY servers.

For servers other than PRIMERGY servers, changing SNMP communities does not require any configuration change in Resource Orchestrator.

1. Change the SNMP community set on the managed server.

Follow the instructions in the ServerView Agents manual to change the SNMP community used by a managed server.

2. In the ROR console server resource tree, right-click the target server, and select [Modify]-[Registration Settings] from the popup menu.

The [Modify Server Settings] dialog is displayed.

3. Change "SNMP Community".

4. Click <OK>.

The SNMP community is changed.

- For SPARC Enterprise servers

Use the following procedure to change SNMP community used by the Remote Management Controller.

1. Change the SNMP community set on the remote management controller (XSCF).

For details on changing SNMP communities, refer to the XSCF manuals.

2. In the ROR console server resource tree, right-click the target chassis and select [Modify]-[Registration Settings] from the popup menu.

The [Modify Chassis Settings] dialog is displayed.

3. Change "SNMP Community".

4. Click <OK>.

The SNMP community is changed.

## 3.2.5 Changing Server Management Unit Configuration Settings

---

This section explains how to modify server management unit settings.

- For rack mount or tower servers

Use the following procedure to change remote management controller settings.

1. Change settings on the remote management controller.

If the user account is changed, it should still have administrator authority.

2. In the ROR console server resource tree, right-click the target server, and select [Modify]-[Registration Settings] from the popup menu.

The [Modify Server Settings] dialog is displayed.

3. Change "Remote Management Controller IP address". To modify user account information, select the "Modify remote management controller login account" checkbox, and change the "User name" and "Password" of the "Remote management controller".

- For SPARC Enterprise M3000 servers

Use the following procedure to change remote management controller (XSCF) settings.

1. Change settings on the remote management controller (XSCF).

If the user account is changed, it should still have administrator authority ("platadm" privileges).

2. In the ROR console server resource tree, right-click the target server, and select [Modify]-[Registration Settings] from the popup menu.

The [Modify Server Settings] dialog is displayed.

3. Change "Remote Management Controller IP address (ILOM/XSCF)".

To modify user account settings, select the "Modify remote management controller login account" checkbox, and change the "User name" and "Password" fields under "Remote management controller (ILOM/XSCF)".

- For SPARC Enterprise T servers

Use the following procedure to change remote management controller settings (ILOM).

1. Change settings on the remote management controller (ILOM).

If the user account is changed, it should still have administrator authority ("Admin" privileges).

2. In the ROR console server resource tree, right-click the target server, and select [Modify]-[Registration Settings] from the popup menu.

The [Modify Server Settings] dialog is displayed.

3. Change "Remote Management Controller IP address (ILOM/XSCF)".

To modify user account settings, select the "Modify remote management controller login account" checkbox, and change the "User name" and "Password" fields under "Remote management controller (ILOM/XSCF)".

- For PRIMEQUEST servers

Use the following procedure to change remote server management settings.

1. Change the remote server management settings.

If the user account is changed, it should still have administrator authority.

2. In the ROR console server resource tree, right-click the target chassis and select [Modify]-[Registration Settings] from the popup menu.

The [Modify Chassis Settings] dialog is displayed.

3. Select the "Modify remote server management login account" checkbox. Then, change the "User name" and "Password" of "Remote Server Management".

- For SPARC Enterprise M4000/M5000/M8000/M9000 servers

Use the following procedure to change remote management controller (XSCF) settings.

1. Change settings on the remote management controller (XSCF).

If the user account is changed, it should still have administrator authority ("platadm" privileges).

2. In the ROR console server resource tree, right-click the target chassis and select [Modify]-[Registration Settings] from the popup menu.

The [Modify Chassis Settings] dialog is displayed.

3. Select the "Modify remote server management login account" checkbox. Then, change the "User name" and "Password" of "Remote server management (XSCF)".

## 3.2.6 Changing Port Numbers

---

This section explains how to change port numbers.

When changing port numbers of the agent, the "nfagent" port of the manager must also be changed. Change this according to information in "3.1.2 Changing Port Numbers".

For details on port numbers, refer to "Appendix A Port List" of the "Setup Guide CE".

Use the following procedure to change the port numbers for managed servers:

1. Change the port numbers.

[Windows/Hyper-V]

Use a text editor (such as Notepad) to change the following line in the *Windows\_system\_folder\system32\drivers\etc\services* file.

```
# service name port number/protocol name
nfagent      23458/tcp
```

[Linux/VMware/Xen/KVM]

Use a command such as vi to change the following line in the */etc/services* file.

```
# service name port number/protocol name
nfagent      23458/tcp
```

[Solaris]

Use a command such as vi to change the following line in the */etc/services* file.

```
# service name port number/protocol name
rcvat        23458/tcp
```

2. Restart the server on which the port number has been changed.

## 3.2.7 Changing VM Host Login Account Information

---

This section explains how to change VM host login account information.

If the login account information (user name and password) of the VM host entered when the VM host was registered is changed, change the login account information of the VM host that was registered in Resource Orchestrator.

The method for changing the VM host login account is shown below.

1. In the ROR console server resource tree, right-click the target VM host, and select [Modify]-[VM Host Login Account] from the popup menu.

The [Change Login Information] dialog is displayed.

2. Enter the new login account information that was changed on the VM host.

User name

Enter the user name to log in to the VM host. Specify a user name that has VM host administrator authority.

Password

Enter the password of the user to log in to the VM host.

3. Click <OK>.

VM host login information is changed.

## 3.2.8 Changing the VLAN Settings of LAN Switch Blades

---

This section explains how to change LAN switch VLAN settings.

The VLAN settings of the LAN switch blade ports connected to the physical servers can be reconfigured normally within Resource Orchestrator.

Refer to "[2.4.6 Configuring VLANs on Internal Connection Ports](#)" for details on how to configure these settings.

## 3.2.9 Changing HBA address rename Settings

---

This section explains how to change the HBA address rename settings.

The WWNs and HBA ports that are set by HBA address rename can be reconfigured normally within Resource Orchestrator.

For details on how to configure these settings, refer to "8.2 HBA address rename Settings" in the "Setup Guide CE".

## 3.2.10 Changing Boot Options

---

This section explains how to change boot option settings.

The boot options configured for PRIMEQUEST servers can be changed by re-configuring them.

Use the following procedure to configure the boot option settings.

1. In the ROR console server resource tree, right-click the target server, and select [Modify]-[Registration Settings] from the popup menu.

The [Modify Server Settings] dialog is displayed.

2. To use this feature, the following settings must first be defined:

Boot option

- For UEFI

Select "UEFI".

- For Legacy Boot

Select "Legacy boot".



Note

Changing the boot option changes the information registered with Resource Orchestrator.

As the actual boot option will not be changed, it is necessary to change the BIOS settings when performing the change.

## 3.3 Changing Settings for the HBA address rename Setup Service

---

This section explains how to change settings for the HBA address rename setup service. Such settings include the admin server IP address, the port used to communicate with the admin server, and the IP address of the HBA address rename server.

### 3.3.1 Changing the IP Address of the Admin Server

---

This section explains how to change the IP address of the admin server.

When this setting is changed, the HBA address rename setup service automatically checks whether it can communicate with the new admin server IP address.

Changing this setting also requires changing the port on the admin server side beforehand.

Change the IP address of the admin server according to "[3.1.1 Changing Admin IP Addresses](#)", and change the admin IP address for the HBA address rename setup service according to step 12.

### 3.3.2 Changing the Port Number Used to Communicate with the Admin Server

---

This section explains how to change the port used between the HBA address rename setup service and the admin server.

The HBA address rename setup service uses the "rcxweb" port to communicate with the admin server.

When this setting is changed, the HBA address rename setup service automatically checks whether it can communicate with the new admin server IP address.

Changing this setting also requires changing the port on the admin server side beforehand.

Use the following procedure to change the port numbers used to communicate with the admin server:

1. Change the port number of the manager.

Change the "rcxweb" port number according to the instructions given in "[3.1.2 Changing Port Numbers](#)".

2. Change the port number of the HBA address rename setup service.

Refer to "8.2.1 Settings for the HBA address rename Setup Service" in the "Setup Guide CE", and change the port to the same port number.

### 3.3.3 Changing the IP Address of the HBA address rename Server

---

This section explains how to change the IP address of the HBA address rename server.

Use the following procedure to change the IP address of the HBA address rename server.

1. Log in to the HBA address rename server with administrator authority.

2. Stop the HBA address rename setup service.

Stop the HBA address rename setup service according to "8.2.1 Settings for the HBA address rename Setup Service" in the "Setup Guide CE".

3. Change the IP address set within the operating system.

Change the IP address according to the OS manual.

4. Restart the HBA address rename setup service.

Start the HBA address rename setup service according to "8.2.1 Settings for the HBA address rename Setup Service" in the "Setup Guide CE".

## 3.4 Changing VIOM Registration Settings

---

Use the following procedure to perform setting changes for management software (VIOM).

1. In the ROR console management software tree, right-click the management software (VIOM), and select [Modify]-[Registration Settings] from the popup menu.

The [Modify Management Software(VIOM) Settings] dialog is displayed.

2. To use this feature, the following settings must first be defined:

User name

Enter the name of a VIOM user account.

## Password

Enter the password of the above VIOM user account.

### 3. Click <OK>.

To change registered VIOM server profiles, follow the procedure described in "[2.1.1 Registering VIOM Server Profiles](#)" to open the Web interface of ServerView Virtual-IO Manager and change the settings. Changes made inside Virtual-IO Manager are automatically reflected in Resource Orchestrator.

## 3.5 Changing LAN Switch Settings

---

This section explains how to change LAN switch settings.

### 3.5.1 Changing LAN Switch Basic Settings

---

This section explains how to change LAN switch basic settings.

The following settings can be changed.

- LAN switch name (node name for management purposes)
- Admin LAN (IP address)
- User name
- Password
- Administrative password
- SNMP community

Complete the changes to the settings on the target LAN switch before performing this procedure.

Use the following procedure to change LAN switch settings:

1. In the ROR console server resource tree or network resource device tree, right-click the target LAN switch name and select [Modify]-[Registration Settings] from the popup menu.

The [Modify LAN Switch] dialog is displayed.

2. Make changes to the values as needed.
3. Click <OK>.

The settings for the LAN switch are changed with the entered information.



It is possible to set the IP address of the target switch to another unregistered LAN switch. However, this will result in the Resource Orchestrator configuration being inconsistent with the actual network configuration.

If the IP address of the target switch is set to the same address as that of another unregistered LAN switch unintentionally, change back the target LAN switch IP address to its original value according to the instructions given in this section.

If there are more than one LAN switch with inconsistent IP address configurations, delete all registered LAN switches according to "[5.4.2 Deleting LAN Switches and Network Devices](#)" first, then perform Discover and Register according to "[2.5.2 Registering LAN Switches](#)".

### 3.5.2 Changing VLANs Set for External Connection Ports of LAN Switch Blades

---

VLAN types and IDs set on the external connection ports of a managed LAN switch blade can be changed.



## Note

VLANs cannot be changed on PRIMERGY BX900/BX400 LAN switch blades operating in IBP mode.  
If the port VLAN ID is unspecified or 1, a tagged VLAN ID cannot be set to 1.

## Changing VLAN IDs

This section explains how to change VLAN IDs set on the external ports of a LAN switch.

### - With Port VLANs

Use the following procedure to change VLAN IDs:

1. In the ROR console server resource tree, right-click the target LAN switch blade and select [Modify]-[Network Settings] from the popup menu.

The [VLAN Settings] dialog is displayed.

2. To use this feature, the following settings must first be defined:

#### VLAN

Select "Change" and select the VLAN ID that has been changed.

#### Physical Port and Link Aggregation

Select "Untagged" from the VLAN type of the port number to configure or link aggregation group name.

3. Click <OK>.

The VLAN ID is changed.

### - With Tagged VLANs

First delete the VLAN ID was set on the desired LAN switch blade port before setting the new VLAN ID.

Use the following procedure to change VLAN IDs:

1. In the ROR console server resource tree, right-click the target LAN switch blade and select [Modify]-[Network Settings] from the popup menu.

The [VLAN Settings] dialog is displayed.

2. To use this feature, the following settings must first be defined:

#### VLAN

Select "Change" and select the VLAN ID that has been changed.

#### Physical Port and Link Aggregation

Select "None" from the VLAN type of the port number to configure or link aggregation group name.

3. Click <OK>.

The VLAN ID set for the selected LAN switch blade port is released.

4. Repeat step 1 and set the new VLAN ID in the [VLAN Settings] dialog.

#### VLAN

Select "Create new" or "Change" in the VLAN information and select the VLAN ID to be changed.

#### Physical Port and Link Aggregation

Select "Tagged" from the VLAN type of the port number to configure or link aggregation group name.

5. Click <OK>.

The VLAN ID is changed.

## Changing VLAN Types

This section explains how to change the types of VLAN (port or tagged VLAN) set on the external ports of a LAN switch.

Use the following procedure to change VLAN types:

1. In the ROR console server resource tree, right-click the target LAN switch blade and select [Modify]-[Network Settings] from the popup menu.

The [VLAN Settings] dialog is displayed.

2. To use this feature, the following settings must first be defined:

VLAN

Select "Change" and select the VLAN ID that has been changed.

Physical Port and Link Aggregation

Change the VLAN type ("Untagged" or "Tagged") of the port number to configure or link aggregation group name.

3. Click <OK>.

The VLAN type is changed.

## Deleting VLAN IDs

This section explains how to delete VLAN IDs.

- Deleting VLAN IDs from LAN switch blades

Use the following procedure to delete VLAN IDs:

1. In the ROR console server resource tree, right-click the target LAN switch blade and select [Modify]-[Network Settings] from the popup menu.

The [VLAN Settings] dialog is displayed.

2. To use this feature, the following settings must first be defined:

VLAN

Select "Change" and select the VLAN ID that has been changed.

3. Click <Delete>.

The VLAN ID is deleted.

- Deleting VLAN IDs from LAN switch ports

Use the following procedure to delete VLAN IDs:

1. In the ROR console server resource tree, right-click the target LAN switch blade and select [Modify]-[Network Settings] from the popup menu.

The [VLAN Settings] dialog is displayed.

2. To use this feature, the following settings must first be defined:

VLAN

Select "Change" and select the VLAN ID that has been changed.

Physical Port and Link Aggregation

Select "None" from the VLAN type of the port number to delete VLANs or link aggregation group name.

3. Click <OK>.

The VLAN ID is deleted.



### 3.5.3 Re-discovering LAN Switches

Newly added LAN switches can be discovered by re-executing LAN switch discovery.  
For details on LAN switch discovery, refer to "Discovery" in "2.5.2 Registering LAN Switches".



When using "auto-configuration for network device" function on a LAN switch, register it as a network device using the method described in "2.7 Registering Network Devices" instead of re-executing LAN switch discovery.

## 3.6 Modifying Network Resource Specifications

This section explains how to modify specifications of network resources.

The availability of modification for each item depending on the network resource type is shown below:

Table 3.1 Modification Availability Range List

Category	Items	Admin LAN Network Resources Directly Connecting with Manager	Network Resources of Additionally Created Admin LAN	Network Resources of iSCSI or Public LAN
Basic information	Network resource name	Yes	Yes	Yes
	Label	Yes	Yes	Yes
	Comment	Yes	Yes	Yes
Connection information	VLAN ID	No	No	No
	External connection port	Yes (*1)	Yes (*1)	Yes (*1)
	Automatic configuration	No	No	No
	Physical LAN segments	Yes (*2)	Yes (*2)	Yes (*2)
	Auto-configuration of VLAN on external ports	No	No	No
Subnet information	Subnet address/subnet mask	Yes (*3, *4)	Yes (*3)	Yes
	IP address to exclude	Yes	Yes	Yes
	Default gateway	Yes (*4)	Yes	Yes
Network resource type	-	No	No	No
Auto-configuration of network devices (L2 switches) (*5)	VLAN IDs, connection ports, etc.	No	No	Yes

Yes: Modification is possible

No: Modification is not possible

\*1: Even after changing external connection ports, virtual switches, port groups, and virtual bridges that have been deployed can be used as is. New information on the external connection ports will be reflected on the configuration of virtual switches, port groups, and virtual bridges deployed after modification of the network resource. When modifying the deployed network according to the external connection port, server virtualization software must be operated directly to do so.

\*2: Even after changing physical LAN segments, virtual switches, port groups, and virtual bridges that have been deployed can be used as is. New information on the physical LAN segments will be reflected on the configuration of virtual switches, port groups, and virtual bridges deployed after modification of the network resource. When modifying the deployed network according to the physical LAN segment, server virtualization software must be operated directly to do so.

\*3: The subnet address and subnet mask of admin LAN can be changed, when there are no physical servers using the network resources

of the target of modification.

\*4: Modification can be performed by executing the `rcxadm mgrctl modify` command.

\*5: Possible when the network resource has been created specifying `auto="true"` for the `<SwitchConfiguration>` element in the XML definition file.

Use the following procedure to change network resource specifications.

1. Right-click the target network resource in the orchestration tree, and select [Change Settings]-[Modify Specification] from the popup menu.  
The [Modify a network resource] dialog is displayed.
2. Change the items you want to modify.
3. Click <OK>.  
The network resource is changed.



### Note

- The default gateway address of an admin LAN resource which is the same subnet address as that of the manager cannot be changed.  
When changing the number of the IP address to use after changing the subnet addresses or subnet masks, the IP address for L-Server is also automatically changed.  
As the OS configuration installed on an L-Server is not changed, manually change it to match the detailed information of the L-Server.
- Making the following change to the network resource for which automatic configuration of VLAN on the external connection port is specified may cause a network loop.
  - Adding another external connection port on a LAN switch blade which has been already specified as an external connection port  
In this case, take action to prevent a network loop first, such as disconnecting the cable for the external connection port to be added, before making changes to the network resource.

## 3.7 Changing Network Device Settings

This section explains how to change settings of network devices.

Use the following procedure to change the settings of a registered network device:

1. Create network configuration information for the target network device.
2. Change the network device settings based on the network configuration information created in 1.

### 3.7.1 Creating the Network Configuration Information (XML Definition)

Create the network configuration information necessary for changing the registered network device settings.

In the following cases, it is possible to create network configuration information that can be used as input information for changes based on its original network configuration information.

- When the network configuration information used for registering the network device exists
- When the network configuration information retrieved from Resource Orchestrator using the `rcxadm netconfig export` command exists



### See

- For how to create network configuration information (XML definitions), refer to "2.6 Network Configuration Information" of the "Reference Guide (Resource Management) CE".
- For details on the `rcxadm netconfig` command, refer to "1.3.7 rcxadm netconfig" of the "Reference Guide (Resource Management) CE".

## 3.7.2 Changing Network Device Settings

---

This section explains how to change settings of a network device.

The following information can be changed:

- Device Name
- Location
- Type Information
- Maintenance Mode
- Group ID
- SNMP Information
- Login Information
- Monitoring Settings
- Web Interface URL

Network device settings can be changed using the following methods:

- When modifying network devices individually  
Use the `rxadm netdevice modify` command.
- When modifying multiple network devices at one time  
Use the `rxadm netconfig import` command.



### See

- For details on the `rxadm netdevice` command, refer to "1.3.6 `rxadm netdevice`" in the "Reference Guide (Resource Management) CE".
- For details on the `rxadm netconfig` command, refer to "1.3.7 `rxadm netconfig`" in the "Reference Guide (Resource Management) CE".



### Note

- The type (in the "Type" element) cannot be modified for the network devices already registered in a network pool.
- The type (in the "Type" element) and group ID (in the "Redundancy group\_id" element) cannot be modified for the network devices already deployed for an L-Platform.
- Modifying multiple network devices at one time deletes all link information that has been registered, and then registers the link information specified for the "Links" element.  
To change device information only while keeping existing link information, do not specify the "Links" element.

## 3.8 Changing VM Management Software Settings

---

This section explains how to change VM management software settings.

The following settings can be changed.

- Location
- IP address
- User name
- Password

Here the method for changing settings registered with Resource Orchestrator is explained.

Complete re-configuration within the VM management software admin console before performing this procedure.

Use the following procedure to change VM management software settings:

1. In the ROR console management software tree, right-click the target management software, and select [Modify]-[Registration Settings] from the popup menu.

The [Modify Management Software(*name*) Settings] dialog is displayed.

The name of the selected VM management software is displayed in *name*.

2. Enter the following items:

#### Location

Select the location of the VM management software registration to change.

- If VM management software is installed on the admin server

Select "Admin Server".

- In other cases

Select "Other Server".

#### IP address

If "Other Server" was selected, enter the IP address of the server on which VM management software is installed.

#### User name

Enter the user name to use to control VM management software.

#### Password

Enter the password of the above VM management software user account.

3. Click <OK>.

VM management software settings are changed.

## 3.9 Changing Power Monitoring Environment Settings

---

This section explains how to change power monitoring environment settings.

Power environment settings include environmental data settings, collection cancel settings, and power monitoring device settings.

### 3.9.1 Changing Environmental Data Settings

---

Use the following procedure to change environmental data settings:

1. From the ROR console menu, select [Tools]-[Options].

The [Options] dialog is displayed.

2. Click the "Environmental Data" category title, and input the following items in the displayed area.

#### Data to collect

Select the "Power" checkbox to start collecting power consumption data.

#### Polling interval (in minutes)

Enter the time interval of the data collection (1-6 or 10).

The number of devices that can be monitored simultaneously depends on the value of this polling interval and the load put on the admin server. The following values are guidelines.

Table 3.2 Polling Interval

Polling Interval	Number of Devices that can be Monitored Simultaneously
5 minutes	Up to 40 devices

Polling Interval	Number of Devices that can be Monitored Simultaneously
10 minutes	Up to 60 devices

Use a polling interval of 5 minutes or longer when monitoring chassis and servers. Use a polling interval of 10 minutes if monitoring more than 40 devices.

#### Data storage period

Enter storage periods for each collection rate. Data older than the configured storage period will be deleted everyday.

Enlarging data storage periods reduces the number of devices that can be monitored simultaneously.

Use the default storage period values when monitoring chassis and servers.

3. Click <Apply>.

The modified settings are reflected.



#### Note

If the "Power" checkbox under "Data to collect" is cleared, the collection of power consumption data (including the calculation of hourly, daily, and other summarized data) will not be performed anymore.

## 3.9.2 Cancelling Collection Settings for Power Monitoring Environments

This section explains how to cancel the collection of power consumption data.

Use the following procedure to cancel the collection of power consumption data.

1. From the ROR console menu, select [Tools]-[Options].

The [Options] dialog is displayed.

2. Click the "Environmental Data" category title, and modify the values for the following items in the displayed area.

#### Data to collect

Clear the "Power" checkbox.

3. Click <Apply>.

Collection of environmental data is canceled.

## 3.9.3 Changing Power Monitoring Devices

This section explains how to change power monitoring device settings.

The following settings can be changed.

- Device Name
- Admin LAN (IP Address)
- SNMP Community
- Voltage
- Comments

Complete setting modifications on the actual power monitoring device before performing this procedure.

Use the following procedure to change power monitoring device settings:

1. From the ROR console, right-click the power monitoring device tree, then select [Modify]-[Registration Settings] from the popup menu.

The [Modify Power Monitoring Device] dialog is displayed.

2. Make changes to the values as needed.

3. Click <OK>.

The power monitoring device settings will be changed with the entered information.

## **3.10 Changing Monitoring Information Settings**

---

This section explains how to change and cancel monitoring information settings.

### **3.10.1 Changing Monitoring Information Settings**

---

This section explains how to change monitoring information settings.

The following settings can be changed.

- Enabling or disabling of ping monitoring
- Time-out
- Recovery method
- Number of reboots

Use the following procedure to change settings:

1. In the ROR console server resource tree, right-click the target physical OS and the VM host, and select [Modify]-[Monitoring Settings] from the popup menu.

The [Configuring monitoring settings] dialog is displayed.

2. Make changes to the values as needed.

3. Click <OK>.

The settings for the monitoring information are changed to the entered settings.

### **3.10.2 Canceling Monitoring Information Settings**

---

This section explains how to cancel monitoring information settings.

Use the following procedure to cancel the monitoring information settings:

1. In the ROR console server resource tree, right-click the target physical OS and the VM host, and select [Modify]-[Monitoring Settings] from the popup menu.

The [Configuring monitoring settings] dialog is displayed.

2. Uncheck the "Enable ping monitoring" checkbox.

3. Click <OK>.

The settings for the monitoring information are cancelled.

## **3.11 Changing Storage**

---

This section explains how to change storage settings.

### **3.11.1 Changing Storage Management Software Basic Information**

---

This section explains how to change the basic settings of storage management software.

The following settings can be changed.

- Label
- Comments

Use the following procedure to change the basic settings of storage management software:

1. In the ROR console storage tree, right-click the target storage management software, and select [Modify]-[Registration Settings] from the displayed menu.

The [Resource Change Setting] dialog is displayed.

2. Modify the values for the following items:

Label

Enter up to 32 alphanumeric characters or symbols.

Comment

Enter up to 256 alphanumeric characters or symbols.

3. Click <OK>.

Basic information for the storage management software is modified.

### 3.11.2 Changing Storage Unit Basic Information

---

This section explains how to change the basic information of storage units.

The following settings can be changed.

- Label
- Comments

Use the following procedure to change the basic information of storage units:

1. In the ROR console storage tree, right-click the target storage unit, and select [Modify]-[Registration Settings] from the displayed menu.

The [Resource Change Setting] dialog is displayed.

2. Modify the values for the following items:

Label

Enter up to 32 alphanumeric characters or symbols.

Comment

Enter up to 256 alphanumeric characters or symbols.

3. Click <OK>.

Basic information for the storage unit is modified.

### 3.11.3 Changing Virtual Storage Resource Basic Settings

---

This section explains how to change the basic settings of virtual storage resources.

The following settings can be changed.

- Label
- Comments

Use the following procedure to modify the basic information for virtual storage resources:

1. In the ROR console storage tree, right-click the target virtual storage resource, and select [Modify]-[Registration Settings] from the popup menu.

The [Resource Change Setting] dialog is displayed.

2. Modify the values for the following items:

Label

Enter up to 32 alphanumeric characters or symbols.

#### Comment

Enter up to 256 alphanumeric characters or symbols.

3. Click <OK>.

The basic information of the virtual storage resource is modified.

### **3.11.4 Changing Basic Information for Disk Resources**

---

This section explains how to modify the basic information for disk resources.

The following settings can be changed.

- Label
- Comments

Use the following procedure to modify the basic information for disk resources

1. Select the target virtual storage in the ROR console storage tree.

The disk resource list is displayed in the [Resource List] tab.

2. From the disk resource list, right-click the target disk resource, and select [Modify]-[Registration Settings] from the displayed menu.

The [Resource Change Setting] dialog is displayed.

3. Modify the values for the following items:

#### Label

Enter up to 32 alphanumeric characters or symbols.

#### Comment

Enter up to 256 alphanumeric characters or symbols.

4. Click <OK>.

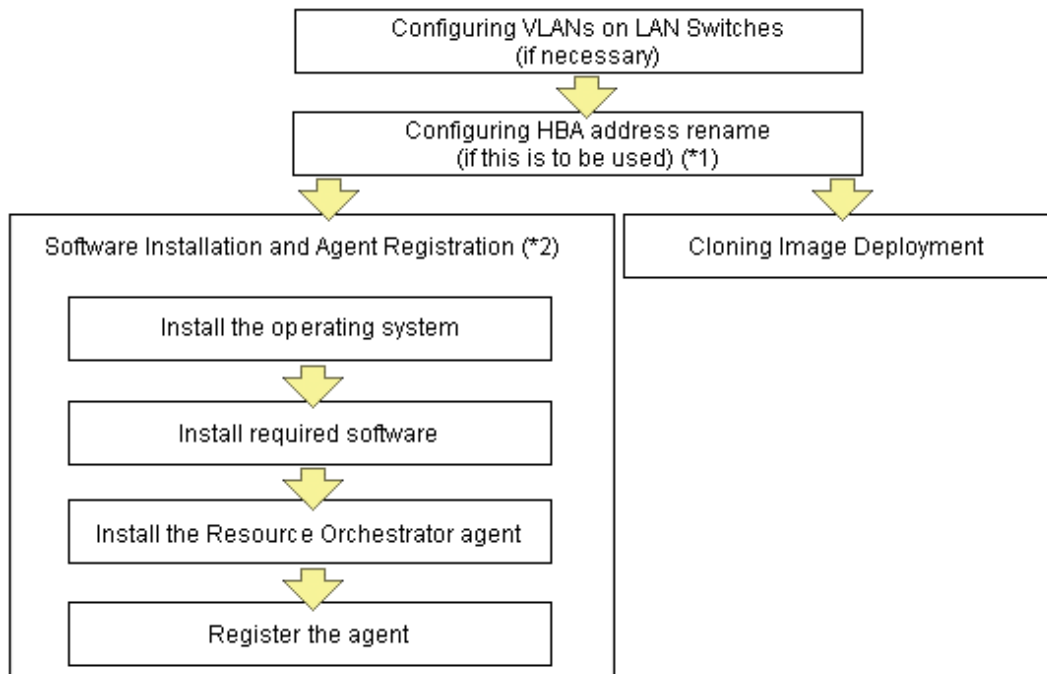
The basic information for disk resources is modified.



# Chapter 4 Configuring the Operating Environment of Managed Servers

This section explains how to install software to the registered managed servers and set up their operating environment.

Figure 4.1 Procedure for Setting up Operating Environments



\*1: HBA address rename and VIOM cannot be used together within the same chassis. I/O virtualization settings for all the servers mounted in one chassis must be made using either HBA address rename or VIOM.

\*2: These settings can be omitted for resources that have already been installed or registered.

## 4.1 Cloning Image Deployment

For the second and subsequent servers, operating systems are created using the cloning image collected from the first server.

For details on cloning, refer to "Chapter 7 Cloning [Windows/Linux]" of the "User's Guide VE".

## Chapter 5 Deleting Resources

This section explains how to delete resources.

The managed server and the LAN switch can be registered and deleted for one resource in the same chassis.

Note that operation of a server cannot be performed while the LAN switch is being registered and removed.

If the operation is performed simultaneously for multiple resources, one of the following messages is displayed.

In this case, wait until the current operation is completed before executing the desired operation again.

```
FJSVrcx:ERROR:67210: LAN_switch_name(LAN switch):is busy
```

or

```
FJSVrcx:ERROR:67210: Managed_server_name (physical server):is busy
```

### 5.1 Deleting Chassis

This section explains how to delete chassis.

Use the following procedure to delete the chassis.

1. In the ROR console server resource tree, right-click the target chassis, and select [Delete] from the popup menu.

The [Delete Resource] dialog is displayed.

2. Click <OK>.

The target chassis is deleted from the server resource tree.



#### Note

If server blades and partitions within the chassis were already registered, delete these server blades and partitions before deleting the chassis. If LAN switches have been registered, delete all LAN switches before deleting the chassis.

### 5.2 Deleting Managed Servers

This section explains how to delete managed servers.

Use the following procedure to delete managed servers.

1. In the ROR console server resource tree, right-click the target server (or the physical OS or the VM host on the server) and select [Delete] from the popup menu.

The [Delete Resource] dialog is displayed.

If a VM host is running on the server to be deleted, any VM guests running on that host are also deleted from the server resource tree at the same time. The VM guests to be deleted appear in the [Delete Resource] dialog, so check that it is safe to delete them.

2. Click <OK>.

- If a physical OS or VM host exists on the target server and HBA address rename is set

The server will be powered off and the target server will be unregistered when the resource is deleted. Resource Orchestrator does not delete the host affinity settings of storage units or the zoning settings of Fibre Channel switches.

- If WWN information is set for the target server

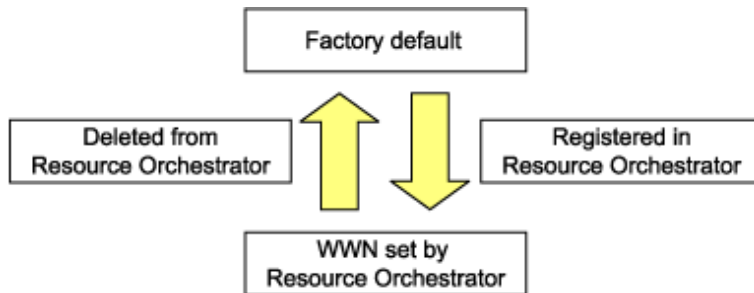
The host affinity settings of storage units and the zoning settings of Fibre Channel switches will be deleted when the SPARC server is deleted.

- If the deleted server is a PRIMERGY BX series server, a PRIMEQUEST server, or SPARC Enterprise M4000/M5000/M8000/M9000 server

The target server will be unregistered and remain in the server resource tree.

## Information

- If HBA address rename has already been set up on the managed server, the HBA WWN is reset to the factory default. When this occurs, the managed server is turned on temporarily, after the power is forcibly turned off once. When the operating system is running on a managed server, it is recommended to shut it down before deleting the server.



- VM guests can be deleted using the management console of the server virtualization software used. Doing so will automatically delete those VM guests from Resource Orchestrator as well.
- If the same storage device volume is to be used to operate the target server after the server has been deleted, use storage management software such as ETERNUS SF Storage Cruiser to reset the storage host affinity and fibre channel switch zoning with the factory default WWN.
- Any system images backed up from the target server are also deleted automatically.
- After the server has been deleted, the maintenance LED is switched OFF automatically.
- Deleting a server on which both the HBA address rename function and a VM high-availability feature (provided by the server virtualization software used) are enabled will produce the following behavior. The server will be powered off, causing the high-availability feature to trigger its VM recovery process. To avoid interruption of hosted applications during server deletion, it is recommended to move VM guests to another server beforehand. For more details on the high-availability features available for each server virtualization software, refer to "E.2 Configuration Requirements" in the "Setup Guide VE".

## 5.3 Cancelling VIOM Integration

This section explains how to cancel VIOM integration.

Use the following procedure to cancel VIOM integration:

1. In the ROR console management software tree, right-click the target management software (VIOM), and select [Delete] from the popup menu.  
The [Delete Resource] dialog is displayed.
2. Click <OK>.  
The target management software (VIOM) is deleted.

To delete registered VIOM server profiles, follow the procedure described in "[2.1.1 Registering VIOM Server Profiles](#)" to open the Web interface of ServerView Virtual-IO Manager and delete the desired profiles from there.

## Note

Integration with VIOM cannot be cancelled in the following cases.

- When there are spare server settings involving the VIOM server profile exchange method
- When there are servers using the VIOM server profile exchange method that are in the following states
  - Being switched over
  - Have been switched over (prior to failback)
  - Being failed back

- Server blades that are managed using VIOM, and are currently the target of operations by Resource Orchestrator (power control, image-related processes, etc.)

---

## 5.4 Deleting LAN Switches and Network Devices

---

This section explains how to delete LAN switches and network devices.

- Deleting LAN Switch Blades
- Deleting LAN Switches and Network Devices

---

### 5.4.1 Deleting LAN Switch Blades

---

This section explains how to delete LAN switch blades.

Use the following procedure to delete LAN switch blades.

1. In the ROR console server resource tree, right-click the target LAN switch blade and select [Delete] from the popup menu.

The [Delete Resource] dialog is displayed.

2. Click <OK>.

The target LAN switch blade is un-registered.

---

### 5.4.2 Deleting LAN Switches and Network Devices

---

This section explains how to delete LAN switches and network devices.

Use the following procedure to delete LAN switches and network devices.

- The Procedure Using the ROR Console

1. In the ROR console network device tree, right-click the target LAN switch or network device and select [Delete] from the popup menu.

The [Delete Resource] dialog is displayed.

2. Click <OK>.

The target LAN switch or network device is deleted from the network device tree.

- The Procedure From the Command Line

Use the `rcxadm netdevice delete` command.



See

For details on the `rcxadm netdevice` command, refer to "1.3.6 `rcxadm netdevice`" in the "Reference Guide (Resource Management) CE".



Note

The network devices already deployed to an L-Platform cannot be deleted.

---

## 5.5 Deleting Network Resources

---

This section explains how to delete network resources.

### When VLANs for External Connection Ports of LAN Switch Blades have not been Configured

Use the following procedure to delete a network resource.

1. In the ROR console orchestration tree, right-click the target network resource in a network pool, and select [Delete] from the popup menu.  
The [Delete Resource] dialog is displayed.
2. Click <OK>.

## When VLANs for External Connection Ports of LAN Switch Blades have been Configured

Use the following procedure to delete a network resource.

1. Refer to the instructions given in "When VLANs for External Connection Ports of LAN Switch Blades Have not been Configured" to delete a target network resource.
2. If the VLAN configured for the external connection port of the LAN switch blade is not necessary, follow the procedure from 3. to delete a target network resource.
3. In the ROR console server resource tree, right-click the target LAN switch blade and select [Modify]-[Network Settings] from the popup menu.  
The [VLAN Settings] dialog is displayed.
4. To use this feature, the following settings must first be defined:
  - Under VLAN, select "Change".
  - Select a VLAN ID.
  - Select "None" as the VLAN type to delete.  
For details, refer to "[3.5.2 Changing VLANs Set for External Connection Ports of LAN Switch Blades](#)".
5. Click <OK>.
6. Confirm that the VLAN has been deleted.

In the ROR console server tree, click the LAN switch blade that includes the port specified as the external connection port of the network resource. In the switch details displayed, confirm that no VLAN is configured for the specified port.



### Note

Deleting a network resource with a VLAN configured for an external connection port of a LAN switch blade does not delete that VLAN.

## 5.6 Deleting VM Management Software

---

This section explains how to delete VM management software.

Use the following procedure to delete VM management software.

1. In the ROR console management software tree, right-click the target management software, and select [Delete] from the popup menu.  
The [Delete Resource] dialog is displayed.
2. Click <OK>.  
The target management software is deleted.

## 5.7 Clearing the Power Monitoring Environment

---

This section explains how to clear the power monitoring environment.

Clearing the power monitoring environment is done by deleting power monitoring targets.

For details on how to release collection settings, refer to "[3.9.2 Cancelling Collection Settings for Power Monitoring Environments](#)".

## 5.7.1 Deleting Power Monitoring Devices

---

This section explains how to delete power monitoring devices.

Use the following procedure to delete power monitoring devices:

1. In the ROR console power monitoring devices tree, right-click the target power monitoring device and select [Delete] from the popup menu.

The [Delete Resource] dialog is displayed.

2. Click <OK>.

The target power monitoring devices are deleted from the tree view.

## 5.8 Deleting Admin LAN Subnets

---

This section explains how to delete admin LAN subnets.

Use the following procedure to delete an admin LAN subnet.

1. From the ROR console menu, select [Settings]-[Admin LAN Subnet].

The [Admin LAN Subnet] dialog is displayed.

2. Select the subnet to delete.

3. Click <Delete>.

The [Delete Admin LAN Subnet] dialog is displayed.

4. Click <OK>.

The target subnet information is deleted.



### Information

When an admin LAN subnet is deleted, the simplified DHCP service for Resource Orchestrator will be disabled.

In this case, either use the OS standard DHCP service that was enabled when the admin LAN subnet was registered, or perform re-installation after uninstalling the manager.



### Note

It is not possible to delete the information of subnets which have managed servers registered.

Before deleting subnet information, delete all managed servers that have been registered on the relevant subnet.

# Chapter 6 Pre-configuration

This chapter provides an overview of the pre-configuration function and explains how to use system configuration files.

## 6.1 Overview

Using the Pre-configuration function, it is possible to create system definition files that can be later used to setup a Resource Orchestrator environment. Importing system configuration files makes it easy to perform various registration settings in one operation. This prevents the operating mistakes induced by sequences of individual, manual configuration steps.

The pre-configuration function can be used in the following situations.

- New Installation

From a traditional work office (or another off-site location), define the various parameters required for Resource Orchestrator and record them in a system configuration file. Next, send this definition file to your actual system location (machine room), and import the file into Resource Orchestrator using the import functionality of the ROR console. This single operation automates the registration of all the servers defined in the system configuration file.

- Backing up a System Configuration

Using the export function of the ROR console, the current Resource Orchestrator configuration can be exported to a system configuration file.

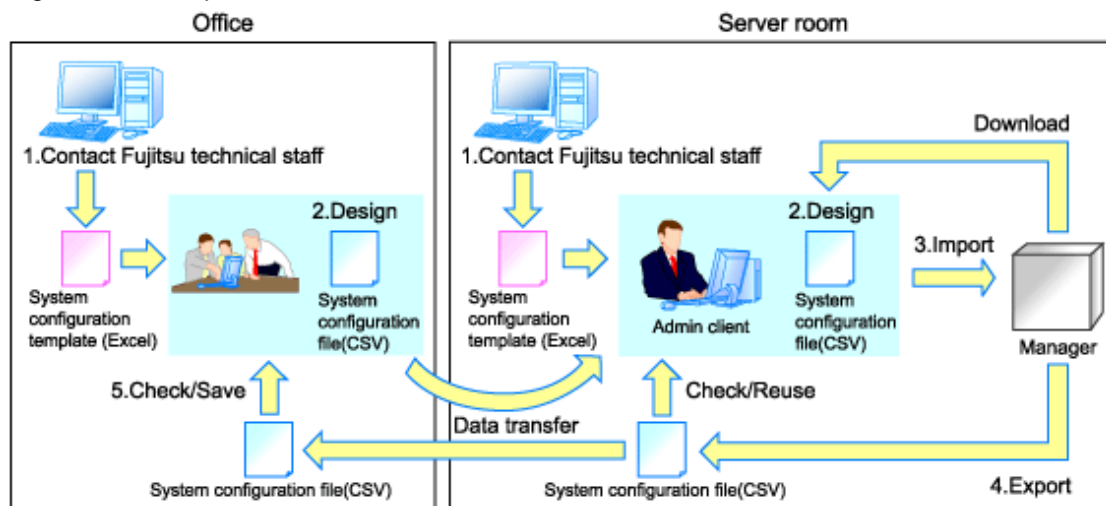
- Batch Re-configuration

The registration settings of already registered resources can be modified easily by exporting the current configuration to a system configuration file and editing the desired configuration items before re-importing that configuration file. The actual re-configuration is then performed as a single import operation.

- Re-use of Existing Configurations

Once a system has been fully setup, its configuration can be exported and re-used as a basis for the design of other systems. This makes it easy to design various systems located in different sites.

Figure 6.1 Examples of Use



Only system configuration files in CSV format can be imported or exported. For details on the system configuration file's format, refer to "[Appendix A sFormat of CSV System Configuration Files](#)".

Resource Orchestrator provides a sample in CSV format. To obtain a copy of the Excel template (hereafter system configuration template), please contact Fujitsu technical staff. This system configuration template makes it easy to create system configuration files in CSV format.

- When loading a system configuration template from a CSV file, or importing a system configuration file from the ROR console

Use the format described in "[A.2 File Format](#)" for the system configuration file.

- When saving a file in CSV format from the system configuration template, or exporting a system configuration file from the ROR console

Export will be performed using the latest file format given in "A.2 File Format".

The following operations, usually performed from the ROR console, can be equally performed using the pre-configuration function.

- Registration
  - "2.1 Registering VIOM Coordination"
  - "2.4 When using Blade Servers"
  - "2.5.2 Registering LAN Switches"
  - "2.2 Registering VM Management Software"
  - "2.9 Registering Power Monitoring Devices" (\*1)
  - "2.10 Registering Admin LAN Subnets"
  - "2.4.4 Configuring VLANs on LAN Switches"
  - "8.2 HBA address rename Settings" of the "Setup Guide CE" (\*2)
  - "8.4 Configuring the Monitoring Information" of the "Setup Guide VE"
  - "8.6 Server Switchover Settings" of the "User's Guide VE"
- Modifying
  - "3.1.1 Changing Admin IP Addresses" (\*3)
  - "3.1.8 Changing Admin LAN Subnets"
  - "3.2.2 Changing Server Names"
  - "3.2.3 Changing Admin IP Addresses" (\*3)
  - "3.2.4 Changing SNMP Communities"
  - "3.2.5 Changing Server Management Unit Configuration Settings"
  - "3.2.7 Changing VM Host Login Account Information"
  - "3.2.8 Changing the VLAN Settings of LAN Switch Blades"
  - "3.2.9 Changing HBA address rename Settings" (\*2)
  - "3.2.10 Changing Boot Options"
  - "3.4 Changing VIOM Registration Settings"
  - "3.5 Changing LAN Switch Settings"
  - "3.8 Changing VM Management Software Settings"
  - "3.9 Changing Power Monitoring Environment Settings"
  - "3.10 Changing Monitoring Information Settings"
  - "8.7 Changing Server Switchover Settings" of the "User's Guide VE"

\*1: To start collecting environment data, the collection settings should be manually set from the ROR console's option dialog.

\*2: Restart all the managed servers that were either registered or modified following an import operation.

\*3: The pre-configuration's scope of configuration is the same as that of the ROR console.

Moreover, the pre-configuration function can perform the same labels and comments settings as those available in BladeViewer. Those settings are described in "3.6.1 Listing and Editing of Labels and Comments" and "Chapter 3 BladeViewer" of the "Operation Guide VE".



## Note

- The following operations cannot be performed by the pre-configuration function, and should be performed from the ROR console.
  - Deleting registered resources from Resource Orchestrator
  - Changing the name of a registered chassis, physical server (only for servers other than PRIMERGY BX servers) or a power monitoring device
  - Deleting registered admin LAN subnets
  - Discovering, registering, or changing registration settings of a LAN switch
  - Detecting physical link information from a LAN switch
  - Cancelling VIOM Integration
  - Registration and deletion of SNMP trap destinations
  - Configuration and change of WWN information using ETERNUS SF Storage Cruiser integration
- The following operations cannot be performed by the pre-configuration function, and should be performed using commands.
  - Registration and deletion of ETERNUS SF Storage Cruiser integration
- Make sure that less than 200 resources are specified for registration or changing in the system configuration file specified for import.  
If it is necessary to specify more than 200 resources for registration or changing, do by importing multiple system configuration files.
- When using ServerView Deployment Manager on the admin LAN, the following settings cannot be defined using the pre-configuration function. For details on co-existence with ServerView Deployment Manager, refer to "Appendix L Co-Existence with ServerView Deployment Manager" of the "Setup Guide CE".
  - Spare server settings (using the backup and restore or HBA address rename method)
  - HBA address rename settings

## 6.2 Importing the System Configuration File

This section explains how to import a system configuration definition file (saved in CSV format) from the ROR console.

Use the following procedure to import a system configuration definition file.

1. Prepare a system configuration file in CSV format.

### Point

- System configuration templates in Excel format cannot be directly imported into Resource Orchestrator. Use the template's save to CSV function to produce a system configuration file in CSV format before importing.
  - Only system configuration files conforming to the format described in "[A.2 File Format](#)" can be imported. For details on the file format, refer to "[Appendix A sFormat of CSV System Configuration Files](#)".
  - Make sure that less than 200 resources are specified for registration or changing in the system configuration file.  
If it is necessary to specify more than 200 resources for registration or changing, do by importing multiple system configuration files.
  - When importing system configuration files which begins with "RCXCSV,V1.0" in the first line, the agent cannot automatically be registered. Moreover, the registration fails in cases where a spare server is defined to a VM host in the system configuration file.
2. Open and log in to the ROR console according to "7.1 Login" of the "Setup Guide CE".
  3. In the ROR console, select [File]-[Import] from the menu.  
The [Import System Configuration File] dialog is displayed.

4. Specify a configuration file prepared in 1.
5. Click <OK>.

The import process starts. The system configuration file is verified first, and then resources are imported one by one, following the order defined by the system configuration file.

The processing of resource registration or change is executed after the verification.

The process status can be checked in the Recent Operations area of the ROR console.

Clicking <Cancel> in the Recent Operations area displays a confirmation dialog and stops the import process. The <Cancel> button interrupts the import process after completing the current process. Note that the processing performed up to the error point is effective in the system.

## Point

---

- The "SpareServer", "ServerAgent" and "ServerVMHost" sections must meet the conditions below when performing pre-configuration.

- a. Spare server section ("SpareServer")

**In cases where the specified spare server has no operating system installed**

The physical server which is defined as a spare server must not be defined in "ServerWWNN", "ServerAgent", or "ServerVMHost" sections.

**When configuring a server using I/O virtualization as a spare server**

The server must meet one of the following conditions:

- HBA address rename information must already be configured on the physical server in which a spare server is defined
- A VIOM server profile must already be configured on the physical server in which a spare server is defined

**In cases where the specified spare server is a VM host**

The physical server which is defined as a spare server must already be registered for the Resource Orchestrator agent.

**When configuring a server using WWN information coordinating with ESC as a spare server**

WWN information must already be configured on the primary server and the spare server.

If the above conditions are not meet, divide the section as different CSV files, and import them one by one.

- b. Agent section ("ServerAgent" or "ServerVMHost")

To register an agent, it must fulfill all of the following conditions. Please import agents only if they meet all these conditions.

The agent of Resource Orchestrator must already be installed on the managed server.

An OS must be running on the managed server.

The agent of the target physical server must be registered, or the agent registration section defined in the system configuration file.

- In the "Server" section, when registering or changing managed servers in different subnets than the admin server, one of the following conditions must be fulfilled:
    - The target subnet information is registered.
    - The target subnet's information is defined in the "Subnet" section of the CSV format system configuration file.
- 

## Note

---

- When registering a new server with the registered primary server, and configuring it as a spare server, import the "Server" section and "SpareServer" section separately.
  - When changing physical server names during pre-configuration, it cannot be performed at the same time as other pre-configuration operations. Import the "Server" section separately from other sections.
-

6. When the import is completed successfully, a message is displayed in the Recent Operations area.

## Point

---

### - Error handling

The processing of resource registration or change is executed after the verification of the system configuration file during import.

If an error occurs during the verification process, which means an invalid value exists in the system configuration file, an error message is displayed only in the event log. Correct the system configuration file, and import it again.

Invalid content also includes invalid section headers.

If there is an error message displayed, but the values in the specified line are all correct, check whether the section header is correct or not.

If an error occurs during registration and change process, an error message is displayed in both the recent operations area and the event log. In this case, the process is finished up to the previous line setting, that is, before the system configuration file line number which message is displayed. Correct the system configuration file and rectify the problem, then import it again. The process will resume from the position where it stopped.

### - Import log file

The import log is saved in the following location on the manager.

In cases where an error occurs in the verification step, which means the processing of registration or changing the resource has not started yet, no log file is created.

[Windows]

*Installation\_folder*\Manager\var\log\config.log

[Linux]

/var/opt/FJSVrcvmr/log/config.log

### - Backing up the manager prior to import automatically

When importing is performed by a user, exporting is also automatically executed. The export file is saved as the backup of the manager configuration. Use this file to return to the previous values if there is an input error in the system configuration file. Note that the backup can store the latest five versions.

The system configuration file backup can be stored in the following folder on the manager.

[Windows]

Folder

*Installation\_folder*\Manager\var\config\_backup

File name

rcxconf-*YYYYMMDDHHMMSS*.csv (the date and time are shown in *YYYYMMDDHHMMSS*)

[Linux]

Directory

/opt/FJSVrcvmr/var/config\_backup

File name

rcxconf-*YYYYMMDDHHMMSS*.csv (the date and time are shown in *YYYYMMDDHHMMSS*)

---

7. Perform post-setting operations.

If the import is completed successfully, perform the following procedures if required.

- If HBA address rename is set, then restart the relevant managed server.
- If the agent is registered, perform either one of the following to enable further backup or cloning operations.
  - Restart the managed server.
  - Restart the Related Service described in "7.3 Starting and Stopping the Agent" of the "Setup Guide CE".

## 6.3 Exporting the System Configuration File

---

This section explains the method for exporting a system configuration file containing the current system settings.

Use the following procedure to export the system configuration file in CSV format from the ROR console.

1. Open and log in to the ROR console according to "7.1 Login" of the "Setup Guide CE".
2. In the ROR console, select the [File]-[Export] menu item.
3. The export process starts automatically.
4. When the process complete successfully, the [File Download] dialog is displayed.

Click one of the following.

- When clicking <Save>

As the [Save As] dialog is displayed, specify the destination folder and file name, and then save the file. Note that the system configuration file can be exported only in the CSV format.

- When clicking <Open>

Open the file using an application (such as Excel) associated to CSV files.

- When clicking <Cancel>

Export operations will be cancelled.

### Note

- If any server is in switchover state, the server name is enclosed in parentheses, such as "(name)".
- The admin server subnet information is not output in the "Subnet" section.

### Point

#### **Error handling**

If an error occurs during the export, an error message is displayed. Follow the message diagnostic to resolve the problem.

# Chapter 7 Registering Resources in Resource Pools

This section explains how to register a resource managed by Resource Orchestrator to a resource pool.

A resource pool is a type of resource folder displayed on the orchestration tree of ROR console, which stores the resources for selection when creating or adding L-Servers.

A resource pool type is specified when creating a resource pool, and only resources of a specific type are stored in each type of resource pool. When installing Resource Orchestrator, one resource pool is created for each resource pool type. For details on operating multiple resource pools, refer to "[Chapter 12 Resource Pool Operations](#)".

This section explains how to register resource pool types and resources to a resource pool.

Table 7.1 Registering Resources to Resource Pools Based on Resource Type

Resource pool types	Type of Resources Stored in the Resource Pool	Method of Registration to the Resource Pool	Necessity of Registration Based on Server Type	
			Physical L-Server	Virtual L-Server
VM pool	VM host resources	For details, refer to " <a href="#">7.1 VM Host Resources</a> ".	No	Yes
Server pool	Physical server resources	For details, refer to " <a href="#">7.2 Physical Server Resources</a> ".	Yes	No
Storage pool	Virtual storage resources or disk resources	For details, refer to " <a href="#">7.5 Storage Resources</a> ".	Yes	Yes
Network pool	Network resources or network devices	Refer to " <a href="#">7.3 Network Resources</a> " or " <a href="#">7.4 Network Devices</a> ".	Yes	Yes
Address pool	Address set resource	For details, refer to " <a href="#">7.6 Address Set Resources</a> ".	Yes	Yes (*1)
Image pool	Image resources The following two types are available: <ul style="list-style-type: none"> <li>- Virtual image resource An image that is created using a template from a VM management software for VM guest creation, or that is collected as a cloning image from an L-Server.</li> <li>- Physical image resources An image that uses a cloning image from cloning of a physical server in ROR VE.</li> </ul>	<ul style="list-style-type: none"> <li>- For details on how to register an image that uses a template from VM management software, refer to "<a href="#">7.7.1 Virtual Image Resources</a>".</li> <li>- For details on how to register a cloning image that was collected using ROR VE, refer to "<a href="#">7.7.2 Physical Image Resources</a>".</li> <li>- For details on how to collect cloning images from an L-Server, refer to "<a href="#">11.5.1 Collecting and Registering Cloning Images</a>".</li> </ul>	Yes (*2)	Yes (*3)

Yes: Required

No: Not Required

\*1: When using RHEL5-Xen or RHEL-KVM, it is necessary to register MAC addresses.

\*2: When collecting cloning images from L-Servers, the cloning images are automatically stored in image pools.

\*3: When using templates, register them to image pools.

## Information

For details on configuration modification, registration release, and deletion of resources registered in resource pools, refer to "[12.3 Resource Operations](#)".

## 7.1 VM Host Resources

---

This section explains how to register a VM host in a VM pool.

Moving an L-Server (migration) is only possible between VM hosts belonging to the same cluster group, when two or more cluster groups are registered in the same VM pool.

Use the following procedure to register a VM host in a VM pool:

1. In the ROR console orchestration tree, right-click the target VM pool, and select [Register Resources] from the popup menu. The [Register Resources] dialog is displayed.

2. Select the VM host to register.

The list of the VM hosts that can be registered is displayed in the resource list. Select the VM host that you want to register using the "Select" checkbox, or select all VM host resources displayed in the resource list by checking <Select all>.

3. Click <OK>.

The VM host resource is registered.

## 7.2 Physical Server Resources

---

This section explains how to register a physical server in a server pool.

Use the following procedure to register a physical server in a server pool:

1. In the ROR console orchestration tree, right-click the server pool, and select [Register Resources] from the popup menu. The [Register Resources] dialog is displayed.

2. Select the physical server to register.

The list of the physical servers that can be registered is displayed in the resource list. Select the physical server that you want to register using the "Select" checkbox, or select all registered physical servers displayed in the resource list by checking <Select all>.



- When the "Display servers with OS installed" checkbox is checked, physical servers with OS's installed are displayed in the resource list. However, physical servers with OS's installed cannot be used for creating L-Servers.

Do not check the "Display servers with OS installed" checkbox.

- Do not select servers for which I/O virtualization is not available, such as other vendor's servers, as those servers cannot be used to create physical L-Servers.

3. Click <OK>.

The physical server is registered.

## 7.3 Network Resources

---

This section explains how to create a network resource and register the resource in a network pool.

Network resources can be created using the following methods:

- Creating new network resources

Refer to "[7.3.1 Creating New Network Resources](#)".

- Creating network resources using already registered admin LAN subnets

Refer to "[7.3.2 Create Network Resources Using Already Registered Admin LAN Subnets](#)".

The network resource for the admin LAN that is directly connected from the manager is automatically created with the values of "AdminLan" for the network resource name and "1" for the VLAN ID.

To change these values, delete "AdminLan", and then create a new network resource following the procedure provided in ["7.3.2 Create Network Resources Using Already Registered Admin LAN Subnets"](#).

When configuring the subnet settings in network resources, confirm that the following IP addresses are not included in the subnet scope. Set them as excluded addresses when they are included in the subnet scope.

- IP address for detected, unregistered servers
- IP address of VM management software
- Admin LAN IP address for LAN switch blade
- IP address for default gateway
- iRMC address
- Admin IP address for network device

## 7.3.1 Creating New Network Resources

---

Use the following procedure to create a new network resource and register it in a network pool:

When using VMware as server virtualization software, and using the same VLAN for both the service console and the port group, configure the port group name to be excluded from network auto-configuration in the "VMware Excluded Port Group Definition Files" beforehand.

An L-Server can be created, even if there are multiple port groups which have the same VLAN.

When a user wants to perform network auto-configuration using an arbitrary physical NIC, specify a physical LAN segment of a server NIC definition from network resources, defining a physical NIC to use for the server NIC definitions. To reflect the physical NIC configuration specified in the server NIC definition file on Resource Orchestrator, use the `rcxadm nicdefctl commit` command.

The command operations enable the network auto-configuration to perform in the configurations using arbitrary physical NICs. However, when using the server NIC definitions, use commands to operate.



See

- For details on how to specify a port group to be excluded from network auto-configuration, refer to "2.12 VMware Exclusion Port Group Definition File" of the "Reference Guide (Resource Management) CE".
- For details on the `rcxadm nicdefctl` command, refer to "1.7.16 rcxadm nicdefctl" of the "Reference Guide (Resource Management) CE".
- For details on server NIC definition, refer to "2.11 Server NIC Definition" of the "Reference Guide (Resource Management) CE".

1. In the ROR console orchestration tree, right-click the target network pool, and select [Create Network Resource]-[New] from the popup menu.

The [Create a network resource] dialog is displayed.

2. Enter the following items:

Network resource name

Enter a name for the network resource.

- When selecting "Admin LAN" for type

Enter up to 16 characters beginning with an alphabet character (upper or lower case), and including alphanumeric characters (upper or lower case), underscores ("\_"), periods ("."), or hyphens ("-").

- If a type other than "Admin LAN" is selected.

Enter up to 32 characters beginning with an alphanumeric character (upper or lower case), and including alphanumeric characters (upper or lower case), underscores ("\_"), periods ("."), or hyphens ("-").

Type

Set the network resources type to create using the following option buttons:

- Public LAN
- Admin LAN
- iSCSI boot

## Information

A network resource for the admin LAN is automatically created as the management network that is specified when installing Resource Orchestrator.

When using two or more management networks, create two or more network resources for admin LANs.

If creating a network resource for the admin LAN, the admin LAN subnet will be registered automatically.

For details on how to register admin LAN subnets, refer to "[2.10 Registering Admin LAN Subnets](#)".

## Note

- When creating the public LAN, a network resource name and a VLAN ID must be entered.
- When creating a network resource for the admin LAN, a network resource name, a VLAN ID, a subnet address, and a subnet mask must be entered.
- When creating a network resource for iSCSI boot, a network resource name, a VLAN ID, a subnet address, and a subnet mask must be entered.
- In a clustered manager configuration, when registering an admin LAN subnet for the first time, perform "[Settings for Clustered Manager Configurations](#)" in the "[2.10 Registering Admin LAN Subnets](#)". When setting, replace "admin LAN subnet" as "network resource for the admin LAN".  
Admin LAN subnet is set at the same time when creating new network resources.

### Detail configuration

Make settings to suit usage.

- Use configured virtual switches.  
Select this checkbox to use a virtual switch that was set up beforehand.  
Clear this checkbox if VLAN auto-configuration is to be used for the external port of the LAN switch blade.
- Automatically configure VLANs for the uplink ports  
Select this checkbox if VLAN auto-configuration is to be used for the external port of the LAN switch blade.

### VLAN ID/Uplink port settings

Perform the settings for VLAN IDs and uplink ports.

#### VLAN ID

Specify the VLAN ID to allocate to the LAN switch blade and virtual switch. Select a VLAN ID allocated to the uplink port of the LAN switch blade, or enter a number. Specify a pre-designed VLAN ID.

Enter an integer between "1" and "4094".

- For external networks including blade servers  
Select the VLAN ID of an uplink port.
- For internal networks or external networks with rack mount servers only:  
Enter a VLAN ID.

Specifying VLAN IDs and clicking <Setting> displays the [Define VLAN ID/Uplink port settings] dialog.



## Uplink port settings (Chassis/LAN Switch/Position/Port/LAG Name) (Optional)

If you connect an external network to an L-Server, perform the settings for the internal ports and virtual switches of the LAN switch blade to enable communication for the specified ports.

Information for an uplink port consists of the following information.

- Chassis

Displays the chassis name for the external connection port.

- LAN Switch

Displays the switch name for the external connection port.

- Location to mount

Displays the slot number in the chassis for the external connection port.

- Port

Displays the port number for the external connection port. If the external port is a link aggregation group, the port numbers of the member ports are displayed, separated by commas (",").

- LAG

If the external port is a link aggregation group, the link aggregation group name is displayed.

- Untagged VLAN

Displays the Untagged VLAN information set in the external connection port.

- Tagged VLAN

Displays the Tagged VLAN information set in the external connection port, separated by commas (",").

Make the settings for the external port as follows.

- a. Click <Setting> in [VLAN ID/Uplink port settings] in the [Create a network resource] dialog.

The [Uplink port settings] dialog is displayed.

- b. Specify the uplink port to use when automatically setting external networks, including blade servers.

Select two ports to make into a pair.

**If there are multiple chassis**

Select the all ports of the chassis to use.

**When specifying a port in a link aggregation configuration (When specifying LAN switch blade PY CB Eth Switch/IBP 10Gbps 18/8)**

Set a link aggregation configuration on the uplink ports of LAN switch blades in advance, reflect the link aggregation information for LAN switch blades, and then select a configured link aggregation group name.

**When specifying a port in a link aggregation configuration (When specifying something else)**

Confirm the settings of the LAN switch blade in advance, and select one or more ports for which link aggregation has been configured.

For details on how to configure link aggregation on LAN switch blades, refer to "C.3.2 Preparations" in the "Setup Guide CE".

The ports displayed in "Target Uplink Ports" can be filtered based on the following items.

- "Filter ports by VLAN ID"

- Chassis name

- Switch name

- Location to mount

- Port number

- LAG name

If the VLAN auto-configuration of the external port is to be used, clear the "Filter ports by VLAN ID" checkbox, and check the checkbox of the external port that was set up beforehand.

Do not specify for internal networks or external networks with rack mount servers only.

#### Subnet settings (Optional)

This setting can be omitted if "Public LAN" is specified for the type.

Enter if you want to automatically set a network and IP address for the NIC connected to the network resource when deploying an image on an L-Server. IP addresses included in subnet addresses are allocated to L-Servers, but it is possible to specify a range of addresses to exclude. Clicking <Add> will display the "Define start and end IP addresses" dialog, specify the range of IP addresses to exclude, and click <Add>. To reactivate excluded IP addresses, check the appropriate checkboxes on the list, and click <Delete>. Clicking <OK> displays the original dialog with the entered settings.

Network addresses and broadcast addresses are automatically excluded.

#### Information

If a subnet address is set for a network resource, the IP address can be automatically set when deploying an image to an L-Server. If no subnet address is set, the DHCP settings are adopted.

#### Subnet address/mask

Enter the subnet address and subnet mask to set using the "xxx.xxx.xxx.xxx" format.

The maximum value for a subnet mask is 255.255.255.255 (32-bit mask) and the minimum value is 255.255.0.0 (16-bit mask). However, 255.255.255.254 cannot be specified.

#### Note

When creating a physical L-Server, specify a different subnet from admin LAN for the public LAN subnet.

#### Default gateway (Optional)

This setting can be omitted if something other than "Admin LAN" is selected.

Enter the IP address for the default gateway to use when communicating externally of the subnet.

#### Exclusion IP range (Optional)

IP addresses that are being used for other devices but you do not want to automatically allocate to an L-Server (because of plans for future use) can be specified.

#### Note

Of the IP addresses specified for the Subnet address/mask, the following addresses are automatically excluded from the target of allocation. They cannot be specified for Exclusion IP range.

- Admin server
- Network address and broadcast address

#### Label (Optional)

A custom label can be defined for the network resource. User-defined labels make it easier to identify the resource.

Enter up to 32 alphanumeric characters or symbols.

#### Comment (Optional)

A custom comment can be defined for the network resource. For example, registering detailed work content, troubleshooting, and recovery procedures can speed up recovery.

Enter up to 256 alphanumeric characters or symbols.

3. Click <OK>.

The network resource is created and registered in a network pool.

When checking the "Automatically configure VLANs for the uplink ports." checkbox in the VLAN ID/Uplink port settings, a tagged VLAN is automatically configured in the uplink port of LAN switch blade, when creating a network resource.

## 7.3.2 Create Network Resources Using Already Registered Admin LAN Subnets

---

Use the following procedure to create a network resource using an admin LAN subnet, and register it in a network pool:

1. In the ROR console orchestration tree, right-click the target network pool, and select [Create Resource]-[Using existing admin subnet] from the popup menu.  
The [Create a network resource] dialog is displayed.

2. Enter the following items:

Network resource name

Clicking <Select> displays the [Select a subnet for the admin LAN] dialog.

Select an already configured admin LAN subnet.

When the selected admin LAN subnet has no name, enter the name of a network resource for "Network resource name".

Enter up to 32 characters beginning with an alphanumeric character (upper or lower case), and including alphanumeric characters (upper or lower case), underscores ("\_"), periods ("."), or hyphens ("-").

Click <OK>.

Type

"Admin LAN" is displayed.

VLAN ID/Uplink port settings

Refer to "[VLAN ID/Uplink port settings](#)" of "[7.3.1 Creating New Network Resources](#)".

Subnet settings (Optional)

Refer to "[Subnet settings \(Optional\)](#)" of "[7.3.1 Creating New Network Resources](#)".

Label (Optional)

Refer to "[Label \(Optional\)](#)" of "[7.3.1 Creating New Network Resources](#)".

Comment (Optional)

Refer to "[Comment \(Optional\)](#)" of "[7.3.1 Creating New Network Resources](#)".

3. Click <OK>.

The network resource is created and registered in a network pool.

When checking the "Automatically configure VLANs for the uplink ports." checkbox in the VLAN ID/Uplink port settings, a tagged VLAN is automatically configured in the uplink port of LAN switch blade, when creating a network resource.

## 7.4 Network Devices

---

This section explains how to register a network device in a network pool.

Use the following procedure to register a network device in a network pool as a resource:

1. Right-click the target network pool in the orchestration tree, and select [Register Resources] from the popup menu.  
The [Register Resources] dialog is displayed.
2. Check the "Select" checkbox for the resource to register.

3. Click <OK>.

The network device is registered in the network pool as a resource.

### Note

The network devices to be registered in a network pool are the only devices for which the XML definition (Type element) during registration or modification as resources is "Firewall".

### Information

#### Script execution to perform auto-configuration of network devices

When there are the folder names of rulesets corresponding to "Vendor" and "Unit Name" or "Model Name" of network devices registered in the network pool, the scripts registered in the relevant ruleset folder are executed.

Use the following procedure to confirm the "Vendor" and "Unit Name" or "Model Name" of the network device.

1. Select the network device to confirm in the network device tree on the ROR console.
2. Select the [Resource Details] tab.

In the "General" section, "Vendor", "Unit Name" and "Model Name" are displayed.

## 7.5 Storage Resources

---

This section explains how to register a storage resource in a storage pool.

The registration method varies depending on the type of storage resource.

### For Physical L-Servers

- Virtual Storage Resources

Refer to "[Virtual Storage Resources and Disk Resources for Physical L-Servers](#)".

- Disk Resources

Refer to "[Virtual Storage Resources and Disk Resources for Physical L-Servers](#)".

- iSCSI Boot Disks

To register iSCSI boot disks, execute the iSCSI boot operation command (rcxadm iscsictl).

For details on the rcxadm iscsictl command, refer to "1.7.12 rcxadm iscsictl" of the "Reference Guide (Resource Management) CE".

When registering a disk for iSCSI boot in a storage pool, it is recommended to use the appropriate physical storage unit resource allocation method (thin provisioning or thick provisioning) for that disk.

This does not affect the allocation method of storage resources in the storage pool.

### Note

If iSCSI boot information already registered is specified, the registered information continues to exist.

If the registered information is changed, delete the iSCSI boot information using the unregister subcommand, and then register the iSCSI boot information by using the register subcommand again.

## For Virtual L-Servers

- Virtual Storage Resources

Refer to "[Virtual Storage Resources and Disk Resources for Physical L-Servers](#)".

- Disk Resources [KVM]

Register raw devices or partitions that have been recognized by VM hosts, as disk resources.

To register disk resources, use the `rcxadm disk register` command.

When performing migration of VM guests corresponding to virtual L-Servers, register raw devices or partitions that are shared between VM hosts, as disk resources defined to be shared.

For details on the `rcxadm disk` command, refer to "1.3.4 `rcxadm disk`" of the "Reference Guide (Resource Management) CE".



[KVM]

For disk resources used by virtual L-Servers, the content of disks will remain when disks are detached from the L-Server, or when the L-Server itself is deleted.

When using disk resources that are registered in global pools, perform operation carefully, as the disk resources can be allocated to any users.

When using disk resources for virtual L-Servers, it is recommended to operate the disks in a local pool, and delete data on the disks during deletion of L-Servers or detachment of disks.

Use the following methods to delete the data on disks.

- Using an OS, perform disk formatting while the L-Server is connected
- Using a function of the storage, perform disk formatting (For ETERNUS)
- Create a LUN again

When registering a disk resource for virtual L-Servers in a storage pool, it is recommended to use the appropriate physical storage unit resource allocation method (thin provisioning or thick provisioning) for that disk resource.

This does not affect the allocation method of storage resources in the storage pool.

## Virtual Storage Resources and Disk Resources for Physical L-Servers

Use the following procedure to register a storage resource:

1. In the ROR console orchestration tree, right-click the target storage pool, and select [Register Resources] from the popup menu. The [Register Resources] dialog is displayed.
2. Select the storage resource to register from "Resources".

### Resources

#### Virtual storage

When creating a specified size of disk automatically from the virtual storage during L-Server creation, select "Virtual storage".

When "Virtual Storage" is selected, the virtual storage resources which can be registered are displayed in the resource list.

Select the virtual storage resource which you want to register using the "Select" checkbox of the resources, or select all registered virtual storage resources by checking <Select all>.



Virtual storage resources cannot be selected for EMC storage.

## Disk resource

When using a disk that has been created in advance as an L-Server, select "Disk resource".

When the following items are specified as search conditions, the list of the relevant disk resources that can be registered is displayed.

### Virtual storage

Select a virtual storage where there is a disk that has been created in advance.

### Size

Enter the size of the disk resource.

#### Minimum value

Enter the lowest value of the disk size to be searched as a number with up to one decimal place, in units of gigabytes. Check the "Minimum value" checkbox, and enter a value lower than the maximum value.

#### Maximum value

Enter the highest value of the disk size to be searched as a number with up to one decimal place, in units of gigabytes. Check the "Maximum value" checkbox, and enter a value higher than the minimum value.

Depending on the value of the second decimal place of the disk size, matching disks may not be able to be displayed in the result. For search conditions, specify a size allowing for errors.

### Resource Name

Specify the name of the disk to be found.

- Prefix match

Specify when searching for disks whose names begin with the specified string.

- Partial match

Specify when searching for disks whose names include the specified string.

Select the disk resource which you want to register using the "Select" checkbox of the displayed disk resources, or select all registered disk resources by checking <Select all>.

When using Thin Provisioning or Automatic Storage Layering, the displayed resources that can be registered differ depending on whether Thin Provisioning attributes of storage pools are configured or not.

For details on resources which can be registered, refer to "4.3.1.2 Storage Configuration" of the "Setup Guide CE".

### 3. Click <OK>.

The storage resource is registered.



## Note

When using a LUN that has been created in advance and a LUN for iSCSI boot as a disk resource, if the L-Server is deleted or disks are deleted from L-Servers, the content of disks will remain (is not deleted).

When using disk resources that are registered in global pools, perform operation carefully, as the disk resources can be allocated to any users.

When using a LUN that has been created in advance as a disk resource, it is recommended to operate the LUN in a local pool, and delete data on the disk during deletion of L-Servers or detachment of disks.

Use the following methods to delete the data on disks.

- Using an OS, perform disk formatting while the L-Server is connected
- Using a function of the storage, perform disk formatting (For ETERNUS)
- Create a LUN again

## 7.6 Address Set Resources

---

This section explains how to create an address set resource and register the resource in an address pool.

In the following cases, it is necessary to create address set resources and register them in the address pool:

- When creating physical L-Servers

- For Blade Servers

For WWNs and MAC addresses, it is necessary to create address set resources and register them in the address pool.

- For Rack Mount Servers

For WWNs, it is necessary to create address set resources and register them in the address pool.

It is not necessary to create or register address set resources, since MAC addresses allocated to network adapters of physical servers are used.

- When creating a virtual L-Server with the server type "RHEL-Xen" or "RHEL-KVM"

For MAC addresses, it is necessary to create address set resources and register them in the address pool.

Use the following procedure to create an address set resource and register it in an address pool:

### Registration in Address Pools (WWNs)

To register a WWN in an address pool, execute the `rcxadm addrset create` command.

For details on the `rcxadm addrset create` command, refer to "1.3.10 `rcxadm addrset`" of the "Reference Guide (Resource Management) CE".

### Registration in Address Pools (MAC Addresses)

To register a MAC address in an address pool, execute the `rcxadm addrset create` command.

For details on the `rcxadm addrset create` command, refer to "1.3.10 `rcxadm addrset`" of the "Reference Guide (Resource Management) CE".

An address set resource will be created and registered in the address pool.

## 7.7 Image Resources

---

This section explains how to register a cloning image to a resource pool.

The registration method varies depending on the type of image resource.

### 7.7.1 Virtual Image Resources

---

This section explains how to register a cloning image to a resource pool.

When an image (template) has been created in advance using VM management software, register it to the image pool using the following procedure:

1. In the ROR console orchestration tree, right-click the target image pool, and select [Register Resources] from the popup menu.

The [Register Resources] dialog is displayed.

2. Select a cloning image to register.

3. Click <OK>.

The cloning image is registered.



For images (templates) created in advance using VM management software, change the name of a template as follows to enable Resource Orchestrator to process it:

- Delete any characters other than alphanumeric characters and underscores ("\_").
- Ensure an alphabetic character is used for the first character.
- When using an image created beforehand (template), configure the system disk for template using the following settings:

[VMware]

SCSI:0:0

[Hyper-V]

IDE:0:0

[Oracle VM]

- For PVM (Para-Virtualized Machine)  
xvda
- For HVM (Hardware Virtualized Machine)  
hda

When using something other than the above for the system disk, the L-Server creation process that accompanies cloning image deployment may fail.

---

## 7.7.2 Physical Image Resources

---

This section explains how to register a cloning image that was collected using ROR VE to a resource pool.

1. In the ROR console orchestration tree, right-click the target image pool, and select [Register Resources] from the popup menu.

The [Register Resources] dialog is displayed.

2. Select a cloning image to register.
3. Click <OK>.

The cloning image is registered.



# Chapter 8 L-Server Template Operations

This section explains how to operate an L-Server template.

An L-Server template comprises pre-defined specifications (number of CPUs, memory capacity, disk capacity, number of NICs, etc.) for an L-Server. Use the following XML format.

There are two ways to create an L-Server template:

- Creation Using the Wizard GUI

L-Server templates can be created using the wizard GUI. For details, refer to "[8.1.2 Creating a Template](#)".

- Creation Using an Editor

L-Server templates can be created using an editor.

The L-Server template XML definitions differ depending on whether the server is a physical L-Server or virtual L-Server.

For XML definitions of physical L-Server templates, refer to "2.2.1 Physical L-Server Templates" of the "Reference Guide (Resource Management) CE".

For XML definitions of virtual L-Server templates, refer to "2.2.2 Virtual L-Server Templates" of the "Reference Guide (Resource Management) CE".

Use the UTF-8 character code for L-Server templates.

## 8.1 Operations Using the Wizard GUI

This section explains how to operate an L-Server template using the wizard-style GUI.

From the wizard GUI, it is possible to perform the following operations:

- Viewing a Template

Refer to "[8.1.1 Viewing a Template](#)".

- Creating a Template

Refer to "[8.1.2 Creating a Template](#)".

- Modifying a Template

Refer to "[8.1.3 Modifying a Template](#)".

- Copying a Template

For details, refer to "[8.1.4 Copying a Template](#)".

- Deleting a Template

Refer to "[8.1.5 Deleting a Template](#)".

- Export

Refer to "[8.1.6 Exporting a Template](#)".

- Import

Refer to "[8.1.7 Importing a Template](#)".

- Creating a Template by using an another Template that has been made

Refer to "[8.1.8 Creating a Template by using an another Template that has been made](#)".

### 8.1.1 Viewing a Template

Use the following procedure to view a list of L-Server templates:

1. Select the ROR console orchestration tree, and select [File]-[L-Server Template]-[Edit] from the ROR console menu.  
The [ROR L-Server Template Editor] window is displayed.

2. The registered information of L-Server templates is displayed.

The L-Server template information and the buttons that will be displayed are shown below.

#### Buttons

##### <Create> button

Click when creating an L-Server template. For details, refer to "[8.1.2 Creating a Template](#)".

##### <Import> button

Click when importing an L-Server template. For details, refer to "[8.1.7 Importing a Template](#)".

#### L-Server template List

In each page of the list, 10 items can be displayed.

It is possible to specify the page number to display, move forwards and backwards by single pages, and move to the first or last page.

##### Name (Label)

The L-Server template name and label are displayed.

##### Server Type

The server type is displayed.

For physical L-Server templates, "Physical" is displayed.

For virtual L-Server templates, "VM" is displayed.

##### Server Specifications

When the server type is "Physical", the model name of the server is displayed.

When the server type is "VM", the CPU frequency multiplied by the number of CPUs, and the memory size are displayed.

##### Disk Capacity

The disk capacity is displayed, in units of GBytes.

##### NIC Number

The number of NICs for the L-Server template is displayed.

##### Redundancy

Server redundancy is displayed.

##### Position

The boot location is displayed.

##### <Modify> button

Click when modifying an L-Server template. For details, refer to "[8.1.3 Modifying a Template](#)".

##### <Copy> button

Click when copying an L-Server template. For details, refer to "[8.1.4 Copying a Template](#)".

##### <Delete> button

Click when deleting an L-Server template. For details, refer to "[8.1.5 Deleting a Template](#)".

##### <Export> button

Click when exporting an L-Server template. For details, refer to "[8.1.6 Exporting a Template](#)".

## L-Server List

In each page of the list, 10 items can be displayed.

It is possible to specify the page number to display, move forwards and backwards by single pages, and move to the first or last page.

### Name

The L-Server name is displayed.

### Server Type

The server type is displayed.

For physical L-Servers, "Physical" is displayed.

For virtual L-Servers, "VM" is displayed.

### Server Specifications

When the server type is "Physical", the model name of the server is displayed.

When the server type is "VM", the CPU frequency multiplied by the number of CPUs, and the memory size are displayed.

### Disk Capacity

The disk capacity is displayed, in units of GBytes.

### NIC Number

The number of NICs on the L-Server is displayed.

### Position

The boot location is displayed.

### <Export of Template> button

Click when exporting an L-Server template.

For details, refer to "[8.1.8 Creating a Template by using an another Template that has been made](#)".

## 8.1.2 Creating a Template

---

This section explains how to create an L-Server template.

To create a Physical L-Server Template, refer to "[8.1.2.1 Creating a Physical L-Server Template](#)".

To create a Virtual L-Server Template, refer to "[8.1.2.2 Creating a Virtual L-Server Template](#)".

### 8.1.2.1 Creating a Physical L-Server Template

Use the following procedure to create a physical L-Server template:

1. Select [File]-[L-Server Template]-[Edit] from the ROR console menu.

The [ROR L-Server Template Editor] window is displayed.

2. In the [ROR L-Server Template Editor] window, click <Create>.

The [Create L-Server Template] dialog is displayed.

3. Configure the following settings:

- a. Enter basic information.

#### Name

Enter the name of the L-Server template.

The character string within 32 characters composed of alphanumeric character, underscore ("\_"), and hyphen ("-") is specified in the first alphanumeric character.

### Label (Optional)

Enter a label for the L-Server template.

The character string within 32 characters is specified.

### Comments (Optional)

Enter a comment for the L-Server template.

The character string within 256 characters is specified.

### Server Type

Select a server type.

Select "Physical" when creating a physical L-Server template.

### Server Specification Methods

When Server Type is "Physical", the "Model", and "CPU and Memory" of the server are displayed.

Click <Model> to select a model name to allocate to the L-Server.

Clicking <CPU and Memory> enables you to enter the number of CPUs, CPU performance, and memory size of the server allocated to the L-Server.

### Model

Select a model name.

The following models are displayed:

- PRIMERGY BX620 S4
- PRIMERGY BX620 S5
- PRIMERGY BX620 S6
- PRIMERGY BX920 S1
- PRIMERGY BX920 S2
- PRIMERGY BX922 S2
- PRIMERGY BX924 S2
- PRIMERGY BX960 S1
- PRIMERGY RX100 S5
- PRIMERGY RX100 S6
- PRIMERGY RX200 S4
- PRIMERGY RX200 S5
- PRIMERGY RX200 S6
- PRIMERGY RX300 S4
- PRIMERGY RX300 S5
- PRIMERGY RX300 S6
- PRIMERGY RX600 S4
- PRIMERGY RX600 S5
- PRIMERGY RX900 S1
- PRIMERGY TX150 S6
- PRIMERGY TX150 S7
- PRIMERGY TX200 S5
- PRIMERGY TX200 S6

- PRIMERGY TX300 S4
- PRIMERGY TX300 S5
- PRIMERGY TX300 S6
- PRIMEQUEST 1000
- Other PC servers

Set the basic information, and click <Next>.

- b. Enter information on the CPU and memory.

**CPU Perf**

Select the CPU frequency. Enter a number between 0.1 and 10.

**CPU Num**

Enter the number of CPUs to be allocated to the L-Server.

Enter a number between 1 and 240.

**Memory Size**

Enter the memory capacity to be allocated to the L-Server.

Enter a number between 0.1 and 8192.

Set the basic information, and click <Next>.

- c. Enter NIC information.

**NIC**

Enter the number to identify the NIC definition to allocate to the L-Server.

**Index**

Index is a number in which the NIC definition allocated in L-Server is identified.

Configure a number in the following range:

0 to 31

Click <Add NIC> to add a NIC.

Clicking <Delete> deletes a NIC.

**NIC Num**

Specify the number of network resources (NumOfNetworkLinks) to configure for NICs. Each index is specified.

Specify a number in the following range:

1 to 4098

**NIC Group (Optional)**

Specify a NIC redundancy group. Specify a NIC redundancy group, if necessary.

Up to 16 NIC groups can be added.

**Index**

Enter a NIC redundancy group index. Configure a number in the following range:

0 to 15

**NIC Num**

Enter the number of network resources (NumOfNetworkLinks) contained in the NIC redundancy group.

Specify a number in the following range:

1 to 4098

One network resource is set to NIC and the NIC redundancy group when omitting it.

Click <Add NIC Group> to add a NIC Group.

Click <Delete NIC Group> to delete a NIC Group.

#### **NIC**

Select a NIC index to configure as the NIC redundancy group. Two NICs must be specified for the group.

Enter the NIC information, and click <Next>.

- d. Enter the disk information.

#### **Disk**

Enter the disk capacity.

Enter a number in the following range:

0.1 to 2048

Clicking <Add> adds a disk.

Clicking <Delete> deletes a disk.

Up to 60 disk indexes can be added, in the range of between 0 to 59.

#### **DiskType**

Select a disk type.

- FC

- iSCSI

When "FC" is selected for the connection type, clicking <Add> adds a disk. The disk can be deleted by clicking <Delete> button.

Enter the disk information and click <Next>.

- e. Enter the information on server redundancy, alive monitoring, and boot location.

#### **Redundancy**

Select a server redundancy to be allocated to the L-Server.

Select "HA" when enabling redundancy.

Select "None" when not enabling redundancy.

#### **Alive Monitoring**

Configure alive monitoring as enabled or disabled.

#### **Repurpose**

Specify whether to release the server allocated to the L-Server when the power is turned off.

When not configuring repurpose, select " ".

When automatically releasing a server, select "true".

When not automatically releasing a server, select "false".

" " is selected by default.

#### **Selection method for spare servers**

Specify the selection method of spare servers.

When not configuring the method, select " ".

Select "name\_order", when selecting a server from the servers with the same model name in alphabetical order.

When selecting a server with the same or higher level of performance values, or a server with the least difference in the performance levels, select "keep\_spec".

" " is selected by default.

## FC connection pattern

Specify the name of the pattern file for FC connections.

The list of file names of pattern files for FC connections located under the directory in the manager environment is displayed as a pull-down menu.

[Windows]

*Installation\_folder*\Manager\etc\customize\_data\fc\_connection\_pattern

[Linux]

/etc/opt/FJSVrcvnr/customize\_data/fc\_connection\_pattern

"" is selected when there is no FCConnectionPattern file.

As for default, "" is selected.

When the fc\_connection\_pattern file is created after the L-Server template created, it is possible to input directly. Enter a string that is no more than 64 characters long, where the first character is a number or letter and the remaining characters are alphanumeric characters, underscores ("\_") and hyphens ("-").

- f. The dialog to confirm the entered information is displayed.

When "Are you sure to create a new L-Server Template?" is displayed, confirm the content, and then click <Create>.



See

For the input ranges for the [Create L-Server Template] dialog, refer to "2.2.1 Physical L-Server Templates" in the "Reference Guide (Resource Management) CE".

## 8.1.2.2 Creating a Virtual L-Server Template

Use the following procedure to create a virtual L-Server template:

1. Select [File]-[L-Server Template]-[Edit] from the ROR console menu.

The [ROR L-Server Template Editor] window is displayed.

2. In the [ROR L-Server Template Editor] window, click <Create>.

The [Create L-Server Template] dialog is displayed.

3. In the [Create L-Server Template] dialog, set the following items.

- a. Enter basic information.

### Name

Enter the name of the L-Server template.

The character string within 32 characters composed of alphanumeric character, underscore ("\_"), and hyphen ("-") is specified in the first alphanumeric character.

### Label (Optional)

Enter a label for the L-Server template.

The character string within 32 characters is specified.

### Comments (Optional)

Enter a comment for the L-Server template.

The character string within 256 characters is specified.

### Server Type

Select a server type.

Select "VM" when creating a virtual L-Server template.

## VM type

Select a VM type.

The following VM types are displayed:

- VMware
- Hyper-V
- RHEL-Xen
- RHEL-KVM
- Oracle VM

Set the basic information, and click <Next>.

### b. Configure the overcommit function.

When the VM type of basic information is one of following types, the functions can be configured.

- VMware
- Hyper-V
- RHEL-KVM

#### Overcommit

Decide whether to use the Overcommit function.

Select "true" when using the overcommit function.

Select "false" when not using the overcommit function.

"false" is selected by default.

### c. Enter information on the CPU and memory.

When the VM type of basic information is one of following types, the functions can be configured.

- VMware
- Hyper-V
- RHEL-KVM

#### CPU architecture

Select a CPU architecture. "IA" can be selected.

#### CPU Perf

Enter the CPU frequency. Enter a number between 0.1 and 8.0.

[Oracle VM]

Enter a number between 0.3 and 8.0.

#### CPU Reserve (Optional)

Enter the minimum size of CPU resources to be reserved for the L-Server. Enter when using the overcommit function.

Enter the value in the range from 0 to the *upper\_limit\_of\_the\_CPU\_performance*.

If left blank, "0" is set when creating an L-Server.

#### CPU Share (Optional)

Enter the relative proportion for allocation of CPU resources.

It is possible to specify it for VMware.

Enter when using the overcommit function.

Enter an integer between 1 and 1000000.

The value is set to number of CPUs \* 1000 when L-Server is created by default.



#### CPU Allocation Priority (Optional)

Enter CPU allocation priority.

It is possible to specify it for Hyper-V.

A number between 1 and 10000 can be specified.

If left blank, "100" is set when creating an L-Server.

#### CPU Num

Enter the number of CPUs to be allocated to the L-Server.

Enter a number between 1 and 8.

[Hyper-V]

Enter a number between 1 and 4.

[Oracle VM]

Enter a number between 1 and 32.

[RHEL-KVM]

Enter a number between 1 and 64.

#### Memory Size

Enter the memory capacity to be allocated to the L-Server.

Enter a number between 0.1 and 255, in units of gigabytes.

#### Memory Reserve (Optional)

Enter the minimum amount of memory resources to be reserved for the L-Server.

It is possible to specify it for VMware.

Enter when using the overcommit function.

Enter the value in the range from 0 to the *upper\_limit\_of\_the\_memory\_capacity*.

If left blank, the value specified for the memory size when creating an L-Server is configured.

#### Memory Share (Optional)

Enter the relative proportion for allocation of memory resources on the L-Server.

It is possible to specify it for VMware.

Enter when using the overcommit function.

Enter an integer between 0 and 1000000.

If left blank, the value specified for the memory size \* 1024 \* 10 when creating an L-Server is configured.

#### Memory buffer (Optional)

Specify the memory buffer.

It is possible to specify it for Hyper-V.

A number between 5 and 2000 can be specified.

By default, "20" is set when enabling a dynamic memory when L-Server is created.

#### Memory Weight (Optional)

Specify the memory allocation priority.

It is possible to specify it for Hyper-V.

A number between 0 and 10000 can be specified.

If left blank, "5000" is set when creating an L-Server.

### Startup RAM (Optional)

Specify the amount of an initial memory.

It is possible to specify it for Hyper-V.

Enter a number between 0.1 and memory capacity.

By default, memory capacity is set when enabling a dynamic memory when L-Server is created.

### Dynamic Memory (Optional)

It is possible to specify it for Hyper-V.

Specify "true" when enabling a dynamic memory.

Specify "false" when disabling a dynamic memory.

By default, this information is different depending on an amount of an initial memory and a set value of the memory buffer.

"True" is set when the amount of an initial memory or the memory buffer has already set.

Nothing is set when the amount of an initial memory and the memory buffer are unset. Enter the CPU and memory information, and click <Next>.

### d. Enter NIC information.

#### NIC Number

Enter when the server type is "VM".

Enter the number of NICs.

Enter a number between 1 and 10.

[RHEL-Xen]

Enter a number between 1 and 15.

[Oracle VM] [RHEL-KVM]

Enter a number between 1 and 8.

Enter the NIC information, and click <Next>.

### e. Enter the disk information.

#### Disk

Enter the disk capacity, in units of GBytes.

Enter a number in the following range:

0.1 to 2048 (GB)

[Xen]

0.1 to 999.9 (GB)

Clicking <Add> adds a disk.

Enter the disk number.

[VMware]

A number between 0 and 55 can be specified.

[Hyper-V] [Oracle VM]

A number between 0 and 59 can be specified.

[Xen]

A number between 0 and 251 can be specified.

[RHEL-KVM]

A number between 0 and 16 can be specified.

Enter the disk information and click <Next>.

- f. Enter the information on server redundancy, alive monitoring, and boot location.

#### Redundancy

Select a server redundancy to be allocated to the L-Server.

Select "HA" when enabling redundancy.

Select "None" when not enabling redundancy.

[Xen] [RHEL-KVM]

Only "None" can be specified.

#### Alive Monitoring

Configure alive monitoring as enabled or disabled.

This item can only be configured when "Redundancy" is enabled.

[Xen] [RHEL-KVM] [Oracle VM]

The alive monitoring configuration is not displayed.

#### Boot Location

Decide whether the physical location of servers to be allocated to the L-Server can be changed.

This item can be configured when "VM" is selected for "Server Type" in the basic information.

Select "Fixed" when starting the L-Server on the same VM host that operated last time.

Select "AttachAtBoot" when automatically selecting the optimal VM host when the L-Server is started.

[Xen]

Only "Fixed" can be specified.

#### Repurpose

Specify whether to release the server allocated to the L-Server when the power is turned off.

Select "true" when releasing automatically.

Select "false" when not releasing automatically.

Nothing is set by default. In this case, the value set to the definition file is used when an L-Server is created.

[RHEL-Xen]

Only "false" can be specified. It can be omitted.

- g. Click <Next>.

The dialog to confirm the entered information is displayed.

When "Are you sure to create a new L-Server Template?" is displayed, confirm the content, and then click <Create>.



#### See

For the input ranges for the [Create L-Server Template] dialog, refer to "2.2.2 Virtual L-Server Templates" in the "Reference Guide (Resource Management) CE".



#### Note

When configuring a template using wizard-style GUI, the detailed configurations can be confirmed in the last confirmation window.

The confirmation window of detailed configurations is displayed in order to enable confirmation of the setting values. When using the confirmation window for operation, there may be difference in the displayed contents. Do not operate it on the confirmation screen.

### 8.1.3 Modifying a Template

---

Use the following procedure to modify an L-Server template:

1. Select [File]-[L-Server Template]-[Edit] from the ROR console menu.  
The [ROR L-Server Template Editor] window is displayed.
2. Select an L-Server template to edit on the [ROR L-Server Template Editor] window, and click <Modify>.  
The [Modify L-Server Template] dialog is displayed.
3. In the [Modify L-Server Template] dialog, edit the items you want to modify, and click <Modify>.
4. The dialog to confirm the entered information is displayed.  
When "Are you sure to copy L-Server Template?" is displayed, confirm the content, and then click <Modify>.  
The L-Server template will be modified.

### 8.1.4 Copying a Template

---

Use the following procedure to copy an L-Server template:

1. Select [File]-[L-Server Template]-[Edit] from the ROR console menu.  
The [ROR L-Server Template Editor] window is displayed.
2. Select an L-Server template to copy on the [ROR L-Server Template Editor] window, and click <Copy>.
3. The [Copy L-Server Template] dialog is displayed.  
Edit the L-Server template name.
4. In the [Copy L-Server Template] dialog, click <Next>.
5. The copy confirmation dialog is displayed.  
When "Are you sure to copy L-Server Template?" is displayed, confirm the content, and then click <Copy>.  
The L-Server template will be copied.

### 8.1.5 Deleting a Template

---

Use the following procedure to delete an L-Server template:

1. Select [File]-[L-Server Template]-[Edit] from the ROR console menu.  
The [ROR L-Server Template Editor] window is displayed.
2. Select an L-Server template to delete on the [ROR L-Server Template Editor] window, and click <Delete>.
3. When "Are you sure you want to delete this Template?" is displayed, confirm the content, and then click <Delete>.  
The L-Server template will be deleted.

### 8.1.6 Exporting a Template

---

Use the following procedure to export an L-Server template:

1. Select [File]-[L-Server Template]-[Edit] from the ROR console menu.  
The [L-Server Template Editor] window is displayed.
2. Select the L-Server template to export, and Click <Export>.
3. The export confirmation dialog is displayed.  
When "Are you sure to copy L-Server Template?" is displayed, confirm the content, and then click <Yes>.

The L-Server template will be exported.

## 8.1.7 Importing a Template

---

Use the following procedure to import an L-Server template:

1. Select [File]-[L-Server Template]-[Edit] from the ROR console menu.  
The [L-Server Template Editor] window is displayed.
2. Select the L-Server template to import, and Click <Import>.
3. The [Import L-Server Template] dialog is displayed.
4. Select the file name for L-Server template to import, and Click <OK>.

The L-Server template is imported.

When a registered L-Server template name is included in the specified file, a warning dialog is displayed to confirm whether to overwrite the L-Server template.

When overwriting it, click <OK>.

When not overwriting it, click <Cancel> and return to the dialog to specify the file name.

## 8.1.8 Creating a Template by using an another Template that has been made

---

It is possible to create a template by using an another template that has been made.

Use the following procedure to export an L-Server template:

1. Select [File]-[L-Server Template]-[Edit] from the ROR console menu.  
The [L-Server Template Editor] window is displayed.
2. Select the L-Server template to export, and Click <Export L-Server template>.  
The [L-Server export] dialog is displayed.
3. Specify the template name for exporting L-Server, and Click <Export>.

The L-Server can be exported as an L-Server template.

Click <Cancel> and return to the [L-Server export] dialog.



When the L-Server template is made from made L-Server by export, the log is not displayed in the event and the progress report of the ROR console.

## 8.2 Editing a Template Using an Editor

---

This section explains how to edit a template using an editor.

### 8.2.1 Exporting a Template

---

This section explains how to export an L-Server template.

Use the following procedure to export an L-Server template:

1. Select the ROR console orchestration tree.

On the [Template List] tab, right-click the L-Server template to export and select [Export] from the popup menu. Displays the [File Download] dialog.

2. Click <Save>.

The L-Server template is exported.

From the command-line, execute `rcxadm template export`.

For details on the `rcxadm template export` command, refer to "1.5.1 `rcxadm template`" of the "Reference Guide (Resource Management) CE".



When exporting an L-Server template, the XML file is generated based on the XML specifications.

## 8.2.2 Editing a Template

---

This section explains how to edit an L-Server template.

The methods of editing L-Server templates are as follows:

- Editing Using a Wizard-style GUI

Refer to "[8.1 Operations Using the Wizard GUI](#)".

- Manual Editing

Perform the following procedure:

1. Export an L-Server Template

Export an L-Server Template.

For details on how to export L-Server templates, refer to "[8.2.1 Exporting a Template](#)".

2. Edit the L-Server Template Using an Editor

Edit the L-Server template created in 1. using the editor.

For details on the XML definition of L-Server templates, refer to "2.2 L-Server Templates" in the "Reference Guide (Resource Management) CE".

3. Import the L-Server Template

Import the L-Server Template.

For details on how to import L-Server templates, refer to "[8.2.3 Importing a Template](#)".

If a template is imported without editing the L-Server template name of the L-Server template file which was exported in 2, the content of the existing L-Server template will be overwritten.

If a template is imported after changing the L-Server template name of the L-Server template file which was exported in 2, a new L-Server template will be added, leaving the content of the existing template intact.



When creating a virtual L-Server, the values in the VM specific information definition file are used even if those values have not been set in the L-Server template.

If there are discrepancies between the L-Server template and VM specific information definition file (e.g. CPU performance is lower than CPU Reserve), L-Server creation will fail.

For details on VM specific information definition files, refer to "E.1.1 Definition Files" of the "Setup Guide CE".

## 8.2.3 Importing a Template

---

This section explains how to import an L-Server template.

Use the following procedure to import an L-Server template:

1. Select [File]-[L-Server Template]-[Import] from the ROR console menu.
2. Specify the file name, and click <OK>.

The L-Server template is imported.

When a registered L-Server template name is included in the specified file, a warning dialog is displayed to confirm whether to overwrite the L-Server template.

When overwriting it, click <OK>.

When not overwriting it, click <Cancel> and return to the dialog to specify the file name.

From the command-line, execute `rcxadm template import`.

For details on the `rcxadm template import` command, refer to "1.5.1 `rcxadm template`" of the "Reference Guide (Resource Management) CE".

## 8.2.4 Deleting a Template

---

This section explains how to delete an L-Server template.

L-Server templates that are no longer required, including the sample template, can be deleted.

Use the following method to delete an L-Server template:

On the [Template List] tab, right-click the L-Server template to delete, and select [Delete] from the popup menu.

From the command-line, execute `rcxadm template delete`.

For details on the `rcxadm template delete` command, refer to "1.5.1 `rcxadm template`" of the "Reference Guide (Resource Management) CE".

# Chapter 9 Operating User Accounts

Only users with the infrastructure administrator, tenant administrator, or administrator role can create user accounts.

For details on operation methods by a tenant administrator, refer to "Chapter 8 Tenant" of the "User's Guide for Tenant Administrators CE".

## 9.1 Registering User Accounts

This section explains how to register user accounts.

When registering the user accounts of the existing directory services as infrastructure administrators in Resource Orchestrator, use user registration on the ROR console.

Use the following procedure to register a user account:

1. Check if user information is registered in the directory service. If no user information is registered, register it.

This operation is not necessary when using internal authentication in Basic mode.

2. In the ROR console, select [Settings]-[User Accounts].

The [User Accounts] dialog is displayed.

3. Click <Add>.

The [Register User Account] dialog is displayed.

4. Configure the following settings:

### User ID

Specify a user ID registered in the directory service.

#### For Basic Mode

- When using authentication by directory services, or when using the Single Sign-On

Specify a user ID registered in the directory service.

- When using internal authentication

Enter a character string beginning with an alphabetic character and containing up to 32 alphanumeric characters, underscores ("\_"), hyphens ("-"), and periods ("."). User group names are case-sensitive.

### Password (Confirm password)

For Basic mode, only when the internal authentication is used, the password will be displayed.

Enter a string using up to 16 alphanumeric characters or symbols.

### User Groups

Select the user group to configure for the user account from the already created user group.

### Scopes/Roles (Optional)

#### Resource

Select the scope of access to set for the user account.

#### Role

Select the role to set for the user account.

### Label (Optional)

Enter a label for the user account.

Enter up to 32 alphanumeric characters or symbols.

### Comment (Optional)

Enter any comments for the user group.

Enter up to 256 alphanumeric characters or symbols.



5. Click <OK>.

The user account is created.

When using user operations to register users also in the directory service in Resource Orchestrator, use the `rcxadm user create` command after checking the settings of the definition file for directory service operations (`ldap_attr.rcxprop`). For details on the definition file for directory service operations, refer to "6.6.1 Settings for Tenant Management and Account Management" in the "Operation Guide CE". For details on the `rcxadm user create` command, refer to "1.6.1 `rcxadm user`" of the "Reference Guide (Resource Management) CE".



When using the application process, add all infrastructure administrators and dual-role administrators to the `IflowUsers` group. For information on how to add those administrators, refer to "6.5.1.2 Adding an infrastructure administrator/dual-role administrator to `IflowUsers` Group" in the "Setup Guide CE".

## 9.2 Viewing a User Account

---

This section explains how to view user accounts.

Use the following procedure to view a registered user account.

1. In the ROR console, select [Settings]-[User Accounts].

The [User Accounts] dialog is displayed.

A list of user accounts (user IDs and user groups) is displayed.

From the command-line, execute `rcxadm user list` or `rcxadm user show`.

For details on the `rcxadm user list` command and the `rcxadm user show` command, refer to "1.6.1 `rcxadm user`" of the "Reference Guide (Resource Management) CE".

## 9.3 Modifying a User Account

---

This section explains how to modify user accounts and passwords.

### User Accounts

Use the following procedure to modify a user account:

1. In the ROR console, select [Settings]-[User Accounts].

The [User Accounts] dialog is displayed.

2. Select the user account to modify.

3. Click <Modify>.

The [Modify User Account] dialog is displayed.

4. Change the items you want to modify.

5. Click <OK>.

The user account information is modified.

### Password

Use the following procedure to change the password of the logged-in user.

1. On the ROR console, select [Settings]-[Change Password].

The [Change Password] dialog is displayed.

2. Enter the necessary items to change passwords.

Current password

Enter the current password.

New password

Enter the new password.

Confirm password

Enter the new password again to confirm it.

3. Click <OK>.

The password is changed.

Execute the rxcadm user modify command.

For details on the rxcadm user modify command, refer to "1.6.1 rxcadm user" of the "Reference Guide (Resource Management) CE".

## 9.4 Deleting a User Account

---

This section explains how to delete user accounts.

The user information in the directory service is not deleted when the settings are made not to register users in the directory services.

The user information in the directory service is deleted when the settings are made to register users in the directory services.

A definition file for directory service operations (ldap\_attr.rcxprop) is used to define whether user information is registered in the directory service. For details on the definition file for directory service operations, refer to "6.6.1 Settings for Tenant Management and Account Management" in the "Operation Guide CE".

Use the following procedure to delete a user account:

1. In the ROR console, select [Settings]-[User Accounts].

The [User Accounts] dialog is displayed.

2. Select the user account to delete.

3. Click <Delete>.

The [Delete User Account] dialog is displayed.

4. Confirm the user account to delete.

5. Click <OK>.

The user account is deleted.

From the command-line, execute rxcadm user delete.

For details on the rxcadm user delete command, refer to "1.6.1 rxcadm user" of the "Reference Guide (Resource Management) CE".

# Chapter 10 Creating L-Servers

This chapter explains how to create L-Servers.

For an overview of the functions, refer to "1.2.3 L-Servers" of the "Setup Guide CE".

L-Servers can be created using the following two methods:

- Creation Using an L-Server Template  
Resources are automatically selected from a resource pool.
- Creation Without Using an L-Server Template  
Specify a resource or a resource pool.

## Creation Using an L-Server Template

Use the following procedure to create an L-Server using an L-Server template:

- When cloning images are not stored in image pools, or when not using cloning images which have been already registered
  1. Select an L-Server template. Specify "None" for images.  
For details, refer to "[10.1 Creation Using an L-Server Template](#)".
  2. Install an OS manually.  
As an L-Server with no OS installed is created, install an OS manually.  
For details, refer to "8.6.1 When Collecting Cloning Images from Physical L-Servers" of the "Setup Guide CE".
- When cloning images are stored in image pools
  1. Select an L-Server template. Specify a cloning image to deploy.  
An L-Server on which a cloning image has been deployed is created.  
For details, refer to "[10.1 Creation Using an L-Server Template](#)".

## Creation Without Using an L-Server Template

For details on how to create specifying individual specifications without using an L-Server template, refer to "[10.2 Creation of Physical L-Servers Using Parameters](#)" or "[10.3 Creation of Virtual L-Servers Using Parameters](#)".



When using Linux for a physical L-Server, and iSCSI storage for a system disk, an L-Server cannot be created using a cloning image.

When using RHEL5-Xen, L-Server creation and operation using the ROR console cannot be performed. For details, refer to "E.4.4 Setup" of the "Setup Guide CE".



[Windows/Linux]

For details on physical L-Servers, refer to "D.7 Creating an L-Server" of the "Setup Guide CE".

[VMware]

For details on VMware, refer to "E.2.5 Setup" of the "Setup Guide CE".

[Hyper-V]

For details on Hyper-V, refer to "E.3.4 Setup" of the "Setup Guide CE".

[KVM]

For details on RHEL-KVM, refer to "E.6.4 Setup" of the "Setup Guide CE".

[Oracle VM]

For details on Oracle VM, refer to "E.5.4 Setup" of the "Setup Guide CE".

---

## Linking L-Servers with Configured Physical Servers or Virtual Machines

Configured physical servers and virtual machines can be managed by linking them with L-Servers.

The management scope and the scope of use as an L-Server vary depending on the resources used by the configured physical server or virtual machine.

For details, refer to "[Chapter 16 Linking L-Servers with Configured Physical Servers or Virtual Machines](#)".

## 10.1 Creation Using an L-Server Template

---

This section explains how to create an L-Server using an L-Server template.

Use the following procedure to create an L-Server using an L-Server template:

1. Select the ROR console orchestration tree. Select an L-Server template on the [Template List] tab of the Main Panel, and click <Create>.

The [Create an L-Server] dialog is displayed.

2. On the [General] tab, set the following items.

### Name

Enter a name for the L-Server.

- For Physical L-Servers

Enter up to 64 characters beginning with an alphanumeric character (upper or lower case), and including alphanumeric characters (upper or lower case), underscores ("\_"), or hyphens ("-").

- For Virtual L-Servers

[VMware] [Hyper-V]

Enter up to 64 characters beginning with an alphanumeric character (upper or lower case), and including alphanumeric characters (upper or lower case), underscores ("\_"), periods ("."), and hyphens ("-").

[Xen] [Oracle VM]

Periods (".") cannot be used.

[KVM]

Enter up to 64 characters beginning with an alphanumeric character (upper or lower case), and including alphanumeric characters (upper or lower case), underscores ("\_"), or hyphens ("-").

[Oracle VM]

Enter using 32 characters or less.

### Destination folder

Select a resource folder or a tenant folder to store L-Servers.

### Template

Specify an L-Server template created in "8.5 Creating L-Server Templates" of the "Setup Guide CE".

The L-Server template specified from the [Template List] tab is displayed. Check the specifications (CPU performance, memory capacity, disk capacity (multiple)) for the L-Server to create.

- For Physical

Model name, disk capacity (multiple) are displayed.

- For Virtual  
CPU performance, memory capacity, and disk capacity (multiple) are displayed.

## Image

Specify a cloning image to deploy.

Clicking <Select> displays the [Select a Cloning Image] dialog.

To manually install an operating system, select "None".

When "None" is selected, it is necessary to select the OS type on the [Server] tab.

When selecting "None", check the "Single path mode" checkbox of "FC path".

For details, refer to "10.2.2 [Server] Tab" and "10.3.2 [Server] Tab".

If you select "Deploy" from "Image deployment", the parameters for the operating system must also be specified.

For details on the items that must be set, refer to "10.2.5 [OS] Tab" and "10.3.5 [OS] Tab".

### Note

When creating an L-Server specifying a cloning image, if the OS of a cloning image is Linux, the L-Server is created using the user name and password used when the cloning image was created.

It is recommended to change the password after creating an L-Server to maintain security.

When deploying cloning images, the OS image included in a cloning image is used, but the values of CPU, memory and network are overwritten with the values used when creating an L-Server. Only system disks are deployed.

### Information

For virtual L-Servers, when creating an L-Server, even if the size of the system disk is specified in advance, if the specified size differs from that of the deployed cloning image, the size will be changed to that of the deployed cloning image.

[VMware] [Hyper-V]

Depending on the software virtualization software used, some restrictions may apply to the operating systems that parameters can be set for and the prerequisites for performing the settings.

For details, refer to the manual of server virtualization software.

Basic software (OS) that can be used on an L-Server is limited to software supported by the server virtualization software.

The image to deploy can be specified when creating an L-Server. Image deployment for Resource Orchestrator uses the following functions of the server virtualization software:

Table 10.1 Functions Used when Deploying Images

Server Virtualization Software	Function
VMware vSphere (R) 4 VMware vSphere (R) 4.1 VMware vSphere (R) 5	Template, guest OS customization
Microsoft(R) System Center Virtual Machine Manager 2008 R2 Microsoft(R) System Center 2012 Virtual Machine Manager	Template, guest OS operating system profile

## Resource allocation

When creating an L-Server for which only a configuration definition exists, check the "None (Definition only)" checkbox.

When an L-Server for which only a configuration definition has been created is started, resources will be allocated.

For details, refer to "11.8.2.1 Allocating Resources".

When modifying the configuration of an L-Server for which only a configuration definition was created, refer to "[11.8.2.3 Modifying Configuration Definition Information](#)".

#### Network (NIC)

Select a network resource to connect to the NIC of the L-Server.

A list of the NICs defined in the L-Server template is displayed. Select the network to connect to each NIC from the "Network to connect" column.

- a. Click <Select> in the "Network to connect" column.

The [Select a Network Resource] dialog is displayed.

- b. The following items are displayed: Select the network resource to connect.

- Name (Label)
- Admin LAN
- Subnet address
- Number of addresses (Unused/Total)

For physical L-Servers, the network connection can be selected in addition to these items.

- Connect

Specify when connecting network resources.

- Do not connect

Specify when not connecting network resources, only creating a configuration definition.

#### Note

The network (NIC) number corresponds to a NIC number (NICIndex) + 1 that is defined in L-Server templates.

[Oracle VM]

One or more networks must be specified.

#### Label (Optional)

A custom label can be defined for the L-Server. User-defined labels make it easier to identify the server.

Enter up to 32 alphanumeric characters or symbols.

#### Comment (Optional)

A custom comment can be defined for the L-Server. For example, registering detailed work content, troubleshooting, and recovery procedures can speed up the recovery of affected applications when a problem occurs.

Enter up to 256 alphanumeric characters or symbols.

3. Click <OK>.

The L-Server is created.

The process status can be checked in the Recent Operations area of the ROR console.

When creating a physical L-Server specifying image deployment, clicking <Cancel> in the Recent Operations area displays a confirmation dialog and stops the process.

#### Note

- Please note that canceling the creation of a physical L-Server specifying image deployment does not restore the destination server to the state before image deployment took place.
- When operations are cancelled on the last part, the physical L-Server may remain.

Delete the physical L-Server, from the [Resource] tab on the ROR console. For details on how to delete an L-Server, refer to "[11.4 Deleting an L-Server](#)".

## Point

### Association of an L-Server Name with a VM Guest Name

When installing an operating system manually on the L-Server or using the management console of server virtualization software, select the L-Server in the orchestration tree, and operate the VM for the *Guest\_name* displayed in [Resource Details].

The following name is automatically allocated for *Guest\_name*:

*L-Server\_name* - *Number*

*Number* is automatically set by Resource Orchestrator to avoid overlapping of names on server virtualization software if an L-Server with the same name is created during "[Chapter 13 Resource Folder and Tenant Operations](#)".

For operation without *numbering*, refer to "Numbering VM names" in "[Table 11.4 List of Items Specified in the Definition File](#)" of "[11.8.1 Installation](#)". However, L-Servers with the same name cannot be created. Avoid using the same L-Server name more than once.

## Note

- When creating an L-Server, log off ETERNUSmgr of ETERNUS storage registered on ESC.
- When operating NetApp storage in cluster environments and operating a partial system due to system trouble, perform the operation after recovering the NetApp storage and returning the system to cluster operation.
- When the status of the VM host and virtual storage is one other than "normal", the resource will be excluded from L-Server allocation regardless of its available space.
- When operating a VM host in a cluster system, create an L-Server with the storage resources shared between VM hosts specified.  
L-Server cannot be created using storage resources that are not shared between VM hosts.
- Depending on the "None (Definition only)" checkbox, the power status of an L-Server after its creation is as follows.

Table 10.2 L-Server Power Status after Creation

	When Checked	When not Checked
Physical L-Server	Powered OFF	Powered ON
Virtual L-Server	Powered OFF	Powered OFF

For details on how to start an L-Server, refer to "[11.1.1 Starting an L-Server](#)".

- When creating a virtual L-Server, the values in the VM specific information definition file are used even if those values have not been set in the L-Server template.

If there are discrepancies between the L-Server template and VM specific information definition file (e.g. CPU performance is lower than CPU Reserve), L-Server creation will fail.

For details on VM specific information definition files, refer to "E.1.1 Definition Files" and "Appendix I Definition Files" of the "Setup Guide CE".

[Hyper-V]

- When using dynamic memory and memory weight, Windows Server 2008 R2 Service Pack 1 (SP1) or later must be applied to the VM host, and SCVMM must be upgraded to System Center Virtual Machine Manager 2008 R2 Service Pack 1 (SP1) or later. When creating an L-Server for which dynamic memory is enabled or memory weight is specified, creation of the L-Server will fail unless there are a VM host and SCVMM satisfying the conditions above.

## 10.2 Creation of Physical L-Servers Using Parameters

This section explains how to configure a physical L-Server with server, storage, and network specifications configured, without using an L-Server template.

Specify the values on the following tabs:

- [General] Tab
- [Server] Tab
- [Disk] Tab
- [Network] Tab
- [OS] Tab

Use the following procedure to create L-Servers:

1. Right-click the target resource folder in the orchestration tree, and select [Create]-[L-Server] from the popup menu.  
The [Create an L-Server] dialog is displayed.
2. On each tab, set the following items.
3. Click <OK>.  
The L-Server is created.

### Note

Each item to set has an upper limit. Even when valid values are specified, the creation of an L-Server may fail depending on the availability of resources in resource pools and the hardware configuration.

### Information

- For the storage units that support the setting of LUN alias names, when disk resources are created with Resource Orchestrator, set the alias (if possible) based on the disk resource name in the LUN.
- If there is doubling up of the alias names set for the ETERNUS LUN, the initial setting for aliases in ETERNUS LUN is used instead.

The format for the alias name set for the disk resource names and Resource Orchestrator is as follows.

#### Disk resource names Format

`name-x-disky`

*name*: L-Server name specified by user

*x*: String in decimal format, uniquely allocated by the manager

*y*: Decimal representing the disk index

#### Alias name Format

`NAMEXXYYYY` (maximum 16 characters)

*NAME*: String starting at the beginning of *name* (maximum 11 characters)

*XX*: Two digit decimal string corresponding to *x*

*YYYY*: Three digit decimal string corresponding to *y*

- As the L-Server names that can be reflected in alias are a maximum of 11 characters, the infrastructure administrator should consult with the tenant administrator and determine rules for L-Server names.
- If the L-Server name is changed, the disk resource name and aliases in the details about the disk are not changed.
- If the disk resources are created from the virtual storage (RAID group, for example) that is the subject of ETERNUS Dynamic LUN Mirroring, the LUN created on the remote site receives the same alias.
- If the alias name of the ETERNUS LUN corresponding to the disk created from the virtual storage has been changed using the ETERNUS WebGUI, the alias name in the disk details will be updated with the regular update. The disk resource name is not changed.



## 10.2.1 [General] Tab

---

### Name

Enter a name for the L-Server.

Enter up to 64 characters beginning with an alphanumeric character (upper or lower case), and including alphanumeric characters (upper or lower case), underscores ("\_"), or hyphens ("-").

### Destination folder

Select a resource folder or a tenant folder to store L-Servers.

### Template

Specify "None" in the selection list.

### Server type

Enter the type of server for the L-Server to be created.

Select "Physical".

### Image

Specify a cloning image to deploy.

- a. Click <Select>.

The [Select a Cloning Image] dialog is displayed.

- b. Select the cloning image to deploy to the L-Server, specifying "Deploy" in "Image deployment".

The available cloning images are displayed in the selection list.

Specifying "Do not deploy" in "Image deployment" will create an empty server without an operating system installed.



### Note

When using a Windows image for multiple languages (English/Japanese Language Pack), manually select the language version when deploying the cloning image.

### Resource allocation

When creating an L-Server for which only a configuration definition exists, check the "None (Definition only)" checkbox.

When allocating resources for an L-Server for which only a configuration definition was created, refer to "[11.8.2.1 Allocating Resources](#)".

### Network (NIC)

If "None" is specified in "Template" and the server type is specified, the <Add> and <Delete> buttons are displayed.

Clicking <Add> adds a network. Perform settings based on the physical server the L-Server will be located on.

Clicking <Delete> deletes the network in the last line of the list.

When "Physical" is selected for the server type, the admin LAN network resource is automatically configured if the admin LAN network settings for all physical servers registered in a server pool are the same. When the admin LAN network settings for physical servers differ, specify the correct NICs for the admin LAN or public LAN, and the network resources of the destination for connection.

When not using the public LAN, select "not connected".



### Note

- When the admin LAN network settings for a physical server registered in a server pool are different, an admin LAN network resource is automatically registered, if a physical server is selected for use in the [Server] tab.

Also, if an admin LAN network resource is specified for the NIC in "Network (NIC)", when "Physical server" is selected on the [Server] tab, only a physical server or server pool with a NIC configuration matching that of the admin LAN network will be displayed.

For details, refer to "10.2.2 [Server] Tab".

- When performing NIC redundancy, configure the settings by switching over to the [Network] tab.

For details, refer to "10.2.4 [Network] Tab".

---

#### Label (Optional)

Enter a label for the L-Server.

Enter up to 32 alphanumeric characters or symbols.

#### Comment (Optional)

Enter any comments for the L-Server.

Enter up to 256 alphanumeric characters or symbols.

## 10.2.2 [Server] Tab

---

### Server Specification Methods

Select a method to specify a server.

Click <Model> to select a model name to allocate to the L-Server.

Clicking <CPU and Memory> enables you to enter the number of CPUs, CPU performance, and memory size of the server allocated to the L-Server.



---

When <CPU and Memory> is selected, you must enter the number of CPUs, CPU performance, and memory size.

---

### Number of CPUs

Enter the number of server CPUs to allocate to the L-Server. Enter an integer between 1 and 240.

### CPU performance

Enter the server CPU speed to allocate to the L-Server. Enter a number with up to one decimal place, in units of gigahertz. Values between 0.1 and 10 can be specified.

### Memory size

Enter the memory capacity to allocate to the L-Server. Enter a number with up to one decimal place, in units of gigabytes. Values between 0.1 and 8192 can be specified.

### Specifications

The specifications of the physical server are displayed.

When "Automatic" or "Pool" is selected for "Physical server", a hyphen ("-") will be displayed in each parameter.

### Physical server

Select the physical server to allocate to the L-Server.

Clicking <Select> displays the [Select a Server Resource] dialog.

Select one of "Automatic", "Pool", or "Server" in "Resource type".

The default is "Automatic".

- When "Automatic" is Selected

Select a physical server automatically from the resource pool with high priority.

When selecting "Automatic", operate a resource pool with priorities.

When there are multiple resource pools with the same priority, physical servers will be selected satisfying the conditions for a resource pool which has been searched in advance. Therefore, the physical server which has the least difference from the L-Server definitions may not be allocated

For details, refer to "D.8 Selection of Physical Servers for Physical L-Servers" of the "Setup Guide CE".

- When "Pool" is Selected

A list of server pools which can be selected is displayed.

In the server pool list, the server pool name and the number of servers (unused/total) are displayed.

Select the server pool from the server pool list.

- When "Server" is Selected

The list of the physical servers that can be selected is displayed.

In the physical server list, server names, model names, CPU performance, memory size, and NIC numbers are displayed.

Select the physical server to use from the physical server list.

When creating an L-Server for which only a configuration definition has been created, a physical server not allocated to the L-Server can be selected from the list.

When the "Currently unusable" checkbox is checked, failed physical servers and physical servers that have inconsistencies in their admin LAN network configurations are displayed in the list.

When the "Busy" checkbox is checked, the following physical servers are displayed in the list:

- Physical servers already allocated to other L-Servers
- Physical servers already assigned as spare servers
- Physical servers with an OS installed



The [Select a Server Resource] dialog works as follows, depending on the configuration status of admin LAN network resources on the NICs in the [General] tab or the [Network] tab.

- When admin LAN network resources are unset on the NIC

Depending on the selected physical server or the server pool, admin LAN network resources are automatically set on the NIC configurations in the [General] tab or the [Network] tab.

For details on the resources automatically set, refer to the [General] tab or the [Network] tab.

- When admin LAN network resources have been set on the NIC

Physical servers or server pools matching the admin LAN network NIC configurations that are set on the [General] tab or the [Network] tab are displayed.

When not filtering resources using admin LAN network settings, open the [Select a Server Resource] dialog after deleting the settings.

### Resource release

Specify whether to release the physical server allocated to the L-Server when the power is turned off.

If the "Automatic (when powered off)" checkbox is checked, the server is released when the power is turned off.



When resources of the same servers are shared due to a change in usage, ensure that "Resource release" is set for the L-Server they are allocated to.

When the server resources are allocated to the L-Server for which "Resource release" is not configured, the server resources cannot be shared.

### Boot Location

Decide whether the physical location of servers to be allocated to the L-Server can be changed.

When unselecting the "Automatic (when powered off)" checkbox of "Resource release", the location will be "Fixed".

- Fixed

Starts the L-Server on the same physical server that was operated last time.

- Relocate at startup

Automatically selects the optimal physical server when the L-Server is started.

Even when "Physical server" is specified, the L-Server may operate on a separate physical server from the second time it is started.

## Server Recovery

Specify the server redundancy to allocate to the L-Server. To enable redundancy, select the "HA" checkbox.

When selecting the "HA" checkbox, the "Use a low spec server" checkbox of "Spare server specs", and <Select> of "Spare server pool" will be enabled.

## Spare server specs

This section specifies the selection method of spare server.

When the "Use a low spec server" checkbox is selected, physical servers with models matching that in the L-Server definition are selected as spare servers.

For details on how to select a spare server, refer to "14.1.1 L-Server High Availability" of the "Operation Guide CE".

## Spare server pool

Select the spare server pool.

Clicking <Select> displays the [Select a Server Resource] dialog.

Specify the server pool that the physical server to use for automatic switchover is registered in.

When a problem occurs on the physical server, recovery is performed by automatically switching to another physical server in the same resource pool that is operating normally.

For details on how to perform switchover a spare server, refer to "14.1.1 L-Server High Availability" of the "Operation Guide CE".

## Alive Monitoring

Configure alive monitoring as enabled or disabled.

## Address pool (WWN / MAC)

Select an address pool.

Clicking <Select> displays the [Select an Address Resource] dialog.

Select "Automatic" or "Pool". The default is "Automatic".

When selecting "Pool", select from the registered address pool.

Specify the virtual WWN obtained from the I/O Virtualization Option and the address pool of the registered MAC address.

VIOM will be used for blades, and HBA address rename for rack mount servers.

## Startup priority

With L-Servers, when performing batch power operations in a resource folder or a tenant folder, configure the priority for the L-Server.

Set a number between 1 and 256. Smaller values indicate higher priority. If omitted, "128" is set.

When not performing batch power operations, check the "Exclude from batch power operations" checkbox.

## FC settings

### FC connection pattern

If the number of FCs fitted or their location differs from physical server to physical server, specify an FC connection pattern file.

Configuration is possible for the following types of storage units. For details, refer to "D.5.1 Definition Files" in the "Setup Guide CE".

- EMC CLARiiON storage

- EMC Symmetrix DMX storage
- EMC Symmetrix VMAX storage

### Note

When FC connection patterns are not displayed in the selection list, there are errors in the configuration file. Review the configuration files for FC connection patterns, referring to "D.5.1 Definition Files" in the "Setup Guide CE".

Indicates the settings for when the server starts

#### FC path

When installing an OS manually, check the "Single path mode" checkbox.

When an image is not specified, it is automatically checked.

After installing a multi-path driver on an OS, perform "[11.2.1 Modifying Specifications](#)", and clear the "Single path mode" checkbox.

For details, refer to "D.7 Creating an L-Server" of the "Setup Guide CE".

#### Boot Mode

Specify the L-Server boot method.

- Default

Specify this mode when performing the boot from the disk connected to the L-Server.

- NIC for PXE boot

Specify this mode when performing the network boot using PXE (Preboot eXecution Environment).

- Network for PXE boot

Select the network resource for PXE boot, from the network resources defined in the L-Server.

### Note

PXE boot is unavailable on networks that use tagged VLAN settings.

For network boot, select network resources for which tags are not configured.

#### **When performing a network boot on the admin LAN**

When the DHCP service used by the PXE boot server is configured to receive DHCP requests from other clients, the following functions cannot be used.

- Backup and restore
- Creation of a physical L-Server with images selected
- Deployment and collection of cloning images

## 10.2.3 [Disk] Tab

---

### Disk type

Select a disk type.

- SAN

Select when using SAN storage.

- iSCSI

Select when using iSCSI storage.

## Disks

Clicking <Add> displays the [Disk Definitions] dialog.

Specify the following items for each disk:

### Size \* Number of Disks

- Size

Enter a number with up to one decimal place, in units of gigabytes. Values of 0.1 or larger can be specified.

- Number

Clicking <Add> will display the [Disk Definitions] dialog, then specify the number of disks to add. Specify a number 1 or larger.

### Resource type

Specify the disk to allocate to the L-Server.

Select from the following items.

- Automatic

Select a suitable virtual storage resource from those registered in the appropriate storage pool. Create the specified size of disk resources, and allocate them to the L-Server. Set "Automatic" for the default value.



- When there are storage pools with and without Thin Provisioning attributes configured that have the same priority, the storage pool that will be given priority is decided based on definition files. For details on definition files, refer to "E.1.1 Definition Files" of the "Setup Guide CE".
- If dynamic LUN mirroring has been set in the virtual storage, a volume is also created on the ETERNUS storage in the remote site specified in the definition file. If the ETERNUS storage in the remote site has been detected by Resource Orchestrator, it will be detected as a disk resource that was prepared beforehand, but do not register it to the storage pool.

- Storage pool

Select a virtual storage resource registered in the specified storage pool. Create the specified size of disk resources, and allocate them to the L-Server.

- Virtual storage

Displays virtual storage resources such as RAID groups or aggregates as a list.

Select from the displayed virtual storage resources.

Create the specified size of disk resources from the specified virtual storage resource, and allocate them to the L-Server.

When using the virtual storage resource on which the Thin Provisioning attributes are configured, the disk resource can be created specifying a size exceeding the actual disk space.

- Disk

Assign the LUN created in advance to the L-Server.

When specifying search conditions, the relevant disk resource list is displayed.

Select from the displayed disk resources.

The specified disk resources are allocated to the L-Server.

### Search conditions

#### Storage pool

Select the storage pool of the storage destination of the disk resource.

### Search size

Enter the lowest value of the disk size to be searched as a number with up to one decimal place, in units of gigabytes.

### Allocation status

Specify the status for the disk to allocate to the L-Server.

- Unallocated

Specify when selecting a disk resource which is not allocated to another L-Server.

- Allocated

Specify when selecting a disk resource which is allocated to another L-Server.

### Allocated L-Server

Specify an L-Server when sharing the disk resources.

### Disk name

Specify the name of the disk to be found.

- Begins with

Specify when searching for disks whose names begin with the specified string.

- Includes

Specify when searching for disks whose names include the specified string.

## 10.2.4 [Network] Tab

---

Specify the following items.

### NIC/Network

Configure the network to connect with the NIC used in the L-Server. Clicking <Add> displays the [Add a Network] dialog. Select a network resource to connect with the NIC.

The number of NICs that can be configured is 1 to 32.

### NIC

Select the NIC to use in the L-Server from the selection list. When adding a new NIC or NIC group, select the number displayed as "(Undefined)" from the list. When selecting an already defined NIC, a network resource is added.

### Setup redundant NIC

When performing NIC redundancy, check the "Setup redundant NIC" checkbox, and select another NIC pair from the list to make redundant.

### Network

Select a network resource to connect.

### IP address (Optional)

Specify the IP address to allocate to the L-Server. This should be entered for direct specification of the IP address to be allocated to the L-Server. The specified IP address will be converted to the IP address of the physical server during creation of the L-Server.



If a LUN created beforehand is used to create a physical L-Server, specify the IP address of the OS stored in the LUN.

If an agent has already been installed in the LUN created beforehand, and the IP address of the manager has been changed, the following procedures need to be performed after creating the physical L-Server.

1. Initialize the file where the agent's SSL certificate data is stored.

For details, refer to "5.2 rcxadm certctl" in the "Command Reference".

2. Modify the IP address of the admin LAN of the manager registered in the agent.  
For details, refer to "5.1 rcxadm agtctl" in the "Command Reference".
3. Reboot the physical L-Server.

### Example

Table 10.3 Correspondence Relationships of Network Information [Windows]

OS Information		Information for L-Server Configuration	
IP address specified for network interface (configured by a tenant administrator)	Name of network interface	Number of NICs (number of NICs on the back side of rack mount servers)	IP address
192.168.1.1	Local area connection 1	1	192.168.1.1
192.168.2.1	Local area connection 2	2	192.168.2.1

Table 10.4 Correspondence Relationships of Network Information [Linux]

OS Information		Information for L-Server Configuration	
IP address specified for network interface (configured by a tenant administrator)	Name of network interface	Number of NICs (number of NICs on the back side of rack mount servers)	IP address
192.168.1.1	eth0	1	192.168.1.1
192.168.2.1	eth1	2	192.168.2.1

#### Untagged VLAN

When not configuring a VLAN, check this checkbox.

Only one VLAN can be selected in the same NIC or NIC group.

### Note

[Windows/Linux]

The IP address to be allocated to a physical L-Server must be unique. An IP address is required for each L-Server used.

## 10.2.5 [OS] Tab

Enter the parameters to set for the OS when creating the L-Server. This setting is valid only if an image is specified in the [General] tab.

When using an L-Server with the server type "Physical", refer to "D.7.3 [OS] Tab Configuration" of the "Setup Guide CE".

## 10.3 Creation of Virtual L-Servers Using Parameters

This section explains how to configure a virtual L-Server with server, storage, and network specifications configured, without using an L-Server template.

Specify the values on the following tabs:

- [General] Tab
- [Server] Tab



- [Disk] Tab
- [Network] Tab
- [OS] Tab

Use the following procedure to create L-Servers:

1. Right-click the target resource folder in the orchestration tree, and select [Create]-[L-Server] from the popup menu.  
The [Create an L-Server] dialog is displayed.
2. Set the items required in each tab, and click <OK> to create the L-Server.

### Note

- Each item to set has an upper limit.

Even when valid values are specified, the creation of an L-Server may fail depending on the availability of resources in resource pools, the hardware configuration, and the VM management software specifications.

- When creating a virtual L-Server, if there are any values configured in the VM specific information definition file, those values are used.

For details on VM specific information definition files, refer to "E.1.1 Definition Files" and "Appendix I Definition Files" of the "Setup Guide CE".

[Xen]

- When using RHEL5-Xen, L-Server creation cannot be performed using the ROR console. Use the rcxadm lserver command.

For details on the rcxadm lserver command, refer to "1.3.1 rcxadm lserver" of the "Reference Guide (Resource Management) CE".

[Hyper-V]

- When using dynamic memory and memory weight, Windows Server 2008 R2 Service Pack 1 (SP1) or later must be applied to the VM host, and SCVMM must be upgraded to System Center Virtual Machine Manager 2008 R2 Service Pack 1 (SP1) or later. If there are no VM hosts or SCVMM with SP1 applied, creation of an L-Server for which dynamic memory is enabled, or memory weight is specified will fail.

## 10.3.1 [General] Tab

Name

Enter a name for the L-Server.

[VMware] [Hyper-V]

Enter up to 64 characters beginning with an alphanumeric character (upper or lower case), and including alphanumeric characters (upper or lower case), underscores ("\_"), periods ("."), and hyphens ("-").

[Xen] [Oracle VM]

Periods (".") cannot be used.

[KVM]

Enter up to 64 characters beginning with an alphanumeric character (upper or lower case), and including alphanumeric characters (upper or lower case), underscores ("\_"), or hyphens ("-").

[Oracle VM]

Enter using 32 characters or less.

### Note

Do not enter more than 32 characters.

### Destination folder

Select a resource folder or a tenant folder to store L-Servers.

### Template

Specify "None" in the selection list.

### Server type

Enter the type of server for the L-Server to be created.

Select "VM".

When "VM" is selected for the server type, select the VM type on the [Server] tab.

However, when an image is selected, Resource Orchestrator will automatically select the VM type that matches the image, so selection is not necessary when selecting the server type.

### Image

Specify a cloning image to deploy. Clicking <Select> displays the [Select a Cloning Image] dialog.

Select the cloning image to deploy to the L-Server, specifying "Deploy" in "Image deployment" on the [Select a Cloning Image] dialog.

The available cloning images are displayed in the selection list.

Specifying "Do not deploy" in "Image deployment" will create an empty server without an operating system installed.

[Oracle VM]

L-Servers cannot be created with "Do not deploy" specified in "Image deployment".



### Information

When a cloning image is specified, the sizes of system disks of virtual L-Servers will be changed into the size of when the cloning image was deployed.

When deploying cloning images, the OS image included in a cloning image is used, but the values of CPU, memory and network are overwritten with the values used when creating an L-Server. Only system disks are deployed.



### Note

When using a Windows image for multiple languages (English/Japanese Language Pack), manually select the language version when deploying the cloning image.

### Resource allocation

When creating an L-Server for which only a configuration definition exists, check the "None (Definition only)" checkbox.

When allocating resources for an L-Server for which only a configuration definition was created, refer to "[11.8.2.1 Allocating Resources](#)".

### Network (NIC)

If "None" is specified in "Template", the <Add> and <Delete> buttons are displayed.

Clicking <Add> adds a network. Perform settings based on the physical server the L-Server will be located on.

Clicking <Delete> deletes the network in the last line of the list.

When selecting a NIC other than number 1 during physical server registration, specify the correct NICs for the admin LAN or public LAN, and the network resources of the destination for connection.

When not using the public LAN, select "not connected".

### Label (Optional)

Enter a label for the L-Server.

Enter up to 32 alphanumeric characters or symbols.

### Comment (Optional)

Enter any comments for the L-Server.  
Enter up to 256 alphanumeric characters or symbols.

## 10.3.2 [Server] Tab

---

### VM type

Select the VM type for the L-Server to be created.  
It is not necessary to specify this when deploying an image, because the VM type of the image is used.

### Number of CPUs

Enter the number of server CPUs to allocate to the L-Server. Enter an integer between 1 and 8.

#### [Oracle VM]

The range that can be entered differs depending on the OS type of VM guests.

- Windows

An integer between 1 and 8

- Linux

An integer between 1 and 32

#### [Hyper-V]

Enter an integer between 1 and 4.

#### [KVM]

The number of CPUs supported by the KVM in use is the upper limit.

The upper limit value is 64 for RHEL6.1.

### CPU performance

Enter the server CPU speed to allocate to the L-Server. Enter a number with up to one decimal place, in units of gigahertz. A number between 0.1 and 8 can be specified.

The value entered here is used to determine the CPU ratio to allocate to the L-Server out of the clock speed of the physical CPU of the VM host. If VM hosts with different types of physical CPUs are registered in the VM pool, the actual processing performance may differ according to the allocated VM host.

#### [VMware]

For VM guests on VMware, set the CPU performance for the limit value and 0 for the reserved value.



### Information

---

For details on limit values and reserved values of CPUs, refer to the "vSphere Resource Management Guide" of VMware.

Refer to the relevant version of document, referring to the following URL:

URL: [http://www.vmware.com/support/pubs/vs\\_pubs.html](http://www.vmware.com/support/pubs/vs_pubs.html) (As of February 2012)

---

#### [Hyper-V]

CPU performance is realized through the resource settings of VM guests and VM hosts.

When the SCVMM management console or a Hyper-V manager is used to change the resource reservation of a VM guest or VM host, there is a chance that the creation or starting of VM guests may fail, or the expected performance may not be obtained.

Please do not change VM guest and VM host resource reservations when L-Servers have been created.

#### [KVM]

CPU Capping functions will be ignored, since the function is not supported by RHEL6.1.

#### [Oracle VM]

Specify the size within the range of 0.3 to *the\_resource\_size\_of\_the\_hardware\_on\_which\_the\_VM\_hosts\_operate*.

## Memory

Enter the memory capacity to allocate to the L-Server. Enter a number with up to one decimal place, in units of gigabytes. A number between 0.1 and 255 can be specified.

[VMware]

For VM guests on VMware, set the memory size for the limit and reserved values.

### Information

For details on limit values and reserved values of memory, refer to the "vSphere Resource Management Guide" of VMware.

Refer to the relevant version of document, referring to the following URL:

URL: [http://www.vmware.com/support/pubs/vs\\_pubs.html](http://www.vmware.com/support/pubs/vs_pubs.html) (As of February 2012)

[Hyper-V]

For VM guests with dynamic memory disabled, set the memory size for the virtual machine memory.

For VM guests with dynamic memory enabled, set the memory size to the maximum memory.

The enabled/disabled state of dynamic memory is determined according to the value specified in the VM specific information definition file. For details on VM specific information definition files, refer to "E.1.1 Definition Files" and "Appendix I Definition Files" of the "Setup Guide CE".

[KVM]

The maximum size of available memory can be specified.

[Oracle VM]

The size of resources of hardware where VM hosts operate can be specified.

## OS

Specify the type of operating system to allocate to the L-Server. It is not necessary to specify this when deploying an image, because the VM type of the image is used. The OS type can be changed after the OS installation.

[Hyper-V]

If an unsupported OS type is specified, installation may fail or the OS of the VM guest may not operate correctly.

Additionally, if an incorrect OS type is specified, there is a chance that image collection or L-Server creation for a specified image may fail, and a guest OS may start but hang while awaiting entry. This occurs because Microsoft's Sysprep cannot be processed correctly during personalization processing.

The OS types displayed in the list are the guest OS's which can be specified on the SCVMM management console.

Resource Orchestrator displays all guest OS's in the list in order not to limit user selection, however this does not mean that all guest OS's are supported by SCVMM.

Hyper-V does not support some server type settings such as number of CPUs depending on the OS type. When an incorrect OS type and server type are selected, operation is not guaranteed.

Additionally, even when a service pack is not listed in the OS type list, it may be necessary to install the service pack.

When a guest OS that Hyper-V supports is specified for the OS type, a converged network adapter will be added to VM.

When a different OS has been selected, an emulated network adapter will be added.

For details on the guest OS's supported by SCVMM, refer to the Help of SCVMM.

For details on the guest OS's supported by Hyper-V, refer to the following Microsoft web site.

Microsoft web site

URL: <http://www.microsoft.com/windowsserver2008/en/us/hyperv-supported-guest-os.aspx> (As of February 2012)

[KVM]

Linux, Windows, and Linux (SELinux) can be selected.

A personalized guest OS can only be selected for Linux.

When creating a new guest VM, the information will be displayed. When information of a newly created VM guest is lost during backup and restoration, "unknown" may be displayed.

[Oracle VM]

The OS type cannot be changed.

#### VM host (Optional)

Individually specify the resources to allocate to the L-Server.

Clicking <Select> displays the [Select a VM host] dialog.

Specify a VM host or VM pool. If you do not specify a VM host or VM pool, a VM host that can create an L-Server is automatically searched for from the VM pool. If there are multiple VM pools, the VM host is searched for, beginning with the VM pool with the highest priority.

#### Resource release

Specify whether add the CPU and memory of the VM guests allocated to the L-Server to the total of the VM pool, when the power of the L-Server is OFF.

When the "Automatic (when powered off)" checkbox is checked, the CPU and memory of VM guests allocated to L-Servers cannot be calculated as the total usage amount of VM pools.

#### Boot Location

Decide whether the physical location of servers to be allocated to the L-Server can be changed.

- Fixed

Starts the L-Server on the same VM host that operated last time. Move the L-Server between servers to start it on a separate VM host.

- Relocate at startup

Automatically selects the optimal VM host when the L-Server is started. When "VM host" is specified, select VM hosts from the range.



When RHEL-Xen is specified for the VM type, select "Fixed".

#### Server Recovery

Specify the server redundancy to allocate to the L-Server. To enable redundancy, select the "HA" checkbox.

[VMware] [Oracle VM]

- If the "HA" checkbox is selected

The HA function is located on an enabled VM host.

When there is no VM host for which the HA function has been enabled, the L-Server for which a configuration definition has already been created cannot be started.

- If the "HA" checkbox is not selected

The HA function will be preferentially located on a disabled VM host.

However, the HA function will place a VM guest on an enabled VM host in the following cases:

- The HA function is not located on a disabled VM host
- There is no available CPU or memory



If the HA function is located on an enabled VM host, the HA function of the server virtualization software will be enabled.

When a problem occurs on the physical server that the VM host is operating on, the virtual machine can be recovered by restarting it on a VM host that is operating normally.

[Hyper-V]

In Hyper-V environments this setting is ignored, and VM guests are always located on clustered VM hosts.

[KVM]

In RHEL-KVM environments this setting is ignored, and set as "none", since there are no server recovery functions on Hypervisor.

### Note

When KVM or RHEL-Xen is selected for the VM type, because server recovery cannot be enabled, do not select the "HA" checkbox.

#### Alive Monitoring

Configure alive monitoring as enabled or disabled.

The following operations are performed if you select the "HA" checkbox.

[Xen] [KVM] [Oracle VM]

The alive monitoring configuration is not displayed.

#### Exclusion

Enter when not operating the virtual machine on the same VM host as another virtual machine.

For example, when performing load-balanced work using multiple virtual machines, you can set exclusive operation to ensure that the work continues in a degenerate state because only one virtual machine stops when a physical server fails. Specify an L-Server name or resource folder name that you have operating privileges for.

The virtual machine of the specified L-Server is allocated to different physical servers.

If you specify a resource folder name, one's own L-Server can be included in the resource folder. In the following cases, the L-Server may be allocated to the same physical server, regardless of whether exclusive operation is specified:

- If no other VM hosts that meet the conditions for exclusive operation can be found, such as when there are no VM hosts in the VM pool that have enough free space to install an L-Server
- If the HA function or automatic re-installation function (examples: VMware HA or VMware DRS) of the VM product is enabled

### Note

When an operation that puts a resource that has been configured for exclusive operation outside the access scope of users, the name of the resource will only be displayed on the screen for changing specifications or definitions.

#### Startup priority

With L-Servers, when performing batch power operations in a resource folder or a tenant folder, configure the priority for the L-Server.

Set a number between 1 and 256. Smaller values indicate higher priority. If omitted, "128" is set.

When not performing batch power operations, check the "Exclude from batch power operations" checkbox.

## 10.3.3 [Disk] Tab

---

#### Disks

Click <Add>, and specify the following items for each disk.

##### Size \* Number of Disks

- Size

Enter a number with up to one decimal place, in units of gigabytes. Values of 0.1 or larger can be specified.

[VMware] [Hyper-V]

Specify a number between 0.1 and 2048.

[Oracle VM]

Specify the size within the range of 1 to *the\_resource\_size\_of\_the\_hardware\_on\_which\_the\_VM\_hosts\_operate*.

## Information

When creating an L-Server, even if the size of the system disk is specified, if the specified size differs from that of the deployed cloning image, the size will be changed to that of the deployed cloning image.

### - Number

Clicking <Add> will display the [Disk Definitions] dialog, then specify the number of disks to add. Specify a number 1 or larger.

### Resource type

[Windows] [Linux] [Solaris] [VMware] [Hyper-V] [Xen] [Oracle VM]

Specify the disk to allocate to the L-Server.

Select from the following items.

### - Automatic

Select a suitable virtual storage resource from those registered in the appropriate storage pool. Create the specified size of disk resources, and allocate them to the L-Server. Set "Automatic" for the default value.

## Note

When there are storage pools with and without Thin Provisioning attributes configured that have the same priority, the storage pool that will be given priority is decided based on definition files.

For details on definition files, refer to "E.1.1 Definition Files" of the "Setup Guide CE".

### - Storage pool

Select a virtual storage resource registered in the specified storage pool. Create the specified size of disk resources, and allocate them to the L-Server.

### - Virtual storage

Displays virtual storage resources such as datastores as a list.

Select from the displayed virtual storage resources.

Create the specified size of disk resources from the specified virtual storage resource, and allocate them to the L-Server.

When using the virtual storage resource on which the Thin Provisioning attributes are configured, the disk resource can be created specifying a size exceeding the actual disk space.

### [Hyper-V]

When creating an L-Server or changing the configuration, a maximum of four disks can be specified at one time.

To perform addition of five or more disks, please perform an additional configuration change.

Saved disk resources that are created from virtual storage can only be connected to the L-Server when using Microsoft(R) System Center 2012 Virtual Machine Manager.

Disk resources can be specified if the disk number [No.] is 1 or larger.

After selecting <Disk> from the resource type to use, resources that are displayed in the "Resource List" can be filtered by entering the search conditions and clicking <Search>.

## Note

When the creation of an L-Server with saved disks specified fails, if a virtual machine remains on VM management software, remove the saved disks from the virtual machine before deleting the virtual machine from VM management software. When a virtual machine is deleted without taking removing saved disks, the saved disks are also deleted. Disks on virtual machines can be identified using the disk number (No.) specified when creating an L-Server.

For details, refer to "4.3 Operations for Creating or Starting L-Servers" in the "Reference Guide (Resource Management) CE".

---

[KVM]

Select disk storage from the resource pool to create the disk resource. Select one of Automatic, Storage pool, or Disk.

[Oracle VM]

The total size of resources is not displayed for the virtual storage in the resource list.

## 10.3.4 [Network] Tab

---

Specify the following items.

Network to connect

Configure a network resource to connect.

Clicking <Select> displays the [Select a Network Resource] dialog.

If <OK> is clicked while a network resource is selected, the network resource to connect is displayed.

The number of NICs that can be configured differs depending on the VM type.

[VMware]

0 to 10

[Hyper-V]

0 to 8

[Xen]

0 to 15

[KVM]

0 to 8

[Oracle VM]

1 to 8

IP address (Optional)

Specify the IP address to allocate to the L-Server. To manually specify the IP address to allocate to the L-Server, enter the IP address.

DNS Server

Specify the DNS server.



[Hyper-V]

IP addresses can be automatically configured, on the following guest OS's on which the integrated services are installed.

- Microsoft(R) Windows Server(R) 2008 R2
  - Microsoft(R) Windows Server(R) 2008
  - Microsoft(R) Windows Server(R) 2003 R2
  - Microsoft(R) Windows Server(R) 2003
  - Microsoft(R) Windows(R) 7
  - Microsoft(R) Windows Vista(R)
  - Microsoft(R) Windows(R) XP
- 

## 10.3.5 [OS] Tab

---

Enter the parameters to set for the OS when creating the L-Server. This setting is valid only if an image is specified in the [General] tab.



The setting process is performed the first time the L-Server is started. If an image name is not specified, it is not necessary to enter all these items.

[VMware]

For details on the [OS] tab, refer to "[OS] Tab Configuration" in "E.2.5 Setup" in the "Setup Guide CE".

[Hyper-V]

For details on the [OS] tab, refer to "[OS] Tab Configuration" in "E.3.4 Setup" in the "Setup Guide CE".

[Oracle VM]

For details on the [OS] tab, refer to "[OS] Tab Configuration" in "E.5.4 Setup" in the "Setup Guide CE".

[KVM]

For details on the [OS] tab, refer to "[OS] Tab Configuration" in "E.6.4 Setup" in the "Setup Guide CE".

## Information

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[VMware] [Hyper-V]

### OS Property Definition File

By setting the default values in an OS property definition file in advance, the default values of the information on the [OS] tab, etc. are generated when creating an L-Server. Use the UTF-8 character code for OS property definition files.

Use the OS property definition file for VM products.

It is necessary to indicate the required parameters between VM management software in the definition files.

### Location of the Definition File

[Windows]

*Installation\_folder*\Manager\etc\customize\_data

[Linux]

/etc/opt/FJSVrcvml/customize\_data

### Definition File Name

The definition file name can be used by dividing into definitions that are available for each user group and definitions that are common to the system. If the key of the definition file common to the system is the same as a definition file for a user group, priority is given to the values indicated in the definition file for the user group.

- For User Groups

*os\_setting\_user\_group\_name.rcxprop*

- Common to System

*os\_setting.rcxprop*

### Definition File Format

In the definition file, an item to define is entered on each line. Each line is entered in the following format.

<i>Key = Value</i>
--------------------

### Definition File Items

[VMware]

Refer to "[OS] Tab Configuration" in "E.2.5 Setup" of the "Setup Guide CE".

[Hyper-V]

Refer to "[OS] Tab Configuration" in "E.3.4 Setup" of the "Setup Guide CE".

[Oracle VM]

Refer to "[OS] Tab Configuration" in "E.5.4 Setup" of the "Setup Guide CE".

---

# Chapter 11 L-Server Operations

This section explains how to operate L-Servers.

L-Servers can perform the following operations:

Table 11.1 Available Operations

Operation	Physical L-Server	Virtual L-Server	References
Starting an L-Server	Yes	Yes	Refer to " <a href="#">11.1.1 Starting an L-Server</a> ".
Stopping an L-Server	Yes	Yes	For details, refer to " <a href="#">11.1.2 Stopping an L-Server</a> ".
Restarting an L-Server	Yes	Yes	Refer to " <a href="#">11.1.3 Restarting an L-Server</a> ".
Starting all L-Servers in a resource folder	Yes	Yes	Refer to " <a href="#">Starting an L-Server in a Resource Folder</a> " in " <a href="#">11.1.4 Batch Power Operation of L-Servers in Resource Folders</a> ".
Stopping all L-Servers in a resource folder	Yes	Yes	Refer to " <a href="#">Stopping an L-Server in a Resource Folder</a> " in " <a href="#">11.1.4 Batch Power Operation of L-Servers in Resource Folders</a> ".
Restarting all L-Servers in a resource folder	Yes	Yes	Refer to " <a href="#">Restarting an L-Server in a Resource Folder</a> " in " <a href="#">11.1.4 Batch Power Operation of L-Servers in Resource Folders</a> ".
Modifying specifications	Yes	Yes	Refer to " <a href="#">11.2.1 Modifying Specifications</a> ".
Modifying the basic information	Yes	Yes	Refer to " <a href="#">11.2.2 Modifying the Basic Information</a> ".
Attaching and detaching disks	Yes (*1)	Yes	Refer to " <a href="#">11.2.3 Attaching and Detaching Disks</a> ".
Sharing disks among L-Servers	Yes (*1)	Yes	Refer to " <a href="#">11.2.4 Sharing Disks Between L-Servers</a> ".
Modifying network resource settings	Yes	Yes (*2)	Refer to " <a href="#">11.2.5 Modifying Network Resource Settings</a> ".
Using the L-Server console	Yes	Yes	Refer to " <a href="#">11.3 Using the L-Server Console</a> ".
Deleting an L-Server	Yes	Yes	Refer to " <a href="#">11.4 Deleting an L-Server</a> ".
Collecting cloning images	Yes	Yes	Refer to " <a href="#">11.5.1 Collecting and Registering Cloning Images</a> ".
Viewing cloning images	Yes	Yes	Refer to " <a href="#">11.5.2 Viewing a Cloning Image</a> ".
Unregistering cloning images	Yes	Yes	Refer to " <a href="#">11.5.3 Unregistering a Cloning Image</a> ".
Deleting cloning images	Yes	Yes	Refer to " <a href="#">11.5.4 Deleting a Cloning Image</a> ".
Snapshot collection	No	Yes	Refer to " <a href="#">Collection</a> " of " <a href="#">11.6.1 Snapshot</a> ".
Snapshot restoration	No	Yes	Refer to " <a href="#">Restoration</a> " of " <a href="#">11.6.1 Snapshot</a> ".
Snapshot deletion	No	Yes	Refer to " <a href="#">Deletion</a> " of " <a href="#">11.6.1 Snapshot</a> ".
System image backup	Yes	No	Refer to " <a href="#">Backup</a> " of " <a href="#">11.6.2 Backup and Restore</a> ".
System image restoration	Yes	No	Refer to " <a href="#">Restoration</a> " of " <a href="#">11.6.2 Backup and Restore</a> ".
System image deletion	Yes	No	Refer to " <a href="#">Deletion</a> " of " <a href="#">11.6.2 Backup and Restore</a> ".

Operation	Physical L-Server	Virtual L-Server	References
Moving L-Servers between VM hosts (migration)	No	Yes	Refer to " <a href="#">11.7 Migration of VM Hosts between Servers</a> ".
Allocating resources to L-Servers	Yes	Yes	Refer to " <a href="#">11.8.2.1 Allocating Resources</a> ".
Releasing resources from L-Servers	Yes	Yes	For details, refer to " <a href="#">11.8.2.2 Releasing Resources</a> ".
Changing physical server usage	Yes	No	Refer to " <a href="#">11.9 Changing Physical Server Usage</a> ".

\*1: Only possible when using SAN boot.

\*2: IP addresses and network resources of virtual L-Servers can only be changed when the server's status is defined.

## Note

- Operations for an L-Server included in an L-Platform using the ROR console and commands have limits. Use of the console and moving of an L-Server (migration) between VM hosts are only possible when using the ROR console. Use of commands and moving of an L-Server (migration) between VM hosts are only possible when using the ROR console.
- When an L-Platform is included in a resource folder or a tenant folder, the L-Server under the L-Platform is not the target of batch power operations.
- When operating a physical server or a VM guest related to an L-Server using the server tree on the ROR console or using commands, consider also the effects on L-Servers.

## 11.1 Power Operations

This section explains the power operations of L-Servers.

### 11.1.1 Starting an L-Server

This section explains how to startup an L-Server.

Use the following procedure to start an L-Server:

1. Right-click the target L-Server in the orchestration tree, and select [Power]-[ON] from the popup menu.

A confirmation dialog is displayed.

2. Click <OK>.

The L-Server is started.

On an L-Server for which only a configuration definition has been created (defined), server and disk resources will be allocated, and after image deployment is performed (when a cloning image has been specified), the L-Server will be started.

On an L-Server which has been released (preserved), server resources will be allocated and started.

For details on the statuses when configuration definitions have been created (defined), servers have been released (preserved), and resources have been allocated (allocated), refer to "[11.8 Allocating and Releasing Resources to L-Servers](#)".

From the command-line, execute `rcxadm lserver start`.

For details on the `rcxadm lserver start` command, refer to "1.3.1 `rcxadm lserver`" of the "Reference Guide (Resource Management) CE".



## Note

- From virtual L-Servers to which resources have been allocated (allocated) or from which servers have been released (preserved), a startup command is sent out to VM guests even in the following cases.
  - CPU or memory resources of the VM host on which VM guests are located are running out, and the destination VM host does not exist (When "Boot Location" is "Relocate at startup")
  - CPU or memory resources of the VM host on which VM guests are placed are running out (When "Boot Location" is "Fixed")As sufficient CPU or memory resources cannot be secured on the VM host, an error will occur during L-Server startup. In this case, confirm the output message, and then take corrective action.
- When using tenants to segregate resources, the startup of L-Servers may be limited.  
For details, refer to "[Chapter 13 Resource Folder and Tenant Operations](#)".

[VMware]

- When starting the L-Server, sufficient overhead memory may not be secured, and starting of the L-Server may fail.  
In this case, confirm the output message, and then take corrective action.

---

## 11.1.2 Stopping an L-Server

This section explains how to stop an L-Server.

Use the following procedure to stop an L-Server.

1. Right-click the target L-Server in the orchestration tree, and select [Power]-[OFF] from the popup menu.  
A confirmation dialog is displayed.
2. Click <OK>.  
The L-Server is stopped.

Use the following procedure to stop forcibly.

1. Right-click the target L-Server in the orchestration tree, and select [Power]-[OFF (Forced)] from the popup menu.  
A confirmation dialog is displayed.
2. Click <OK>.  
The L-Server is stopped forcibly.

For L-Servers for which "Resource release" setting is configured, server resources are released. For details on "Resource release", refer to "[10.2.2 \[Server\] Tab](#)" or "[10.3.2 \[Server\] Tab](#)".

From the command-line, execute `rcxadm lserver stop`.

For details on the `rcxadm lserver stop` command, refer to "1.3.1 `rcxadm lserver`" of the "Reference Guide (Resource Management) CE".



## Note

If no OS is installed on the L-Server, the L-Server may not be stopped. In that case, perform a forced stop.

[Oracle VM]

Depending on the presence or absence of the `VirtualizationMethod` attribute and the PV (Paravirtualized) driver of VM guests, stopping operations may cause a forced stop, and a forced stopping operation may cause a stop.

---

## 11.1.3 Restarting an L-Server

This section explains how to restart an L-Server.

Use the following procedure to restart an L-Server.

1. Right-click the target L-Server in the orchestration tree, and select [Power]-[Reboot] from the popup menu.

A confirmation dialog is displayed.

2. Click <OK>.

The L-Server is restarted.

Use the following procedure to restart forcibly:

1. Right-click the target L-Server in the orchestration tree, and select [Power]-[Reboot (Forced)] from the popup menu.

A confirmation dialog is displayed.

2. Click <OK>.

The L-Server is restarted forcibly.

From the command-line, execute `rcxadm lserver restart`.

For details on the `rcxadm lserver restart` command, refer to "1.3.1 `rcxadm lserver`" of the "Reference Guide (Resource Management) CE".



- If no OS is installed on the L-Server, the L-Server may not be restarted. In that case, perform a forced restart.

[Oracle VM]

- Depending on the presence or absence of the `VirtualizationMethod` attribute and the `PV` (Paravirtualized) driver of VM guests, restarting operations may cause a forced restart, and a forced restarting operation may cause a restart.

## 11.1.4 Batch Power Operation of L-Servers in Resource Folders

---

This section explains the batch power operations of L-Servers in resource folders.

When performing batch power operation of L-Server in resource folders, configure the startup priority settings for L-Servers in advance.

For priority order settings, configure from "Startup priority" of the [Modify an L-Server] dialog, or [Server] tab of the [Create an L-Server] dialog.

For details, refer to "10.2 Creation of Physical L-Servers Using Parameters" or "10.3 Creation of Virtual L-Servers Using Parameters".



The batch operations for an L-Server in a tenant are only available for Basic mode.

### Starting an L-Server in a Resource Folder

Use the following procedure to start an L-Server in a resource folder.

1. Right-click the target resource folder or tenant in the orchestration tree, and select [Power]-[ON] from the popup menu.

The [Power On L-Servers] dialog is displayed.



A list of L-Servers that are targets of the power operation is displayed.

The display order is in descending order of priority.

Even if the list of L-Server is not displayed, the power supply can be operated.

2. Click <OK>.

L-Servers in a resource folder are started in the order of priority.

When the following conditions are met on an L-Server with a configuration definition already been created (defined), the L-Server will not be the target of powering on.

- The cloning image is specified
- Boot disks (system volumes) are dynamically created from virtual storage
- The L-Server is a virtual L-Server on RHEL-KVM

When an L-Server uses resources in another tenant, the L-Server will not be the target of powering on.

From the command-line, execute `rcxadm folder start`.

For details on the `rcxadm folder start` command, refer to "1.3.9 `rcxadm folder`" of the "Reference Guide (Resource Management) CE".

## Stopping an L-Server in a Resource Folder

Use the following procedure to stop an L-Server in a resource folder.

1. Right-click the target resource folder or tenant in the orchestration tree, and select [Power]-[OFF] from the popup menu.

The [Power OFF L-Servers] dialog is displayed.



.....  
A list of L-Servers that are targets of the power operation is displayed.

They are displayed in order with low priority.

Even if the list of L-Server is not displayed, the power supply can be operated.  
.....

2. Click <OK>.

L-Servers in a resource folder are stopped in the order of priority.

From the command line, execute `rcxadm folder stop`.

For details on the `rcxadm folder stop` command, refer to "1.3.9 `rcxadm folder`" of the "Reference Guide (Resource Management) CE".

## Restarting an L-Server in a Resource Folder

Use the following procedure to restart an L-Server in a resource folder.

1. Right-click the target resource folder or tenant in the orchestration tree, and select [Power]-[Reboot] from the popup menu.

The [Reboot L-Servers] dialog is displayed.



.....  
A list of L-Servers that are targets of the power operation is displayed.

The display order is in descending order of priority.

Even if the list of L-Server is not displayed, the power supply can be operated.  
.....

2. Click <OK>.

L-Servers in a resource folder are restarted in the order of priority.

From the command-line, execute `rcxadm folder restart`.

For details on the `rcxadm folder restart` command, refer to "1.3.9 `rcxadm folder`" of the "Reference Guide (Resource Management) CE".

## 11.2 Modifying an L-Server

---

This section explains how to perform L-Server configuration changes.

When modifying configurations for an L-Server for which only a configuration definition was created, refer to "[11.8.2.3 Modifying Configuration Definition Information](#)".

- Resource Orchestrator makes periodic queries to VM management software.
  - When the configuration of a virtual machine is modified using VM management software, periodic queries will reflect the changes on the virtual machines used by a virtual L-Server.
  - When addition, modification, or deletion of storage is performed using VM management software, changes to the configuration/status of storage of the virtual L-Server are detected.

- Resource Orchestrator makes periodic queries to storage devices.

When changes are made to storage using storage management software, the changes to the status of the storage on the physical L-Server are detected.

On virtual L-Servers, the following information is updated:

- L-Server Name (\*1)
- CPU Performance
- Number of CPUs
- Memory Capacity (\*2)
- VM Management Software Specific Information
- OS Type
- Server Redundancy (\*3)
- The Number of Disks
- Disk Index
- Disk Capacity
- Device Path
- Usage
- Type

\*1: Confirm the following for the virtual L-Server name and the VM name:

- When use of the same name is configured for both a virtual L-Server and a VM, performing the following operations makes the L-Server name match the VM name.
  - Creating an L-Server
  - Changing L-Server name basic information
- When use of the same name is configured for both a virtual L-Server and a VM, performing the following operations makes the L-Server name match the VM name when VM information changes are detected.
  - Changing labels and comments of L-Server basic information
  - Changing L-Server specifications

For the configuration to use the same name for both a virtual L-Server and a VM machine, refer to "[Table 11.4 List of Items Specified in the Definition File](#)" of "[11.8.1 Installation](#)".

\*2: When using VMware, the value to be reflected varies depending on the memory limit settings.

When Unlimited is set for the memory limit, the specified memory size is reflected.

When a particular value is specified for memory limit, that value is reflected.

When using Hyper-V, the value to be reflected varies depending on the dynamic memory settings.

When dynamic memory is enabled, the setting for the maximum memory is reflected.

When dynamic memory is disabled, the setting for the virtual machine memory is reflected.

\*3: Updated only when VMware FT is configured or released.

When attaching and detaching disks from a virtual machine are performed consecutively on VM management software, an event log regarding Storage Migration is output.

## Note

Network information and physical L-Servers are not updated.

When attachment or detachment of disks is performed using storage management software, the changes to the configuration of storage on the physical L-Server is not detected.

- For the created physical L-Server, reflect attachment or detachment of disks using the following procedure:
  - When a Disk has been Attached
    1. Detach the disk from the physical server using the storage management software.

When the physical server is powered on, it is necessary to change the status of the disk to detach into unused in advance.
    2. Attach the disk to the physical L-Server.

For details, refer to "[11.2.3 Attaching and Detaching Disks](#)".
  - When a Disk has been Detached

Detach the disk from the physical L-Server.

For details, refer to "[11.2.3 Attaching and Detaching Disks](#)".
- For a physical L-Server linked with a configured physical server, reflect attachment or detachment of disks using the following procedure:
  1. Cancel the link between the physical server and the physical L-Server.

For details, refer to "[16.6 Reverting L-Servers](#)".
  2. Create a link between the physical server and the physical L-Server.

For details, refer to "[11.8.1 Installation](#)".
- Even if modification of the L-Server configuration failed, part of the information may be successfully modified. In this case, it takes a while for the modified information to be reflected. The virtual machine information is reflected through periodic queries.

## 11.2.1 Modifying Specifications

This section explains how to modify L-Server specifications. Use the following procedure to modify L-Server specifications:

### The Procedure when Using the GUI

1. Right-click the target L-Server in the orchestration tree, and select [Change Setting]-[Specification] from the popup menu.

The [Modify an L-Server] dialog is displayed.
2. Change the values.
3. Click <OK>.

The current values for each item are displayed in the [Modify an L-Server] dialog. Items that have been changed are indicated with an asterisk ("\*") in front of the item.

### The Procedure From the Command Line

From the command-line, execute `rcxadm lserver modify` or `rcxadm lserver set`.

For details on the `rcxadm lserver modify` command and the `rcxadm lserver set` command, refer to "1.3.1 `rcxadm lserver`" of the "Reference Guide (Resource Management) CE".



## Changeable Items

The items for which specifications can be changed differ depending on whether the L-Server is physical or virtual.

### - Changing Physical L-Server Specifications

The following items can be changed when the power status of the physical L-Server is OFF.

- FC path
- Boot Mode
- CPU Performance (\*1)
- Number of CPUs (\*1)
- Memory Size (\*1)

\*1: Can be specified when using blade servers. When you start the L-Server after setting "Resource release" (for allocating and releasing resources to and from L-Servers) and adjusting CPU and memory settings, a physical server will be selected according to the modified conditions.

### - Changing Virtual L-Server Specifications

The following items can be changed when the power status of the virtual L-Server is ON. For details, refer to the manuals of VM products.

- CPU Performance
- Number of CPUs
- Memory Size
- OS Type (When no images are not deployed)

[Oracle VM]

The OS type cannot be changed, regardless of whether images are deployed or not.

[KVM]

When changing the specifications for the OS types (when images have not been deployed) of virtual L-Servers, for KVM it is necessary to perform settings based on the OS type that the user intends to install.

When the OS type differs from the OS installed on the virtual L-Server, operation is not guaranteed.

The following shows the VM products where changes may be made while the power is on:

- VMware
- Hyper-V
- KVM

The items that can be changed depend on the type of VM product and the settings. Refer to "[Table 11.2 Items that can be changed while the power is on](#)" for details.

Table 11.2 Items that can be changed while the power is on

Resource Name	Changed	VMware	Hyper-V	KVM
Number of CPUs	Add	Yes (*1)	No	No
	Detaching a Disk	No	No	No
CPU performance	Add	Yes	Yes	Yes
	Detaching a Disk	Yes	Yes	Yes
Memory Size	Add	Yes (*1)	No	Yes
	Detaching a Disk	No	No	Yes
OS Type	Change	No	Yes	Yes

\*1: Can be changed if memory/CPU hot plug is enabled. The memory/CPU hot plug is enabled on the virtual L-Server created by Resource Orchestrator.

[VMware] [Hyper-V]

When CPU reserve, memory reserve, and initial memory capacity have been set for the L-Server, changing the CPU performance and memory size to values smaller than those values is not possible. To change these settings, use the command-line or VM management software. (\*1)

[VMware]

When the memory size is changed, the limit value of memory is also changed.

However, when the limit value of memory has been set to "Unlimited", only the memory size is changed.

When changing the memory limit setting, use the VM management software to do so. (\*1)

For details on the configuration method, refer to the manual of the VM management software.

When VMware FT has been configured on a virtual machine linked with a virtual L-Server, server redundancy settings cannot be modified.

Check whether the memory/CPU hot plug has been enabled from the VM management software if an existing VM guest is to be linked to a virtual L-Server.

If it is not enabled, enable the setting from the VM management software. Refer to the manual for the VM management software network device for information on how to enable the memory/CPU hot plug with the VM management software.

[Hyper-V]

When dynamic memory settings are changed from disabled to enabled, without specifying memory capacity or initial memory capacity for the L-Server, the values for the following items of the virtual machine will be same as the memory size.

- Initial Memory Capacity (StartupRAM)
- Maximum Memory

When using dynamic memory or memory weight, it is necessary to apply Service Pack 1(SP1) or later to the VM host, and upgrade SCVMM when using System Center Virtual Machine Manager 2008 R2 Service Pack 1(SP1) or later. When dynamic memory is enabled and memory weight is specified, modification of the L-Server fails unless there are a VM host and SCVMM with SP1 applied.

\*1: The modified value is reflected on the configuration of the L-Server by periodic queries made to the VM management software. For details on reflection of L-Server configuration by periodic queries, refer to "[11.2 Modifying an L-Server](#)".

## Note

Immediately after a snapshot is restored, there may be differences between the configuration of VM guests managed by L-Server and those managed by VM management software.

The differences in VM guest configuration are reflected on the configuration of the L-Server by periodic queries made to the VM management software.

For details on reflection of L-Server configuration by periodic queries, refer to "[11.2 Modifying an L-Server](#)".

When changing the values for server redundancy for an L-Server to which a virtual machine is already allocated, the virtual machine is not changed, only L-Server attributes are changed.

When making changes while the power of the virtual L-Server is on, only the configuration of the virtual L-Server can be changed.

Follow the procedures for the OS's running on the virtual L-Server to have the changes recognized by the OS's.

## 11.2.2 Modifying the Basic Information

---

This section explains how to modify the basic information of L-Servers. Use the following procedure to modify the basic information of L-Servers:

### Note

- Immediately after a snapshot is restored, there may be differences between the configuration of VM guests managed by L-Server and those managed by VM management software.

The differences in VM guest configuration are reflected on the configuration of the L-Server by periodic queries made to the VM

management software.

For details on reflection of L-Server configuration by periodic queries, refer to "[11.2 Modifying an L-Server](#)".

- Changing an L-Server name changes the VM guest name on server virtualization software as well.

For associating an L-Server name with a VM guest name, refer to "[Association of an L-Server Name with a VM Guest Name](#)" in "[10.1 Creation Using an L-Server Template](#)".

- To change an L-Server name, the L-Server must be stopped.

When the L-Server power status is on, the L-Server name cannot be changed.

- Change the names of physical L-Servers when the power status of the L-Server is OFF.

When the physical L-Server power status is on, the L-Server name cannot be changed. For virtual L-Servers, only when the VM product is VMware, can the L-Server name can be changed while the L-Server power status is on. For details, refer to the manuals of VM products.

- 
1. Right-click the target L-Server in the orchestration tree, and select [Change Settings]-[Basic Information] from the popup menu.

The [Resource Change Setting] dialog is displayed.

2. Change the items you want to modify.

3. Click <OK>.

The basic information of the L-Server is modified.

From the command-line, execute `rcxadm lserver modify`.

For details on the `rcxadm lserver modify` command, refer to "1.3.1 `rcxadm lserver`" of the "Reference Guide (Resource Management) CE".

## 11.2.3 Attaching and Detaching Disks

---

This section explains how to modify the disk configuration of an L-Server.

### Prerequisites

For physical L-Servers, attachment and detachment of disks is only possible when using SAN boot.

### Attaching a Disk

Use the following procedure to attach a disk to an L-Server:

1. Right-click the target L-Server in the orchestration tree, and select [Change Settings]-[Attach Disk] from the popup menu.

The [Attach a New Disk] dialog is displayed.

2. Enter the following items:

#### Size

Enter the disk size of the additional disk as a number with up to one decimal place, in units of gigabytes. "10" is initially displayed.

#### Resource type

Specify the disk to allocate to the L-Server.

Select from the following items.

- Automatic

Select the appropriate resources, and allocate storage pools and virtual storage resources or disk resources to the L-Server. Set "Automatic" for the default value.

## Note

When there are storage pools with and without Thin Provisioning attributes configured that have the same priority, the storage pool that will be given priority is decided based on definition files.

For details on definition files, refer to "E.1.1 Definition Files" of the "Setup Guide CE".

If dynamic LUN mirroring has been set in the virtual storage, a volume is also created on the ETERNUS storage in the remote site specified in the definition file.

If the ETERNUS storage in the remote site has been detected by Resource Orchestrator, it will be detected as a disk resource that was prepared beforehand, but do not register it to the storage pool.

### - Storage pool

Select the appropriate resources, and allocate storage pools to the L-Server.

### - Virtual storage

Displays virtual storage resources such as RAID groups or aggregates as a list.

Select from the displayed virtual storage resources.

Create the specified size of disk resources from the specified virtual storage resource, and allocate them to the L-Server.

When using the virtual storage resource on which the Thin Provisioning attributes are configured, the disk resource can be created specifying a size exceeding the actual disk space.

### - Disk

Assign a LUN created in advance, or the automatically created disk resources, for allocation to the L-Server.

When specifying search conditions, the relevant disk resource list is displayed.

Select from the displayed disk resources.

The specified disk resources are allocated to the L-Server.

## Search conditions

### Storage pool

Select the storage pool of the storage destination of the disk resource.

### Search size

Enter the lowest value of the disk size to be searched as a number with up to one decimal place, in units of gigabytes.

### Allocation status

Specify the status for the disk to allocate to the L-Server.

- Unallocated

Specify when selecting a disk resource which is not allocated to another L-Server.

- Allocated

Specify when selecting a disk resource which is allocated to another L-Server.

### Allocated L-Server

Specify an L-Server when sharing the disk resources.

### Disk name

Specify the name of the disk to be found.

- Begins with

Specify when searching for disks whose names begin with the specified string.

- Includes

Specify when searching for disks whose names include the specified string.

3. Click <OK>.

4. Make the disk available following the disk attachment procedure provided by the OS.

From the command-line, execute `rcxadm lserver attach`.

For details on the `rcxadm lserver attach` command, refer to "1.3.1 `rcxadm lserver`" of the "Reference Guide (Resource Management) CE".

## Information

[VMware] [Hyper-V]

Data disks are connected to the L-Server as SCSI disks. They are not connected as IDE disks.

[Oracle VM]

Specify the following items when connecting data disks to an L-Server.

- When the L-Server is an HVM (Hardware Virtualized Machine)
  - System volume: `hda`
  - Data disks (First to seventh): `sda` to `sdg`
- When the L-Server is a PVM (Para-Virtualized Machine)
  - System volume: `xvda`
  - Data disks (First to fifty-ninth): `xvdb` to `xvdbh`

## Note

- When an L-Server is powered on, the disk to be attached to must be recognized by the L-Server. Follow the procedure provided by the OS.
- When using physical L-Servers, disks or networks cannot be attached to the L-Server that is using iSCSI boot.
- Saved disk resources which are created from virtual storage can only be attached to virtual L-Servers on Hyper-V when using Microsoft(R) System Center 2012 Virtual Machine Manager.
- The only disk resources that can be attached to a virtual L-Server on Hyper-V are disk resources that are not used for other virtual L-Servers.
- Saved disk resources cannot be attached to virtual L-Servers on Hyper-V from which snapshots have been collected when using Microsoft(R) System Center 2012 Virtual Machine Manager.

## Information

### Alias Name configuration

- When a disk that has been created from the ETERNUS virtual storage (RAID group, for example) when expanding disks, set the alias (if possible) based on the disk resource in the ETERNUS LUN.  
Refer to "[10.2 Creation of Physical L-Servers Using Parameters](#)".

### Physical L-Server Data Disk for iSCSI Boot

- When Using ETERNUS Storage

Using storage management software, the data disk can be accessed from managed servers by defining LUNs of the iSCSI boot disk and of the data disk in the same Affinity group.

- When Using NetApp Storage

Using storage management software, the data disk can be accessed from managed servers by defining LUNs of iSCSI boot disk and of the data disk in the same igroup.

## Detaching a Disk

Use the following procedure to detach a disk allocated to an L-Server:

1. Right-click the target L-Server in the orchestration tree, and select [Change Settings]-[Detach Disk] from the popup menu. The [Detach a Disk] dialog is displayed.
2. Select or enter the following items:

### Resource List

Select the disk resource to remove from "Resource List". Disk resources other than system disks are displayed in the list.

### Delete the selected disk resource (for Physical L-Servers and for Hyper-V Virtual L-Servers)

If a disk resource that has been created from the virtual storage is selected in the "Resource List", then setting can be made with the following option buttons when reducing disks.

### Yes

The disk resources are deleted when they are reduced.

### No

Disk resources are not deleted when reducing, and they are registered in the same storage pool as the virtual storage they were created from.

### Detach disks (for Virtual L-Servers)

When detaching disks, check the "Detach disks." checkbox.

### Detach disks when the L-Server is running

When detaching disks while the L-Server is powered on, check the "Detach disks when the L-Server is running." checkbox.

3. Click <OK>.

## Note

- When using RHEL-KVM virtual L-Servers, the L-Server must be powered off in order to detach a disk.
- When using a virtual L-Server on something other than RHEL-KVM, and when detaching a disk resource virtual L-Server on Hyper-V, the content of the detached disk is deleted. After confirming the advisory notes in the displayed dialog, check the "Detach disks." checkbox.
- If disks are detached while the server is powered on, it is necessary to change the status of the disk into unused in advance. After confirming the advisory notes in the displayed dialog, check the "Detach disks when the L-Server is running." checkbox.
- When the disk resource is a LUN created in advance or a disk resource for virtual L-Servers, it is recommended to delete the data on the disk, as the data is not deleted when the disk is detached. For details on how to delete data on the disks, refer to the cautionary notes of "[7.5 Storage Resources](#)".
- When using physical L-Servers, disks or networks cannot be detached from the L-Server that iSCSI boot is being adopted.
- If "No" is selected for "Detach Selections disks", this setting is only valid for disk resources when reducing. Specifying this does not allow indefinite saving of disk resources.
- If they are disk resources that were created with dynamic LUN mirroring, the disk resources on the local site and on the remote site are deleted simultaneously when the L-Server is deleted.
- The disk resources detached from a virtual L-Server on Hyper-V can only be saved when using Microsoft(R) System Center 2012 Virtual Machine Manager.
- When the snapshots are collected from a virtual L-Server on Hyper-V, detached disk resources cannot be saved.

From the command-line, execute `rcxadm lserver detach`.

To detach a disk from an L-Server while the power of the L-Server is on, specify the `-online` option command.

For details on the `rcxadm lserver detach` command, refer to "1.3.1 `rcxadm lserver`" of the "Reference Guide (Resource Management) CE".

[Hyper-V]

When changing the configuration, a maximum of up to four disks can be specified at one time.

To perform addition of five or more disks, please perform an additional configuration change.

## Information

- When not deleting detached disks from virtual storage when detaching them, the L-Server can be connected with the same operations as the LUNs that were detached in advance.
- When not deleting detached disks from virtual storage when detaching them, use the following procedure to delete the disk resources:
  1. Connect the disk resource to the L-Server.
  2. Select "Yes" in "Detach Selections disks" when detaching disks.  
Otherwise, delete the L-Server.

## Note

Immediately after a snapshot is restored, there may be differences between the configuration of VM guests managed by L-Server and those managed by VM management software.

The differences in VM guest configuration are reflected on the configuration of the L-Server by periodic queries made to the VM management software.

For details on reflection of L-Server configuration by periodic queries, refer to "[11.2 Modifying an L-Server](#)".

If the disk configuration of a virtual machine is modified using VM management software, attaching and detaching disks to and from virtual L-Servers will be disabled.

[VMware]

- When changed to use a device path other than the following:
  - SCSI:0:0 - SCSI:0:6
  - SCSI:0:8 - SCSI:0:14
  - SCSI:1:0 - SCSI:1:6
  - SCSI:1:8 - SCSI:1:14 AM
  - SCSI:2:0 - SCSI:2:6
  - SCSI:2:8 - SCSI:2:14 AM
  - SCSI:3:0 - SCSI:3:6
  - SCSI:3:8 - SCSI:3:14 AM
- When changed to use Raw Device Mapping

[Hyper-V]

- When changed to use a device path other than the following:
  - IDE:0:0
  - SCSI:0:1 - SCSI:0:14
  - SCSI:1:0 - SCSI:1:14 AM
  - SCSI:2:0 - SCSI:2:14 AM
  - SCSI:3:0 - SCSI:3:14 AM
- When changed to use a path through disk or difference disk

- Note that changing the device path for the system disk enables deletion of disks for all disks.

Once a virtual L-Server is created, do not change the device path of the system disk using VM management software as doing so results in the following behavior.

- A hyphen ("-") is displayed for "Usage" in the "Disk Information" displayed on the [Resource Details] tab on the ROR console.
- Reduction of the size of the system disk will be possible.

When changing the disk type using the same device path from VM management software, perform the following procedure.

1. Delete a disk from the virtual machine using VM management software.
2. Confirm that the disk deleted in 1. has been deleted as disk information of the L-Server on the ROR console.
3. On VM management software, add a disk to the virtual machine.

Here, changing the disk type refers to the following:

- Switching from a virtual disk to Raw Device Mapping, a pass-through disk, or a difference disk
- Switching Raw Device Mapping, a pass-through disk, or a difference disk to a virtual disk

When using VM management software to change the configuration of disk resources saved in a virtual machine that were created from virtual storage, the disk resources registered in the storage pool may be deleted.

When snapshots are collected from the virtual machine using VM management software, attaching disks to or detaching disks from the L-Server may fail.



## 11.2.4 Sharing Disks Between L-Servers

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This section explains how to share disks between multiple L-Servers.

### Prerequisites

- Sharing of disks is possible when the managed servers and storage are shared using Fibre Channel connections.
- First disk (System Volume) cannot be shared between L-Servers.
- Control of simultaneous access to shared disks is performed by other applications, such as cluster systems.
- Disk sharing between L-Servers is only possible for physical L-Servers that use SAN boot.

### Installation

Use the following procedure to create new L-Servers and to share disks between L-Servers:

- Create an L-Server (First server)

Create an L-Server, referring to "[Chapter 10 Creating L-Servers](#)".

When creating an L-Server using the command, execute the `rcxadm lserver create` command.

For details on the `rcxadm lserver create` command, refer to "1.3.1 `rcxadm lserver`" and "2.3.1 Definition Information for Physical L-Servers (XML)" of the "Reference Guide (Resource Management) CE".

- Creating an L-Server (For a second or later server)

Create an L-Server. In this case, select the following:

- Select the disk to allocate to the L-Server.
- Select "Allocated" for "Allocation Status".
- Select the first L-Server created in "Creating an L-Server (For a first server)" as "Allocated L-Server".

When specifying these items as search conditions, connected shared disks can be filtered. For details, refer to "[10.2.3 \[Disk\] Tab](#)".



## Attaching Shared Disks

Use the following procedure to attach disk resources to L-Servers created in advance and to share the disks:

- Attaching shared disks to the first L-Server

To attach disks, use the procedure of "Attach new disks" in "11.2.3 Attaching and Detaching Disks".

- Attaching disks to share for a second (or later) L-Server

To attach disks, use the procedure of "Attach new disks" in "11.2.3 Attaching and Detaching Disks". In this case, select the following:

- Select the disk to allocate to the L-Server.
- Select "Allocated" for "Allocation Status".
- Select the first L-Server to which the shared disks have been attached as the "Allocated L-Server".

When specifying these items as search conditions, connected shared disks can be filtered. For details, refer to "10.2.3 [Disk] Tab".

## 11.2.5 Modifying Network Resource Settings

This section explains how to modify network resource settings.

The following items can be modified.

Table 11.3 Network Resource Items for Modification

Operation	L-Server Status						
	Physical L-Server			Physical L-Server (iSCSI Boot)	Virtual L-Server		
	Defined	Preserved	Allocated	All	Defined	Preserved	Allocated
IP address change (Admin LAN/public LAN) (*1)	Yes	Yes	Yes	Yes	Yes (*2)	-	-
Changing network resources to connect to a NIC or a NIC group	Yes	Yes	Yes	-	Yes (*2)	-	-
NIC addition and deletion	Yes (*3)	-	-	-	Yes (*2, *4)	Yes (*5)	Yes (*5)
Changing untagged VLAN settings (use/not use)	Yes	Yes	Yes	-	-	-	-
Adding or deleting network resources to connect to a NIC or a NIC group	Yes	Yes	Yes	-	-	-	-
Redundancy modification (Example: Changing the combination of NIC1 and 2 to NIC3 and 4)	Yes (*3)	Yes (*3)	Yes (*3)	-	-	-	-
Redundancy addition (Example: Changing NIC1 to the combination of NIC1 and 2)	Yes (*3)	Yes (*3)	Yes (*3)	-	-	-	-
Redundancy deletion	Yes (*3)	Yes (*3)	Yes (*3)	-	-	-	-

Operation	L-Server Status						
	Physical L-Server			Physical L-Server (iSCSI Boot)	Virtual L-Server		
	Defined	Preserved	Allocated	All	Defined	Preserved	Allocated
(Example: Changing the combination of NIC1 and 2 to NIC1 only)							

- \*1: Changing IP addresses across subnets is not possible.
- \*2: IP addresses and network resources of virtual L-Servers can only be changed when the server's status is "defined".
- \*3: NICs that connect to admin LAN resources cannot be changed.
- \*4: For L-Servers with RHEL-KVM or RHEL-Xen selected for the VM type, the NIC cannot be added or deleted.
- \*5: For L-Servers with VMware, Hyper-V, or RHEL-KVM selected for the VM type, NICs can be added or deleted.

### Note

- Modifications to L-Server specifications have no effect on the settings of the OS installed on the L-Server. Modify the network settings of the OS referring to the IP address and network information of the modified L-Server.
- For physical L-Servers, the position of the NIC used for the admin LAN cannot be changed.
- After deployment of L-Servers, do not change the labels for network resources using port groups on VMware. When the label for a network resource to use is changed accidentally, the new L-Server deployment will fail.

Use the following procedure to change network settings.

### When the L-Server status is "defined"

1. Right-click the target L-Server in the orchestration tree, and select [Change Settings]-[Definition] from the popup menu.  
The [Modify L-Server's definition] dialog is displayed.
2. Use the [Network] tab to change network resource settings of the L-Server.

### Information

- For Physical L-Servers  
For details on operation of the [Network] tab, refer to "[10.2.4 \[Network\] Tab](#)".
  - For Virtual L-Servers  
For details on operation of the [Network] tab, refer to "[10.3.4 \[Network\] Tab](#)".
3. Click <OK>.

### When resources have not been allocated (preserved) or have been allocated (allocated) to the L-Server

### Note

When resources have not been allocated (preserved) or have been allocated (allocated) to the L-Server, only the network resources of physical L-Servers can be modified.

## For Physical L-Servers

1. Right-click the target L-Server in the orchestration tree, and select [Change Settings]-[Network Configuration] from the popup menu.

The [Change network configuration of an L-Server] dialog is displayed.

2. Enter the following items:

### NIC

Clicking <Add> adds a network.

Select a network resource to connect with in the [Add a Network] dialog.



### Information

- When adding a new NIC or NIC group, select the number of "(Undefined)" for [NIC] in the [Add a Network] dialog. When performing redundancy for the NIC, select the pair of NICs to use.

- When adding an already defined NIC or a network to connect with the NIC group, select the defined number for [NIC] in the [Add a Network] dialog.

Clicking <Delete> deletes the selected network.

If the number is not the NIC number specified when creating an L-Server, <OK> is not activated. When <OK> is not activated, click <Add> to configure undefined NICs.

### Network

Click <Select> to select a network resource that is connected to a NIC or a NIC group.

### IP address

Enter an IP address to set for the L-Server. If the IP address is not entered, an IP address is automatically allocated to the L-Server.

### Untagged VLAN

Select whether or not to use untagged VLAN for a NIC or a NIC group.

3. Click <OK>.

From the command-line, execute `rcxadm lserver modify`.

For details on the `rcxadm lserver modify` command, refer to "1.3.1 `rcxadm lserver`" of the "Reference Guide (Resource Management) CE".

## For Virtual L-Servers

Use the `rcxadm lserver attach` and `detach` commands for adding and deleting NICs.

For details on the `rcxadm lserver modify` command, refer to "1.3.1 `rcxadm lserver`" of the "Reference Guide (Resource Management) CE".

## 11.3 Using the L-Server Console

This section explains how to use peripheral devices from an L-Server.

When installing an OS after creating an L-Server and performing L-Server maintenance, the L-Server console can be obtained.

When performing usual operations, or the console cannot be obtained, log in to an L-Server through the network.



### Example

#### Network Connection Example

[Windows]  
Remote desktop connection

[Linux]  
SSH connection

---

## Prerequisites for Console Connections

When using a console connection, the prerequisites differ depending on the server type of the L-Server used.

- For Physical L-Servers

When the hardware is PRIMERGY, and the iRMC video console redirection function can be used, connection to the console is possible.

### Note

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For console connection, use functions of ServerView Operations Manager.

For details on ServerView Operations Manager, refer to "1.4.2.2 Required Software" of the "Setup Guide CE".

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- For Virtual L-Servers

On VMware and Hyper-V, when an admin client is installed, and communication between admin clients and VM hosts is possible, connection of the console is possible.

[Oracle VM] [KVM] [Xen]

The console cannot be connected to through the ROR console.

### Note

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For console connection, use admin client functions. Check if the console connection is possible from the admin client in advance.

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[VMware]

Normally, the admin server notifies the admin client of the IP address of the admin LAN of the VM host registered with the admin server to use as the connection destination for the console. For this reason, the console cannot be connected to by admin clients that exist on networks that are not connected to the admin LAN.

To connect to the console from a admin client that is connected only to the public LAN, in the definition file on the admin server, set the VM host connection destination that can be connected from the admin client. The admin server notifies of the VM host connection destination that can be connected from the public LAN and the admin client can connect to the console.

### Note

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If the destination for connection of a public LAN that has been set for a VM host is specified in the definition file, a console connection from the admin LAN will be unavailable.

---

Further, the VM host connection can be specified for each tenant. The L-Server console connection stored in tenants makes requests to the VM host connection set in the definition file. One VM host can be shared by multiple tenants in an environment where there is a separate public LAN for each tenant.

## Preparations for using a console connection from a public LAN

Preparations are necessary in order to use a console connection from a public LAN.

For details, refer to "E.2.2 Preparations" in the "Setup Guide CE".

## Setting the VM Host Connection for each Tenant

Set the VM host connection for when the console window for the L-Server stored in the tenant is started.  
For details, refer to "E.2.4 Configuration After Installation" in the "Setup Guide CE".

[Hyper-V]

Admin clients must be in the same domain as SCVMM or VM hosts. It is necessary to install the VMM management console for SCVMM that is of the same version as the SCVMM registered as VM management software.

## Console

This chapter explains the L-Server console connection.

Use the following procedure to connect the console:

1. Right-click the target L-Server in the orchestration tree, and select [Console Screen] from the popup menu.  
A confirmation dialog is displayed.
2. When using a virtual L-Server, click <OK>.  
The L-Server console window is displayed in another window.

### Note

- When using virtual L-Servers, it is necessary to permit the starting of the console screen using the policy settings of Java Plug-in.

Use the following procedure to permit the starting of the console screen:

1. When starting of the console screen is not allowed, the [Download] dialog of the Java policy setup script is displayed.
2. Click <OK>.  
The Java policy setup script is downloaded. Save the file.
3. Execute the Java policy setup script to configure the settings for permitting the console screen startup.
4. After performing the configuration, close the web browser.

Log in to Resource Orchestrator again using a web browser, and the console screen can then be started from the ROR console.

- In cases where the following VM products are used for a virtual L-Server, starting the ROR console turns the L-Server "ON" when the selected L-Server was "OFF".
  - VMware vSphere (R) 4
  - VMware vSphere (R) 4.1

- For physical L-Servers, when opening the L-Server console screen at the second time or later, a window for iRMC management may be opened instead of the console screen.

If an iRMC management screen is displayed, close that screen and then start the console screen again.

For details, refer to "When Opening the Physical L-Server Console Screen, the iRMC Management Window may be Opened." in "4.3 Operations for Creating or Starting L-Servers" of the "Reference Guide (Resource Management) CE".

---

## 11.4 Deleting an L-Server

This section explains how to delete an L-Server. To delete an L-Server the L-Server must be stopped.

If an L-Server is deleted, the resources allocated to the L-Server are automatically made available for reuse.

1. Right-click the target L-Server in the orchestration tree, and select [Delete] from the popup menu.  
The [Delete an L-Server] dialog is displayed.

2. Click <OK>.

The target L-Server is deleted.

### Note

- When deleting an L-Server, log off from the ETERNUSmgr of ETERNUS storage registered on ESC.
- When operating NetApp storage in cluster environments and operating a partial system due to system trouble, perform the operation after recovering the NetApp storage and returning the system to cluster operation.
- When the disk resource is a LUN created in advance, a LUN for iSCSI boot, or a disk resource for virtual L-Servers, it is recommended to delete the data on the disk, as the data is not deleted when deleting the L-Server to which the disk resource is allocated. For details on how to delete data on the disks, refer to the cautionary notes of "[7.5 Storage Resources](#)".
- If they are disk resources that were created with dynamic LUN mirroring, the disk resources on the local site and on the remote site are deleted simultaneously when the L-Server is deleted.
- When deleting a virtual L-Server, the target L-Server will enter unknown status, and a warning message may be displayed. When the L-Server has been deleted, the warning message will disappear, so no corrective action is necessary.

From the command-line, execute `rcxadm lserver delete`.

For details on the `rcxadm lserver delete` command, refer to "1.3.1 `rcxadm lserver`" of the "Reference Guide (Resource Management) CE".

## 11.5 Cloning Image Operations

This section explains how to collect and delete cloning images.

### 11.5.1 Collecting and Registering Cloning Images

This section explains how to collect cloning images.

Use the following methods to collect cloning images:

- Collect cloning images from L-Servers with an OS installed
- Collect Cloning Images from Templates of Server Virtualization Software

### Note

For physical L-Servers, agents must be registered before collecting cloning images.

For details, refer to "D.7.2 Cloning Images" of the "Setup Guide CE".

Use the following procedure to collect cloning images:

#### Collect cloning images from L-Servers with an OS installed

1. After installing an OS, right-click the target L-Server in the orchestration tree, and select [Cloning]-[Collect] from the popup menu.  
The [Collect a Cloning Image] dialog is displayed.
2. To use this feature, the following settings must first be defined:

### Note

For physical L-Servers, the target L-Server must be operating when cloning images are being collected.

Cloning images cannot be collected from a physical L-Server on which a VM host has been installed.

For virtual L-Servers, the target L-Server must be stopped when cloning images are being collected.

## Cloning Image Name

### New

Enter a name to identify the collected cloning image.

For a cloning image name, enter a character string, beginning with an alphabetic character (upper or lower case), and containing up to 32 alphanumeric characters (upper or lower case) and underscores ("\_").

### Update

Select when specifying the same name as that of a cloning image which has already been collected. Select the cloning image from the list.

For cloning images with the same name, the number that can be retained is the number of cloning image versions.

By default, the maximum number of stored cloning image versions is set to 3.

## Image location (For Virtual L-Servers)

Select the storage location for cloning images. Clicking <Select> displays the [Select a Location for this Image] dialog.

Select the storage location, and click <OK>.

## Destination Pool

Select the image pool to register cloning images in.

## Comment (Optional)

Enter a comment that identifies the cloning image.

Up to 128 characters other than percent signs ("%"), back slashes ("\ cant be specified.

### 3. Click <OK>.

Cloning images are stored in image pools.

Clicking <Cancel> in the Recent Operations area displays a confirmation dialog and stops the process.

From the command-line, execute `rcxadm image create`. For details on the `rcxadm image create` command, refer to "1.4.1 `rcxadm image`" of the "Reference Guide (Resource Management) CE".

Cloning images (identifiable by their name attribute) can be managed by image version.

## Collecting Cloning Images from Templates of Server Virtualization Software

For details, refer to "[7.7.1 Virtual Image Resources](#)".



- When using MAC license authentication for activation of Windows Server 2008 images, Sysprep can be executed a maximum of three times. Since Sysprep is executed when creating L-Server with images specified or when collecting cloning images, collection of cloning images and creation of L-Servers with images specified cannot be performed more than three times. Therefore, it is recommended not to collect cloning images from L-Servers which have had cloning images deployed, but to collect them from a dedicated master server.
- The network parameter auto-configuration function defined in a cloning image cannot be used for Resource Orchestrator.

When the target server of cloning image collection has a redundant NIC configured, release redundancy and then perform collection.

[VMware] [Hyper-V]

The disk space necessary for the collected cloning images can be confirmed from the following display.

- Resource list for image pools, or cloning image list in the [Resource Details] window
- Resource list for image resources, or version list in the [Resource Details] window

From the command-line, execute `rcxadm image list`. For details on the `rcxadm image list` command, refer to "1.4.1 `rcxadm image`" of the "Reference Guide (Resource Management) CE".

[Xen] [KVM] [Oracle VM]

The disk area necessary for extraction cannot be checked from collected cloning images.

For this reason, include the disk size in the cloning image name or the comment, and check the necessary disk area is available before extracting images.

[VMware]

For details on how to collect cloning images on VMware, refer to "Collecting a Cloning Image" of "E.2.5 Setup" of the "Setup Guide CE".

[Hyper-V]

For details on how to collect cloning images on Hyper-V, refer to "Collecting Cloning Images" of "E.3.4 Setup" of the "Setup Guide CE".

[Xen]

For details on how to collect cloning images on RHEL5-Xen, refer to step 3. in "L-Server Creation" in "E.4.4 Setup" of the "Setup Guide CE".

[KVM]

For details on how to collect cloning images on RHEL-KVM, refer to step 3. in "L-Server Creation" in "E.6.4 Setup" of the "Setup Guide CE".

[Oracle VM]

For details on how to collect cloning images on Oracle VM, refer to "Collect Cloning Images" of "E.5.4 Setup" of the "Setup Guide CE".



[VMware]

When "Default" is specified in the [Collect a Cloning Image] dialog, it is assumed that the virtual storage resource containing the L-Server for collecting cloning images has been specified.

[Hyper-V]

Images are stored in the SCVMM library.

Specify a library which has sufficient available disk space to store the collected images.

When "Default" is specified in the [Collect a Cloning Image] dialog, selection is made from libraries registered with SCVMM, but collection of images may fail as the available disk space of libraries is not managed by SCVMM.

[Xen]

When "Default" is specified for the storage destination of images during cloning image collection, a virtual storage is automatically selected from the same storage pool as the virtual storage containing the target L-Server from which cloning images will be collected.

[KVM]

When "Default" is specified for the storage destination of images during cloning image collection, a disk is selected from the storage pool where disks (which are used by the target L-Server from which cloning images will be collected) are registered.

[Oracle VM]

The storage location for images which was specified in the [Collect a Cloning Image] dialog is disabled.

It is assumed that the virtual storage resource containing the L-Server for collecting cloning images has been specified.

Cloning images (identifiable by their name attribute) can be managed by image version.

If a cloning image is created using VM management software, it can be used as is.

## 11.5.2 Viewing a Cloning Image

---

This section explains how to view cloning images.

By selecting the target image pool from the orchestration tree, and displaying the [Resource List] tab, the registered cloning images can be confirmed.



[Oracle VM]

When an Oracle VM image is selected in the Orchestration tree to display the [Resource Details] tab, the [OS] under [Image Information] is not displayed.

From the command-line, execute `rcxadm image list`.

For details on the `rcxadm image list` command, refer to "1.4.1 `rcxadm image`" of the "Reference Guide (Resource Management) CE".

## 11.5.3 Unregistering a Cloning Image

---

This section explains how to unregister cloning images.

Use the following procedure to unregister cloning images.

1. Right-click the target image pool in the orchestration tree, and select [Unregister] from the popup menu.

The [Unregister a Resource] dialog is displayed.

2. Click <OK>.

The cloning image is unregistered.

From the command-line, execute `rcxadm pool unregister`.

For details on the `rcxadm pool unregister` command, refer to "1.3.8 `rcxadm pool`" of the "Reference Guide (Resource Management) CE".



- When unregistering a cloning image, *a numeric value* is added at the end of the image name to change its name as follows:

Image name after unregistration: <i>Image_name_before_unregistration_Numeric_value</i>
--

The image name will not be changed after unregistration.

- When releasing registration, as image names will be changed, execute the `rcxadm image list` command to check the creation time and comment before performing unregistration. Images can be identified using this method.

For details on the `rcxadm image list` command, refer to "1.4.1 `rcxadm image`" of the "Reference Guide (Resource Management) CE".

- Unregistered images of virtual L-Servers can be used in the same way as when they are collected from templates of server virtualization software.

For details, refer to "11.5.1 [Collecting and Registering Cloning Images](#)".

## 11.5.4 Deleting a Cloning Image

---

This section explains how to delete cloning images.

Use the following procedure to delete cloning images:

1. Select the target image pool on the orchestration tree.

The [Resource List] tab is displayed.

2. Right-click the target cloning image in the image pool, and select [Delete] from the popup menu.

3. Click <OK>.

The cloning image is deleted.

From the command-line, execute `rcxadm image delete`.

For details on the `rcxadm image delete` command, refer to "1.4.1 `rcxadm image`" of the "Reference Guide (Resource Management) CE".



[Hyper-V]

For details on how to delete cloning images on Hyper-V, refer to "Deleting Cloning Images" in "E.3.4 Setup" of the "Setup Guide CE".

## 11.6 Snapshots, and Backup and Restoration of L-Servers

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This section explains how to perform snapshots, and backup and restore of an L-Server.

### 11.6.1 Snapshot

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This section provides an overview of snapshots for L-Servers.

Snapshot is the function that saves the state and configuration of an L-Server disk at the time the snapshot is taken. When using virtual L-Servers, the snapshot function of server virtualization software is used.

Restoring a collected snapshot restores the following L-Server parameters to their state when the snapshot was taken.

- Number of CPUs
- CPU Performance
- CPU Shares
- Memory Size
- Memory Shares
- OS Type
- Configuration and Size of the Disk
- Network
- OS Settings



#### Information

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The following parameters cannot be restored using the snapshot function of the server virtualization software. Therefore, change L-Server specifications to restore those parameters using their values at the time the snapshot was taken.

[VMware]

- CPU Reserved
- CPU Shares
- Memory Reserved
- Memory Shares

[Hyper-V]

- OS Type

These parameters may return to their values at the time that the snapshot was taken even when the restoration process is aborted. Check the L-Server parameters, and modify the specifications as necessary.

---



#### Note

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If the OS of the L-Server is Linux, the user name and password used when collecting the snapshot will be saved.

It is recommended to change the password after collecting a snapshot to maintain security.

[VMware]

CPU reservation performance and memory reservation capacity are not restored. Changing this value may prevent an L-Server from starting, depending on the amount of resources used by other VM guests on the same VM host.

---

If multiple snapshots are collected of the same L-Server, the snapshots are managed by automatically adding version numbers to the snapshot file name starting from 1. If the number of snapshot versions exceeds the limit (standard limit is 3), the oldest snapshot will be

deleted. Use the `rcxadm imagemgr` command to change the maximum number of snapshot versions.  
For details on the `rcxadm imagemgr` command, refer to "1.7.2 `rcxadm imagemgr`" of the "Reference Guide (Resource Management) CE".

To collect a snapshot, it is recommended that the power of the L-Server is "OFF" to avoid any inconsistencies occurring in the data and file system on the disk.

When collecting a snapshot from an L-Server that is running, the L-Server must be configured in advance for live collection of snapshots.  
For details on the settings required to collect a snapshot when the server is running, refer to the manual of the server virtualization software.

For details on command operations, refer to "1.4.1 `rcxadm image`" of the "Reference Guide (Resource Management) CE".

## Note

Immediately after a snapshot is restored, there may be differences between the configuration of VM guests managed by L-Server and those managed by VM management software.

The differences in VM guest configuration are reflected on the configuration of the L-Server by periodic queries made to the VM management software.

For details on reflection of L-Server configuration by periodic queries, refer to "[11.2 Modifying an L-Server](#)".

[Windows/Linux]

When using physical L-Servers, snapshots cannot be used.

[Hyper-V]

When using Hyper-V, refer to "E.3.5 Advisory Notes for Hyper-V Usage" of the "Setup Guide CE".

[Xen]

When using RHEL5-Xen, snapshots cannot be used.

Collect L-Server snapshots using PRIMECLUSTER GDS.

For details, refer to "E.4.5 Advisory Notes for RHEL5-Xen Usage" of the "Setup Guide CE".

[KVM] [Oracle VM]

Snapshots cannot be used.

## Information

The snapshot function provided by server virtualization software records the disk from the last update. Consequently, when a disk failure occurs, the snapshot function becomes unavailable at the same time. Snapshot can be used as a corrective measure for problems such as the following:

### Example

- For recovery when a problems occurs with the applied patch
- For recovery when a problem occurs when changing operating system parameters

## Collection

This section explains how to collect a snapshot.

1. Right-click the target L-Server in the orchestration tree, and select [Snapshot]-[Collect] from the popup menu.

The [Create a Snapshot] dialog is displayed.

2. Enter the following items:

Comment

Enter a comment that identifies the snapshot.

Up to 128 characters other than percent signs ("%"), back slashes ("\), double quotes ("), and line feed characters can be specified.

The snapshot is collected.

3. Click <OK>.

From the command-line, execute `rcxadm image snapshot`.

For details on the `rcxadm image snapshot` command, refer to "1.4.1 `rcxadm image`" of the "Reference Guide (Resource Management) CE".

## Restoration

This section explains how to restore a snapshot.

To restore a snapshot, the L-Server must be stopped.

1. Right-click the target L-Server in the orchestration tree, and select [Snapshot]-[Restore] from the popup menu.  
The [Restore a Snapshot] dialog is displayed.
2. Select the version of the snapshot to restore.  
The snapshot is restored.
3. Click <OK>.

Execute the `rcxadm image restore` command.

For details on the `rcxadm image restore` command, refer to "1.4.1 `rcxadm image`" of the "Reference Guide (Resource Management) CE".



### Note

In the following cases, the specifications of the L-Server will not be modified. Use the server virtualization software to make changes as necessary.

- When the VM guest corresponding to the L-Server to be restored has been migrated to a VM host that is not registered with Resource Orchestrator
- When restoring a snapshot which was taken using:
  - Resource Orchestrator V2.2.2 or earlier
  - Resource Orchestrator V.2.3.0 without the following patches applied:
    - T005433WP-03 [Windows]
    - T005567LP-01 [Linux]

## Deletion

This section explains how to delete unnecessary versions of snapshots.

1. Right-click the target L-Server in the orchestration tree, and select [Snapshot]-[Delete] from the popup menu.  
The [Delete a Snapshot] dialog is displayed.
2. Select the version of the snapshot to delete.  
The snapshot is deleted.
3. Click <OK>.

From the command-line, execute `rcxadm image delete`.

For details on the `rcxadm image delete` command, refer to "1.4.1 `rcxadm image`" of the "Reference Guide (Resource Management) CE".

## 11.6.2 Backup and Restore

---

This section explains how to back up and restore L-Servers.

These functions are only provided for physical L-Servers.

Backup and restore of L-Servers is the function for performing backup and restoration of L-Server system images.

If multiple backups of the same L-Server are collected, the backups are managed by automatically adding version numbers to the backup file name starting from 1. If the number of snapshot versions exceeds the limit (standard limit is 3), the oldest snapshot will be deleted.

## Note

To back up and restore L-Server system images, the following conditions must be met:

- For Backup
  - The status of the L-Server is that in which resources have already been allocated (allocated)
  - The L-Server has been started
  - An agent on the L-Server has already been registered
- For Restoration
  - The status of the L-Server is that in which resources have already been allocated (allocated)

Use the following procedure for backup and restoration of system images:

### Backup

1. Right-click the target L-Server in the orchestration tree, and select [Backup/Restore]-[Backup] from the popup menu. The [Backup System Image] dialog is displayed.
2. Configure when necessary.
3. Click <OK>.

System images will be backed up.

The process status can be checked in the Recent Operations area of the ROR console. Clicking <Cancel> in the Recent Operations area displays a confirmation dialog and stops the process.

From the command-line, execute `rcxadm image backup`.

For details on the `rcxadm image backup` command, refer to "4.1 `rcxadm image`" of the "Command Reference".

### Restoration

1. Right-click the target L-Server in the orchestration tree, and select [Backup/Restore]-[Restore] from the popup menu. The [Restore System Image] dialog is displayed.
2. Configure when necessary.
3. Click <OK>.

System images will be restored.

The process status can be checked in the Recent Operations area of the ROR console. Clicking <Cancel> in the Recent Operations area displays a confirmation dialog and stops the process.

From the command-line, execute `rcxadm image restore`.

For details on the `rcxadm image restore` command, refer to "4.1 `rcxadm image`" of the "Command Reference".

### Deletion

This section explains how to delete unnecessary versions of backups of system images.

1. Right-click the target L-Server in the orchestration tree, and select [Backup/Restore]-[Delete a Backup] from the popup menu. The [Delete System Image] dialog is displayed.
2. Select the version of the backup to delete.

3. Click <OK>.

The backup of the system image is deleted.

From the command-line, execute `rcxadm image delete`.

For details on the `rcxadm image delete` command, refer to "1.4.1 `rcxadm image`" of the "Reference Guide (Resource Management) CE".

## 11.7 Migration of VM Hosts between Servers

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This section explains how to move (migrate) an L-Server between servers.

When using physical L-Servers, moving between servers (migration) cannot be used.

Use the following procedure to migrate between servers:

1. Right-click the target L-Server in the orchestration tree, and select [Migrate VM Guest] from the popup menu.  
The [Migrate an L-Server] dialog is displayed.
2. Select the destination VM host from the destination VM host list. Only the VM hosts available for migration are displayed in the destination list.
3. Click <OK>.

From the command-line, execute `rcxadm lserver migrate`.

For details on the `rcxadm lserver migrate` command, refer to "1.3.1 `rcxadm lserver`" of the "Reference Guide (Resource Management) CE".



### Note

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Select a destination VM host with available CPU capacity and memory. If there is insufficient CPU capacity or memory, migration between servers or starting of L-Servers may fail.

When specifying "Automatic selection" in the [Migrate an L-Server] dialog, the migration movement differs depending on the value of the "Resource type" for "VM Host" specified when creating the L-Server. This also applies to L-Servers for which overcommit settings have been configured.

- When "Automatic" is specified for "Resource type"

The migration is performed with a destination VM host selected from accessible VM pools.

In environments using overcommit, depending on whether or not overcommit settings have been configured for the L-Server, the migration is performed differently as follows:

- For L-Servers with Overcommit Configured

The migration is performed with a destination VM host selected from accessible resource pools with overcommit configured.

- For L-Servers without Overcommit Configured

The migration is performed with a destination VM host selected from accessible resource pools without overcommit configured.

- When "VM Pool" is specified for "Resource type"

The migration is performed with a destination VM host selected from a VM pool.

For environments using overcommit, the same overcommit settings must be configured for both the L-Server and VM pools.

- When "VM Host" is specified for "Resource type"

The migration will fail because the destination does not exist. For environments not using overcommit, the same overcommit settings must be configured for both the L-Server and the VM pool which the VM host belongs to.

Perform one of the following:

- Select a VM host from the list of the destination VM hosts, and then perform the operation again.
- In the [Modify an L-Server] dialog, change the value for "VM host" to "Automatic", and then perform server migration again.
- In the [Modify an L-Server] dialog, change the value for "VM host" to "Pool", check the resources to be allocated, and then perform server migration again when necessary.

- In the [Modify an L-Server] dialog, change the value for "VM host" to "VM host", check the resources to be allocated, and then perform server migration again when necessary.

If a VM host is specified for the destination VM host, the migration between servers will be performed regardless of whether or not overcommit has been configured.

The information set on the VM host to use can be checked using the following methods:

- Select the target L-Server in the orchestration tree, and check "Preserved resource" in the [Resource List] tab
- Select the target L-Server in the orchestration tree, and check "Current resource" in the [Resource Details] tab

Maintenance mode excludes the target VM host from the automatically selected target for migration of a virtual L-Server.

Migration by users is possible.

[VMware]

When performing movement between servers (migration), refer to "E.2.2 Pre-setup Preparations" in the "Setup Guide CE".

[KVM]

When performing movement between servers (migration), refer to "E.6.2 Preparations" in the "Setup Guide CE".



### Information

When using virtual L-Servers, the VM Home Position of ROR VE can be used for migration.

For details, refer to "7.3 VM Home Position" of the "Operation Guide VE".

## 11.8 Allocating and Releasing Resources to L-Servers

This section explains how to allocate resources to, and release resources from, L-Servers.

Even if there are no resources to allocate to L-Servers, flexible configuration and operation, such as creating only L-Server definitions in advance, is possible.

Configure the following settings, when creating an L-Server.

- Create an L-Server definition

If only creating an L-Server definition, configure "None (Definition only)", when creating an L-Server.

For details, refer to "10.2.1 [General] Tab" and "10.3.1 [General] Tab".

Only IP addresses/MAC addresses/WWNs are allocated to the created L-Server, and "[defined]" is displayed.

- Automatically release server resources for L-Servers

If releasing server resources when the L-Server is turned off, set "Resource release" during L-Server creation.

For details, refer to "10.2.2 [Server] Tab" and "10.3.2 [Server] Tab".

When the power of an L-Server for which this setting is configured is turned off, "[preserved]" is displayed.



### Note

When sharing resources on the same physical server between L-Servers using the usage change function, set "Resource release" on the L-Server where the server resource is allocated.

When the server resources are allocated to the L-Server for which "Resource release" is not configured, the server resources cannot be shared.

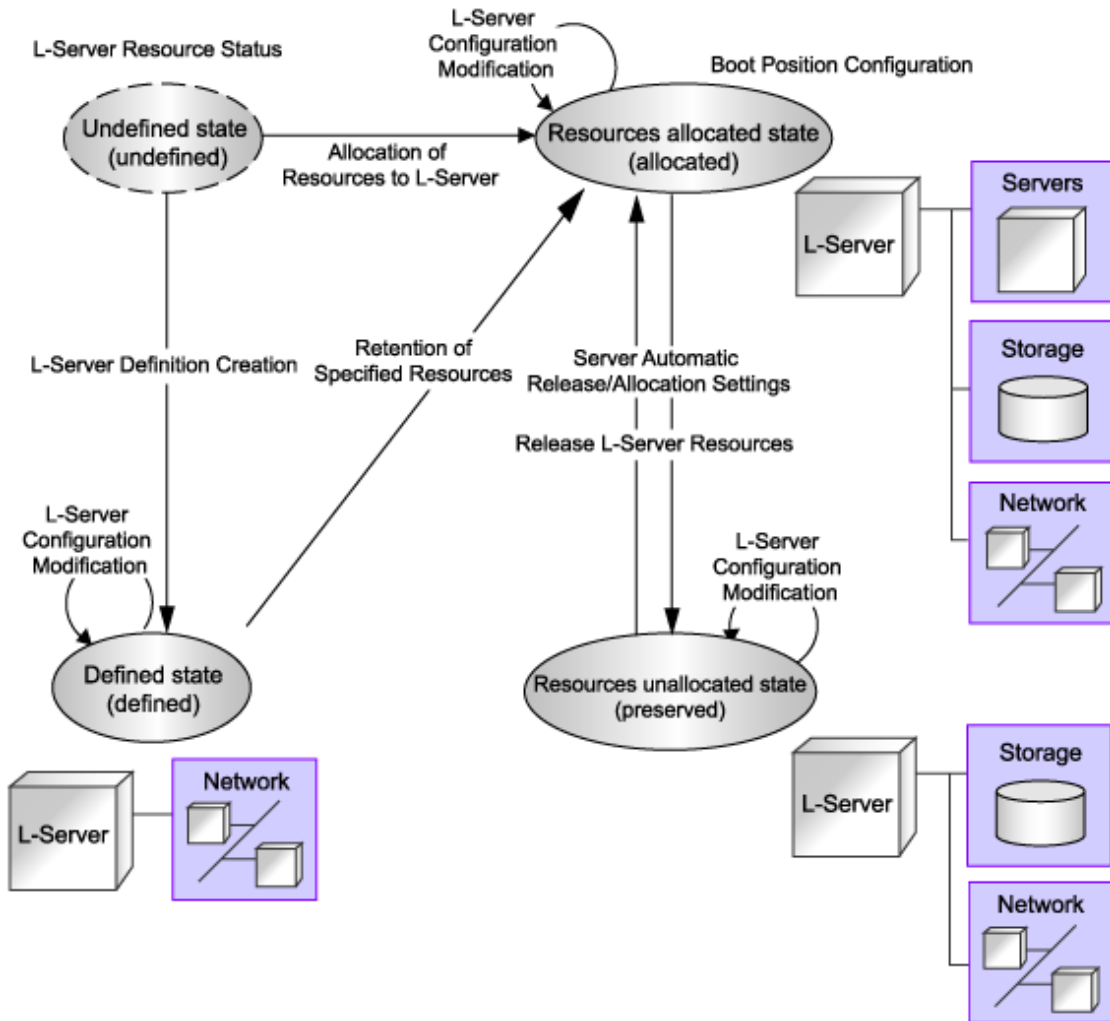


### Note

For an L-Server from which VM guests have been deleted using server virtualization software, "unknown" is displayed for the resource allocation status.

For details, refer to "The Status of an L-Server is Displayed as unknown, and "Message number 67154" or "Message number 67178" is Displayed Even if Operations Other Than L-Server Deletion are Performed." in "4.4 General Operations for L-Servers" of the "Reference Guide (Resource Management) CE".

Figure 11.1 State Transition of L-Servers



L-Servers can be deleted when their status is something other than "undefined" (specifications have not been defined).

## 11.8.1 Installation

By setting the values in the following definition file in advance, it is possible to change L-Server related behaviors and default values displayed on the [General] tab and [Server] tab when creating an L-Server.

For the values for L-Server templates, when an L-Server template does not have values configured, the values of the definition file are adopted.

When creating an L-Server using commands, if the XML file of the L-Server does not have values configured, the values of the definition file are adopted.

Use the UTF-8 character code for definition files.

Location of the Definition File

[Windows]  
*Installation\_folder*\Manager\etc\customize\_data

[Linux]  
 /etc/opt/FJSVrcvmr/customize\_data



Definition File Name

L\_server.rcxprop

Definition File Format

Describe the definition file in individual lines as below:

<i>Key = Value</i>
--------------------

Definition File Items

Specify the following items.

Table 11.4 List of Items Specified in the Definition File

Items	Key	Value	Remarks
Allocating resources	allocate_after_create	true false	<ul style="list-style-type: none"> <li>- When also allocating resources during L-Server creation Specify "true".</li> <li>- When only creating an L-Server definition Specify "false".</li> </ul> <p>If left blank, "true" is set. It will be set using the default values of "Resource allocation" on the [General] tab.</p>
Repurpose	auto_preserved	true false	<ul style="list-style-type: none"> <li>- When releasing server resources while an L-Server is turned off Specify "true".</li> <li>- When not releasing server resources while an L-Server is turned off Specify "false".</li> </ul> <p>If left blank, "false" is set. It will be set as the default value of "Resource release" on the [Server] tab. It can be specified using an L-Server template.</p>
Numbering VM names	vm_name_suffix	true false	<ul style="list-style-type: none"> <li>- When using VM names in the format of "<i>Virtual_L-Server_Name-Number</i>" Specify "true".</li> </ul> <p>For details on numbering, refer to the "<a href="#">Point Association of an L-Server Name with a VM Guest Name</a>" in "<a href="#">10.1 Creation Using an L-Server Template</a>".</p> <ul style="list-style-type: none"> <li>- When using the same name for both a virtual L-Server and a VM when not using numbering Specify "false".</li> </ul> <p>If left blank, "true" is set. Switching the value for this item does not automatically change existing virtual L-Server names or VM names. This item only affects when creating a virtual L-Server, when modifying general information/specifications of a virtual L-Server, and when creating a link between a configured virtual machine and an L-Server. The names of L-Servers created with "false" set for this</p>

Items	Key	Value	Remarks
			item will automatically change when VM names are changed. However, the VM name must conform to the naming conventions for L-Servers.

## 11.8.2 Operations

---

This section explains how to allocate resources to, and release resources from, L-Servers and how to modify configuration definition information.

### 11.8.2.1 Allocating Resources

When an L-Server is started, resources are allocated to it.

For details on how to start an L-Server, refer to "[11.1.1 Starting an L-Server](#)".

Server and disk resources are allocated to the L-Server, when an L-Server is first started. When cloning images are specified, deployment of images is also performed.

When server resources of L-Servers have been released, server resources will be allocated.

### 11.8.2.2 Releasing Resources

When stopping an L-Server, server resources will be released.

For details on how to stop an L-Server, refer to "[11.1.2 Stopping an L-Server](#)".

Methods for releasing server resources differ depending on whether the server is a physical L-Server or virtual L-Server.

- Physical L-Server

The physical server that was used for the L-Server will be released.

- Virtual L-Server

VM guests that are created on VM hosts are excluded from the target for calculation of the total amount of VM host usage.

### 11.8.2.3 Modifying Configuration Definition Information

To modify an L-Server for which a configuration definition has been created (defined), use the following procedure.

When changing the L-Server deployed when creating an L-Platform, use the `rcxadm lserver modify` command to modify the configuration for alive monitoring.

1. Right-click the target L-Server in the orchestration tree, and select [Change Settings]-[Definition] from the popup menu.

The [Modify L-Server's definition] dialog is displayed.

2. Change the items to modify.

For details on setting values in the [Modify L-Server's definition] dialog, refer to "[Chapter 10 Creating L-Servers](#)".

3. Click <OK>.

The L-Server configuration definition information is modified.

From the command-line, execute `rcxadm lserver modify`.

For details on the `rcxadm lserver modify` command, refer to "1.3.1 `rcxadm lserver`" of the "Reference Guide (Resource Management) CE".



## Note

When modifying the configuration definition for an already defined L-Server that has been updated from an earlier version, alive monitoring is disabled. When enabling alive monitoring, modify the configuration of the L-Server again.

## 11.9 Changing Physical Server Usage

---

This section explains how to change physical server usage.

Changing server usage is the function for preparing more L-Servers than physical servers and is used by switching the startup L-Server. This function enables effective use of server resources as the physical server can be changed depending on the time period and situation.

The boot disk and IP address of the L-Server are stored, even while other L-Servers use the physical server.

This function can be used, when an L-Server is actually a physical server. When using virtual machines, multiple L-Servers can be located on a single VM host without any specific configuration, giving the same effects as changing the physical server.

The following two methods are available:

- Use multiple L-Servers, switching between them, on a single physical server  
The physical server which starts the L-Server is always the same.
- Use multiple L-Servers, switching between them, on unused physical servers in a server pool  
The physical server allocated to the L-Server will change depending on the available spare servers in a server pool.

### 11.9.1 Configuring L-Servers for Usage Change

---

This section explains how to change L-Server settings for usage change.

The operations differ depending on whether the configuration definition has already been created (defined), or if resources have already been allocated (allocated).

- When the status of an L-Server for which a configuration definition has already been created (defined)  
Refer to "[11.9.1.1 When only the Configuration Definition \(defined\) is Created](#)".
- When the status of an L-Server is that resources have already been allocated (allocated)  
Refer to "[11.9.1.2 When Resources are Already Allocated \(allocated\)](#)".

#### 11.9.1.1 When only the Configuration Definition (defined) is Created

This section explains configuration and operation when only the configuration definitions have been created (defined) for the L-Server.

#### Settings

Repeat the following procedure the same number of times as the number of physical servers which are used for usage change.

##### 1. Create and Register Each Resource

Create and register each resource.

Perform resource creation and registration, referring to "[Chapter 2 Registering Resources](#)" and "[Chapter 7 Registering Resources in Resource Pools](#)".

##### 2. Create an L-Server

Create an L-Server for which only the configuration definition (defined) is created, referring to "[Chapter 10 Creating L-Servers](#)".

Perform the following configuration:

- Set "Deploy" for image deployment from the select a cloning image section of the [General] tab.
- Check the "None (Definition only)" checkbox on the [General] tab.

- Check the "Automatic (when powered off)" checkbox of "Resource release" on the [Server] tab.

## Operation

The operation method is shown below.

- When using multiple L-Servers, switching between them, on a single physical server

Usage can be changed by repeating the following procedure.

1. Check the Physical Server and L-Server of the Source L-Server for Usage Change
2. Stop the Source L-Server for Usage Change  
Stop L-Servers operating on physical servers which are required for change usage.  
For details, refer to "[11.1.2 Stopping an L-Server](#)".
3. Start the Destination L-Server for Usage Change  
For details, refer to "[11.1.1 Starting an L-Server](#)".

After changing the configuration, the L-Server before changing cannot be operated, until the new L-Server has finished starting.

- When using multiple L-Servers, switching between them, on unused physical servers in a server pool

Usage can be changed by repeating the following procedure.

1. Confirm the Server Pool  
Confirm whether an unused physical server exists in the server pool.
2. Start the Destination L-Server for Usage Change  
For details, refer to "[11.1.1 Starting an L-Server](#)".

After changing the configuration, the L-Server before changing cannot be operated, until the new L-Server has finished starting.

## 11.9.1.2 When Resources are Already Allocated (allocated)

This section explains configuration and operation when resources have been allocated to the L-Server.

## Settings

Perform 1. the same number of times as the number of physical servers which are used for usage change.

1. Create and Register Each Resource

Perform resource creation and registration, referring to "[Chapter 2 Registering Resources](#)" and "[Chapter 7 Registering Resources in Resource Pools](#)".

2. Create an L-Server (First server)

Create an L-Server for which resources are already allocated (allocated), referring to "[Chapter 10 Creating L-Servers](#)".

Perform the following configuration:

- Set "Deploy" for image deployment from the select a cloning image section of the [General] tab.
- Do not check the "None (Definition only)" checkbox from the [General] tab.
- Check the "Automatic (when powered off)" checkbox of "Resource release" on the [Server] tab.

3. Change L-Server Configuration

**When using multiple L-Servers, switching between them, on a single physical server**

Repeat the following procedure the same number of times as the number of physical servers which are used for usage change.

a. Create and Register Each Resource

Perform resource creation and registration, referring to "[Chapter 2 Registering Resources](#)" and "[Chapter 7 Registering Resources in Resource Pools](#)".

b. Release the resources of the source L-Server for usage change

Resources are released while the resource details of the source L-Server for usage change are preserved.

For details, refer to "[11.8.2.2 Releasing Resources](#)".

c. Create an L-Server

Create an L-Server for which resources are already allocated (allocated), referring to "[Chapter 10 Creating L-Servers](#)".

Perform the following configuration:

- Set "Deploy" for image deployment from the select a cloning image section of the [General] tab.
- Do not check the "None (Definition only)" checkbox from the [General] tab.
- Check the "Automatic (when powered off)" checkbox of "Resource release" on the [Server] tab.

**When using multiple L-Servers, switching between them, on unused physical servers in a server pool**

Repeat the following procedure the same number of times as the number of physical servers which are used for usage change.

a. Create and Register Each Resource

Perform resource creation and registration, referring to "[Chapter 2 Registering Resources](#)" and "[Chapter 7 Registering Resources in Resource Pools](#)".

b. Confirm the Server Pool

Confirm whether an unused physical server exists in the server pool.

When an L-Server is allocated to all physical servers in the specified server pool, release a physical server from an L-Server.

c. Release the resources of the source L-Server for usage change

Resources are released while the resource details of the source L-Server for usage change are preserved.

For details, refer to "[11.8.2.2 Releasing Resources](#)".

d. Create an L-Server

Create an L-Server for which resources are already allocated (allocated), referring to "[Chapter 10 Creating L-Servers](#)".

Perform the following configuration:

- Set "Deploy" for image deployment from the select a cloning image section of the [General] tab.
- Do not check the "None (Definition only)" checkbox from the [General] tab.
- Check the "Automatic (when powered off)" checkbox of "Resource release" on the [Server] tab.

## Operation

The methods for operating physical servers after usage changes are as follow.

Perform the procedure before performing any operations.

- When using multiple L-Servers, switching between them, on a single physical server

Usage can be changed by repeating the following procedure.

1. Confirm the Physical Servers to Use
2. Stop the Source L-Server for Usage Change

Stop L-Servers operating on physical servers which are required for change usage.

For details, refer to "[11.1.2 Stopping an L-Server](#)".

3. Start the Destination L-Server for Usage Change

For details, refer to "[11.1.1 Starting an L-Server](#)".

After changing the configuration, the L-Server before changing cannot be operated, until the new L-Server has finished starting.

- When using multiple L-Servers, switching between them, on unused physical servers in a server pool

Usage can be changed by repeating the following procedure.

1. Confirm the Server Pool

Confirm whether an unused physical server exists in the server pool.

2. Start the Destination L-Server for Usage Change

For details, refer to "[11.1.1 Starting an L-Server](#)".

After changing the configuration, the L-Server before changing cannot be operated, until the new L-Server has finished starting.

## 11.9.2 Operation

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The methods for operating physical servers after usage changes are as follow.

Perform the procedure given in "[11.9.1 Configuring L-Servers for Usage Change](#)" before performing any operations.

- When using multiple L-Servers, switching between them, on a single physical server

Usage can be changed by repeating the following procedure.

1. Stop the Source L-Server for Usage Change

Stop L-Servers operating on physical servers which are required for change usage.

For details, refer to "[11.1.2 Stopping an L-Server](#)".

2. Start the Destination L-Server for Usage Change

For details, refer to "[11.1.1 Starting an L-Server](#)".

After changing the configuration, the L-Server before changing cannot be operated, until the new L-Server has finished starting.

- When using multiple L-Servers, switching between them, on unused physical servers in a server pool

Usage can be changed by repeating the following procedure.

1. Confirm the Server Pool

Confirm whether an unused physical server exists in the server pool.

2. Start the Destination L-Server for Usage Change

Start the destination L-Server for usage change.

For details, refer to "[11.1.1 Starting an L-Server](#)".

After changing the configuration, the L-Server before changing cannot be operated, until the new L-Server has finished starting.

### Point

- Usage cannot be changed, while the L-Server is stopped temporarily during L-Server restart.
- When power operation has been performed directly on the physical server using the ROR console or commands, without performing power operation of the L-Server, the L-Server which was last operated will start.
- If the last L-Server that was operated has already been started on another physical server, its status will change so there is no boot disk and it will fail to start.

## 11.9.3 Releasing Configuration

---

This section explains how to release configurations of the L-Server for usage change.

1. Change L-Server Configuration for Fixed Operation

Clear the "Automatic (when powered off)" checkbox of "Resource release" in the [Modify an L-Server] dialog, and click <OK>.

For details, refer to "[11.2.1 Modifying Specifications](#)".

2. Delete Unnecessary L-Servers

When unnecessary L-Servers exist, use the procedure in "[11.4 Deleting an L-Server](#)" to delete them.

# Chapter 12 Resource Pool Operations

This appendix explains how to add new resource pools, and delete or modify existing resource pools.

For an overview of the functions, refer to "1.2.2 Resource Pool" of the "Setup Guide CE".

## 12.1 Overview

This function manages all the resources allocated when creating an L-Server.

A resource pool is a type of resource folder that exists in the orchestration tree, and has the following features that differ from regular folders:

- Pools are selected as resources when creating or adding L-Servers.
- By specifying a resource type when creating a resource pool, only resources of the same type will be stored in that resource pool.
- The total size of the resources in the resource pool and the free space are calculated and displayed. The converted number of L-Servers for the specified L-Server template is also displayed.
- By default, a resource pool is automatically created for each resource pool type.
- In default resource pools which are created automatically, VM hosts of different server virtualization software can be stored in VM pools. In a VM pool where there are various server virtualization software, if the following is specified, Resource Orchestrator will select the appropriate VM host from the VM pool, and create an L-Server.
  - When creating an L-Server using an L-Server template, specify the VM type.
  - When creating individual specifications for an L-Server, specify the VM type on the [Server] tab.
- Resource pools can be used with user/role management to restrict the users that can use them.
- By setting a priority for multiple resource pools, you can set the order for automatically selecting the required resources when creating an L-Server.

For details on resource pool types and the resources that are stored, refer to "Table 1.4 Resource Pool Types" of "1.2.2 Resource Pool" of the "Setup Guide CE".

Moving an L-Server (migration) is only possible between VM hosts belonging to the same cluster group, when two or more cluster groups are registered in the same VM pool.

## 12.2 Resource Pool Operations

This section explains how to perform resource pool operations.

### Creating a Resource Pool

Use the following procedure to create resource pools.

1. Right-click the root folder or a resource folder in the orchestration tree, and select [Create]-[Pool] from the popup menu.

The [Create a Pool] dialog is displayed.

2. To use this feature, the following settings must first be defined:

#### Name

Enter a name for the resource pool.

Enter up to 32 characters beginning with an alphanumeric character (upper or lower case), and including alphanumeric characters (upper or lower case), underscores ("\_"), or hyphens ("-").

To enable the user to identify a resource pool, it is recommended that the resource pool is named based on its resource type, performance, or usage.



## Type

Select the type of the resource pool.

- VM pool
- Server pool
- Storage pool

When configuring Thin Provisioning for a storage pool, refer to "[Configuring Thin Provisioning Attributes for Storage Pools](#)".

- Network pool
- Address pool
- Image pool

## Priority

Select the priority of the resource pool for automatically selecting a resource when creating an L-Server. Select a value between "1" and "10". Smaller values indicate a higher priority. "5" is selected by default.

## Label

Enter a label for the resource pool.  
Enter up to 32 alphanumeric characters or symbols.

## Comment

Enter any comments for the resource pool.  
Enter up to 256 alphanumeric characters or symbols.

### 3. Click <OK>.

The created resource pool is displayed in the orchestration tree.

## Configuring Thin Provisioning Attributes for Storage Pools

Use the following method to configure thin provisioning attributes for storage pools.

### Storage Location of the Definition File

[Windows]  
*Installation\_folder*\Manager\etc\customize\_data

[Linux]  
/etc/opt/FJSVrcvmr/customize\_data

### Definition File Name

pool.rcxprop

### Definition File Format

```
thin_provisioning=pool1,pool2,...
```

### thin\_provisioning

Set the name of the storage pool to set thin provisioning attributes for.

Multiple storage pools can be specified. When specifying more than one, separate them using commas (",").

For a storage pool in a hierarchy, specify the name and the folder, using an absolute path.

For a storage pool directly under the orchestration tree, specify only its name.



## Example

An example definition file is indicated below.

```
thin_provisioning=StoragePool/folder/StoragePool
```

## Note

Whether or not a storage pool has thin provisioning attributes is determined when it is created.

When loading a definition file that was configured during creation of a storage pool, if the `thin_provisioning` key has been specified, a storage pool with thin provisioning attributes will be created.

If the `thin_provisioning` key has not been specified, a storage pool without thin provisioning attributes will be created.

Once a storage pool is created, thin provisioning attributes cannot be set nor cancelled for that storage pool even if the following operations are performed:

- Modification of the value for the `thin_provisioning` key
- Renaming of the storage pool

When creating a storage pool with thin provisioning attributes, the name of the storage pool to be created must be specified for the `thin_provisioning` key in the configuration file beforehand.

## Modifying a Resource Pool

Use the following procedure to change resource pool configurations.

1. Right-click the target resource pool in the orchestration tree, and select [Change Settings]-[Basic Information] from the popup menu.  
The [Change Setting for a Pool] dialog is displayed.
2. Change the items you want to modify.
3. Click <OK>.  
The resource pool setting information is modified.

## Moving a Resource Pool

Use the following procedure to move a resource pool to another resource folder.

1. Right-click the target resource pool in the orchestration tree, and select [Move to Folder] from the popup menu.  
The [Move a Pool] dialog is displayed.
2. Select the destination resource folder.
3. Click <OK>.  
The target resource pool is moved to the destination resource folder.

When using tenants to segregate resources, movement of resources may be limited.  
For details, refer to "[Chapter 13 Resource Folder and Tenant Operations](#)".

## Deleting a Resource Pool

Use the following procedure to delete resource pools.

When a resource pool is deleted, the resources in that resource pool are also deleted.  
The following resources are unregistered from a resource pool:

- VM Host Resources
- Physical Server Resources

- Virtual Storage Resources
- Disk Resources
- Network Devices
- Physical Image Resources

It is recommended that you move the resources in the resource pool to another resource pool in advance.

1. Right-click the target resource pool in the orchestration tree, and select [Delete] from the popup menu.

The name of the resource pool to delete is displayed in the [Delete a Pool] dialog.

If resources are registered in the resource pool to delete, a list of those resources is displayed in "All Resources". Confirm the list, and check the "Delete All Resources" checkbox.

2. Click <OK>.

The target resource pool is deleted.

## 12.3 Resource Operations

---

This section explains how to perform resource operations with resource pools.

### Registration

Use the following procedure to register a resource to a resource pool:

1. Right-click the target resource pool in the orchestration tree, and select [Register Resources] from the popup menu.  
The [Register Resources] dialog is displayed.
2. When a resource to register is a disk resource, click <Search> in the search condition area. The resources displayed in "Resource List" can be filtered by entering the virtual storage, size and resource name and clicking <Search>.
3. Select the resource to register from the "Resource List".
4. Click <OK>.

The resources are registered in the resource pool.

### Modifying a Resource

Use the following procedure to modify a resource registered in a resource pool.

1. Right-click the target resource in the orchestration tree, and select [Change Settings]-[Basic Information] from the popup menu.  
The [Resource Change Setting] dialog is displayed.
2. Change the items you want to modify.
3. Click <OK>.

The resource settings are modified.



#### Note

When changing the subnet information for the L-Server to a different subnet, if there are managed servers in the subnets to be changed, "Subnet address/mask" cannot be changed.

When changing "Subnet address/mask", refer to "[Modifying When There are Managed Servers on the Subnet](#)".

### Modifying When There are Managed Servers on the Subnet

When there are managed servers on the subnet, use the following procedure to change the network address or subnet mask:

1. Register the tenant admin LAN resource information which has the network address or subnet mask after changing.
2. Change the destination for connection on the tenant admin LAN of all L-Servers belonging to the subnet before changing.
3. Delete the tenant admin LAN used before the change, when necessary.

## Moving a Resource

### Move individual resources

Use the following procedure to move a resource to another resource pool.

1. Right-click the target resource in the orchestration tree, and select [Move a Resource] from the popup menu.  
The [Move a Resource] dialog is displayed.
2. For "Destination Pool", select the destination resource pool.
3. Click <OK>.  
The target resource is moved to the selected resource pool.

### Move multiple resources

Use the following procedure to move a number of registered resources that have been registered in the resource pool to another resource pool.

1. Right-click on the resource pool in the orchestration tree, then select [Move Resources] from the contextual menu.  
The [Move a Resource] dialog is displayed.
2. Select the destination resource pool for the resource from the "Destination Pool".
3. If the resources being moved are disk resources click the <Search> in the search conditions. After entering the resource name, click <Search> to reduce the number of resources displayed in the resource list.
4. Select the resource to be moved from the "Resource List".
5. Click <OK>.  
The target resource is moved to the selected resource pool.

When using tenants to segregate resources, movement of resources may be limited.  
For details, refer to "[Chapter 13 Resource Folder and Tenant Operations](#)".

When using Thin Provisioning or Automatic Storage Layering, the destination resource pools that can be selected differ depending on whether Thin Provisioning and Thick Provisioning of storage pools are configured or not.  
For details on destination resource pools and the resources which can be registered, refer to "4.3.1.2 Storage Configuration" of the "Setup Guide CE".



### Note

When the disk resource to be moved is a LUN created in advance or a disk resource for virtual L-Servers, it is recommended to delete the data on the disk beforehand. For details on how to delete data on the disks, refer to the cautionary notes of "[7.5 Storage Resources](#)".

## Unregistration

### Deregister individual resources

Use the following procedure to unregister a resource registered in a resource pool.

1. Right-click the target resource in the orchestration tree, and select [Unregister] from the popup menu.  
The [Unregister a Resource] dialog is displayed.

2. Click <OK>.

### Deregister multiple resources

Use the following procedure to release a number of registered resources that have been registered in the resource pool.

1. Right-click on the resource pool in the orchestration tree, then select [Unregister] from the contextual menu.  
The [Unregister a Resource] dialog is displayed.
2. If the resources being deregistered are disk resources click the <Search> in the search conditions. After entering the resource name, click <Search> to reduce the number of resources displayed in the resource list.
3. Select the resource to be deregistered from the "Resource List".
4. Click <OK>.

### Deleting a Resource

Use the following procedure to delete a resource registered in a resource pool.

1. Right-click the target resource in the orchestration tree, and select [Delete] from the popup menu.  
The [Delete Resource] dialog is displayed.
2. Click <OK>.



#### Note

When there are managed servers on the subnet to be deleted, the subnet information cannot be deleted.

After deleting the managed server, delete the subnet information.

## 12.4 Viewing a Resource Pool

---

The resource list and pool list display the resource folders, total size of resources, and free space available.

In the L-Server list, when the server is a physical L-Server, the physical server for the L-Server is displayed.

When the server is a virtual L-Server, the name of the VM host where the L-Server operates is displayed.

When selecting the "Allocation information" checkbox, resources that have been allocated and resources in use are displayed.

For the already allocated resources, the following information is displayed, depending on the status of resource allocation.

- allocated  
Resource name
- preserved  
Resource name + "(preserved)"
- defined  
"(defined)"

For resources in use, the resources configured as "Physical server" or "VM host" are displayed as icon + resource name.

When the "Configuration information" checkbox is selected, CPU performance, memory size, NIC numbers, disk numbers, and model names are displayed.

If you select the [Resource List] tab with a resource pool selected in the orchestration tree, a list of information for the resources that belong to the resource pool are displayed.

If you select the [Resource Details] tab, detailed information such as the total size of data and free space in the resource pool is displayed.

Also, if you select the [Available Pool] tab, a list of the resource pools that the user has usage rights for and the resources that belong to those pools is displayed.

For virtual storage resources with Thin Provisioning attributes configured, the virtually allocated size will be displayed inside the used amount. Also, depending on the value of the virtually allocated size, the display of free capacity may differ as follows:

- When the virtually allocated size is less than the total size of virtual storage resources  
The area not virtually allocated is displayed in the free capacity.
- When the virtually allocated size is more than the total size of virtual storage resources  
The area exceeding the capacity is displayed preceded by a minus ("-") in the free capacity.

For VMware datastores, when storage pools with Thin Provisioning attributes are registered, they are displayed as explained above.

### Example

- When the total size of virtual storage resources is 20 GB, and the virtually allocated size is 10 GB:  
Total Capacity: 20.0GB  
Free Capacity: 10.0GB
- When the total size of virtual storage resources is 20 GB, and the virtually allocated size is 30GB:  
Total Capacity: 20.0GB  
Free Capacity: -10.0GB

The combined total of the capacity of the virtual storage and disk resources registered in the resource pool is displayed for the total capacity of the storage pool. If a disk resource that has been separated from a virtual storage and that virtual storage exist in the same resource pool, the capacity of the disk resource will not be included in the calculation of the total storage capacity of the storage pool.

### Note

When the following conditions are met, the capacity reserved for failover is displayed in "CPU Capacity" and "Memory Capacity" under "VM Host List" and "Capacity" on the [Resource Details] tab. For VM hosts for which the HA function is unavailable, or for operations with no reservation for failover, a hyphen ("-") is displayed.

- When the HA function provided by server virtualization software is available for the VM hosts, and CPU capacity and memory capacity are reserved for failover

If the VM host does not meet the following conditions, free space will be displayed as 0.

- The power status is "ON".
- The status is "normal".
- Maintenance mode has not been set.
- The maintenance mode of server virtualization software has not been set.

[VMware]

- For VM hosts for which standby mode has been set by server virtualization software, calculation results are displayed for free space even when the status is "stop".

In Resource Details for the VM host, and when using the command (`rcxadm pool list -name Resource_pool_name`), the total CPU capacity is displayed in the format of *CPU\_performance \* CPU\_core\_count*. *CPU\_performance* is displayed as a number truncated to one decimal place. Therefore, depending on the value of the second decimal place of CPU performance, CPU capacity may not match the actual free CPU capacity.

## Max. Number of Possible L-Servers View

This section explains how to display the converted number of L-Servers that can be created with VM pools, server pools, and storage pools.

1. Left-click the target VM pool in the orchestration tree, and select the [Resource List] tab.

2. In the "Template" selection list, select the L-Server template to convert.
3. Click <OK>.
  - The number of L-Servers that can be created is displayed in "Number of creatable L-Servers".

## Note

- When the status of the VM host and virtual storage is one other than "normal", the resource will be excluded from L-Server allocation regardless of its available space. (\*1)

However, a value corresponding to the available space of the resource will be displayed for the L-Server converted number.

- When using physical L-Servers, the L-Server converted number of virtual storage is an estimate, and an error may occur during L-Server creation.
- The available space on resources and the space displayed for the number of L-Servers that can be created are calculated as follows: (\*2)
  - CPU, memory

$$\text{Total\_resource\_capacity (*3)} - (\text{Total\_of\_resources\_used\_for\_virtual\_machines (*4)} - \text{Reservation\_capacity\_for\_the\_VM\_host (the capacity reserved for the HA function enabled on the VM software) (*5)})$$

- Addresses and available space on the network

$$\text{Total\_resource\_capacity} - (\text{Total\_of\_resources\_used\_for\_L-Server (*6)})$$

- Free storage space

$$\text{Total\_resource\_capacity} - (\text{Total\_of\_resources\_used\_for\_L-Server (*6)} + \text{Total\_of\_images (*7)})$$

- Free disk space

Free space as a resource is not displayed.

The free space is calculated as the free space of a resource pool when the following conditions are met:

- Disks are not used for L-Servers or cloning images

The number of L-Servers that can be created is displayed as follows:

- When the number of disks specified for an L-Server template is 1, and when the disk capacity specified for an L-Server template is the same capacity as or smaller than the disk resource
  - 1 is displayed.
- When the number of disks specified for an L-Server template is 2 or larger, or something other than the above
  - 0 is displayed.

[Hyper-V]

As the saved disk resources that are created from the virtual machine cannot be used as system disks, the number is 0, even if the L-Server is unused.

- Number of L-Servers that can be created

The following smallest value is displayed:

- Free CPU capacity / the CPU capacity specified in the L-Server template selected from the "Template" select list
- Free memory size / the memory size specified in the L-Server template selected from the "Template" select list (\*8)
- Free storage capacity / the storage capacity specified in the L-Server template selected from the "Template" select list

\*1:

[VMware]

The VM hosts for which standby mode has been set by server virtualization software are excluded from the targets of L-Server deployment, and other VM hosts in the same cluster become the deployment target location.

[Hyper-V]

When using an L-Server template with dynamic memory settings enabled, VM hosts that do not support dynamic memory are excluded from being the targets of L-Server deployment. In this case, "0" is displayed for the L-Server conversion number, even when there is available space on resources.

\*2: For the resource pool (VM pool) configured as a resource pool for overcommit, the capacity is calculated according to the overcommit configuration file.

When configured to calculate using a maximum value, free CPU capacity/memory size are calculated based on the CPU performance/memory size of the virtual machine.

 Point

When creating a virtual L-Server, if the CPU reservation performance and memory reservation capacity are not specified, the values are configured as follows:

- CPU reservation performance: 0
- Memory reservation capacity: memory capacity or initial memory size

[VMware]

When configured to calculate using a reservation value, free CPU capacity/memory size are calculated based on the CPU performance/memory size reserved for the virtual machine. The number of L-Servers that can be created is calculated based on the CPU reservation performance and the memory reservation capacity specified in the L-Server template.

When the free capacity for VM pools is configured to be calculated using a maximum value, for the virtual machine for which limit values of CPU/memory has been set to "Unlimited" using VM management software, the calculation is performed assuming the following values as the maximum values:

- When no limit has been set for CPU performance  
The physical CPU performance on the VM host is used
- When no limit has been set for memory size  
The memory size set for the virtual machine

[Hyper-V]

When configured to calculate using a reservation value, the values referred to for calculation vary depending on the dynamic memory settings for the virtual machine and the L-Server template, as follow:

- When Dynamic Memory is Enabled  
Free CPU capacity and memory size are calculated based on the CPU performance and initial memory size reserved for the virtual machine.  
Free CPU capacity and memory size are calculated based on the CPU performance and initial memory size reserved for the L-Server template.
- When Dynamic Memory is Disabled  
Free CPU capacity/memory size are calculated based on the CPU performance/memory size reserved for the virtual machine.  
The number of L-Servers that can be created is calculated based on the CPU reservation performance and memory capacity specified in the L-Server template.

[KVM]

When configured to calculate using a reservation value, free memory size is calculated based on the memory reservation capacity/memory size for the virtual machine. The free CPU capacity is not changed.

\*3: This does not include the overhead used for the VM host.

\*4: This includes not only the resources for active virtual machines, but also those of resources of stopped virtual machines.

[VMware]

This includes the overhead memory used for the virtual machine.

The resources of VMware FT secondary virtual machines are included.

\*5:

[VMware]



This is the resource capacity secured when VMware HA admission control is enabled. This is calculated according to the policy of the admission control. Formulas for individual policies are as follows:

- When the policy is share  
Total\_resource\_capacity (\*3) multiplied by the share (%)
- When the policy is the VM host corresponding to the spare server  
Total\_resource\_capacity (\*3) multiplied by 100 (%)
- When the policy is a VM host not corresponding to the spare server  
Total\_resource\_capacity (\*3) multiplied by 0 (%)
- When the policy is a slot (the reservation capacity for the VM host is not secured.)  
Total\_resource\_capacity (\*3) multiplied by 0 (%)

\*6: This includes not only the resources for active L-Servers, but also those of resources of stopped L-Servers.

\*7: Images include cloning images and snapshots. However, the size of images is not displayed.

[Xen]

When using RHEL5-Xen on the managed server, refer to "E.4.5 Advisory Notes for RHEL5-Xen Usage" of the "Setup Guide CE".

\*8:

[VMware]

This does not include the overhead memory allocated when creating a virtual machine from an L-Server template. Therefore, the displayed number of L-Servers may not be able to be created.



# Chapter 13 Resource Folder and Tenant Operations

This appendix explains resource folders, which are used when managing a large number of resources or when you want to divide resources according to certain conditions.

## Resource Folders

Resource folders are used when managing a large number of resources or when you want to divide resources according to certain conditions.

Resources stored in resource folders can be freely placed. Using hierarchical folders, other resource folders can be stored in the resource folders.

Resource folders enable you to do the following:

- Since the number of resources selected at the same time is reduced, operation of resources is easier.
- Resources can be categorized in detail.

You may want to share some resources between departments in case of future changes or faults while maintaining the segregation of resources for each department.

## Tenants

In Resource Orchestrator, the unit for division of management and operation of resources based on organizations or operations is called a tenant.

In order to manage the resource allocated to a tenant, a resource folder, called a tenant folder, is created for an each tenant.

Resource pools to be occupied for each L-Server and tenant are stored, in tenant folders. The exclusive resource pool for each tenant is called a local pool.

There is a resource pool which can be used by multiple tenants, other than a local pool. This resource pool is called a global pool.

Resource Orchestrator enables operation of tenants through division of resources on a tenant folder level, as well as by user groups, and combinations of scopes configured to divide resources.

Perform the following settings to share and segregate resources without combining them by tenants:

- Create a tenant folder for each department

When creating a tenant folder, batch creation or setting of user groups, users, or resource pools can be performed.

Local pool creation or global pool selection can be performed for each resource pool.

Additionally, when using a tenant only within a department, create a local pool.

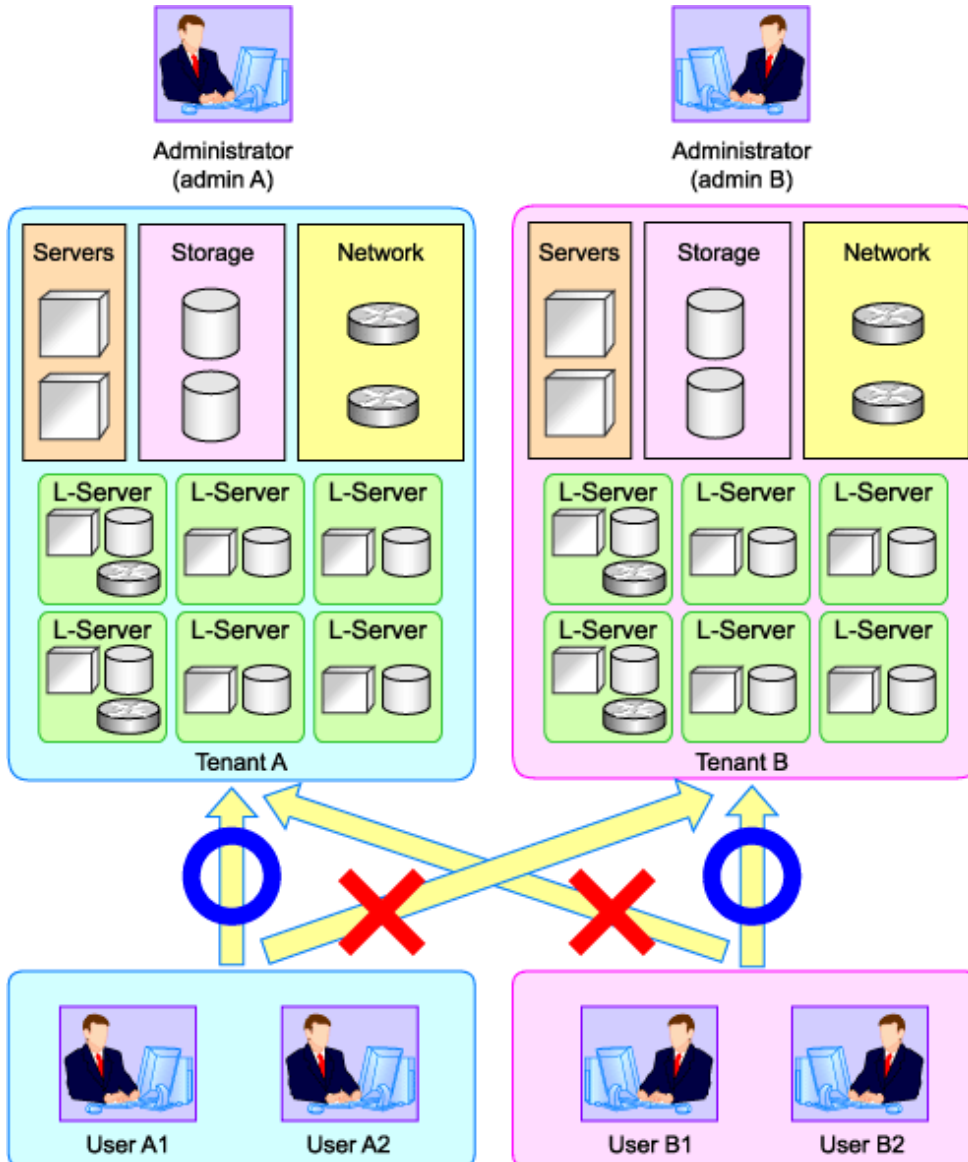
When sharing a tenant between multiple departments, select an existing global pool.

For details on tenant folders, refer to "[13.3 Tenants](#)".

When using tenants to segregate resources, the following operations are limited:

- A powered on L-Server cannot be moved to another tenant.  
Stop the L-Server before moving it.
- Resources used by powered on L-Servers, and resource pools or resource folders that contain those resources cannot be moved to another tenant.  
Stop the L-Servers before moving them.
- L-Servers that are using resources in another tenant cannot be started.  
Required resources must be placed in the same tenant or the same global pool as the L-Server.

Figure 13.1 Sharing and Dividing Resources Using Tenants



## 13.1 Overview

Resource folders are used when managing a large number of resources or when you want to divide resources according to certain conditions.

Resource folders can be created in the orchestration tree or the server resource tree.

Resource folders created in the orchestration tree can store the following resources:

- L-Server
- Resource Pools
- Resource Folders
- Tenant Folders

Resource folders created in the server resource tree can store the following resources:

- Chassis
- Servers (that are not stored in a chassis)
- Resource Folders

Resources stored in resource folders can be freely placed.

Using hierarchical folders, other resource folders can be stored in the resource folders.

Using resource folders enable you to do the following:

- Since the number of resources handled at once is reduced, it becomes easier to select resources
- Resources can be categorized in detail

Also, in the orchestration tree, the access scope of roles can be restricted and used in combinations to restrict the resource folders that can be accessed for each administrator. This enables you to do the following:

- Divide the management scope for each administrator
- Link with roles to prevent erroneous operations from being performed on resources outside of the scope of operation privileges

When the access scope is limited to a single resource folder, that resource folder is called the "home folder". By setting a home folder, a folder does not need to be specified for the various operations that normally require a resource folder to be specified.

## Resources that can be Registered

Resource folders are managed according to their resource folder type. The resources that can be registered for each resource folder type are indicated below.

Table 13.1 Resource Folder Types and Resources that can be Registered

Resource Folder Types	Resources that can be Registered
Orchestration (lserver)	L-Server
	Resource pools
Server (server)	Chassis
	Servers

## 13.2 Resource Folders

---

This section explains the operations for the resource folders of Resource Orchestrator.

### 13.2.1 Creating a Resource Folder

---

This section explains how to create resource folders.

1. Right-click the target resource folder in the tree, and select [Create]-[Folder] from the popup menu.

The [Create a Folder] dialog is displayed.

2. To use this feature, the following settings must first be defined:

#### Name

Enter a name for the resource folder.

Enter up to 32 characters beginning with an alphanumeric character (upper or lower case), and including alphanumeric characters (upper or lower case), underscores ("\_"), or hyphens ("-").

#### Label

Enter a label for the resource folder.

Enter up to 32 alphanumeric characters or symbols.

#### Comment

Enter any comments for the resource folder.

Enter up to 256 alphanumeric characters or symbols.

3. Click <OK>.

The created resource folder is displayed in the tree.

From the command-line, execute `rcxadm folder create`.

For details on the `rcxadm folder create` command, refer to "1.3.9 `rcxadm folder`" of the "Reference Guide (Resource Management) CE".

## 13.2.2 Viewing a Resource Folder

---

This section explains how resource folders are displayed.

Resource folders are displayed in the following format:

*Resource\_folder\_name (label)*

When *label* is not set, only *resource\_folder\_name* is displayed.

If you select the [Resource List] tab with a target resource folder selected in the tree, a list of information for the resources that belong to the resource folder are displayed.

If you select the [Resource Details] tab, detailed information for the resource folder is displayed.

The displayed resource folders differ according to the privileges of the user.

- Users that can access all resources

All resource folders are displayed in the tree.

- Users that have their access scope restricted by their role

Only the resource folders that the user has view privileges for are displayed in the tree.

From the command-line, execute `rcxadm folder list` or `rcxadm folder show`.

For details on the `rcxadm folder list` command and the `rcxadm folder show` command, refer to "1.3.9 `rcxadm folder`" of the "Reference Guide (Resource Management) CE".

## 13.2.3 Modifying the Basic Information

---

This section explains how to modify the basic information (folder name, label, comment) of resource folders.

1. Right-click the target resource folder in the tree, and select [Change Folder Settings]-[Basic Information] from the popup menu.  
The [Folder Change Setting] dialog is displayed.
2. Change the items you want to modify.
3. Click <OK>.

The basic information of the resource folder is modified.

From the command-line, execute `rcxadm folder modify`.

For details on the `rcxadm folder modify` command, refer to "1.3.9 `rcxadm folder`" of the "Reference Guide (Resource Management) CE".

## 13.2.4 Deleting Resource Folders

---

This section explains how to delete resource folders.

The procedure for deleting resource folders differs according to the resource folder type.

### For Orchestration (lserver)

1. Right-click the target resource folder in the orchestration tree, and select [Delete] from the popup menu.  
The [Delete a Folder] dialog is displayed.
2. The name of the resource folder to be deleted will be displayed.  
If resource folders or resources are included in the resource folder to delete, a list of them is displayed in "All Resources".  
Confirm the list, and check the "Delete All Resources" checkbox.



## Note

When the "Delete All Resources" checkbox is checked, the <OK> button will be enabled.

3. Click <OK>.  
The target resource folder is deleted.

From the command-line, execute `rcxadm folder delete`.

For details on the `rcxadm folder delete` command, refer to "1.3.9 `rcxadm folder`" of the "Reference Guide (Resource Management) CE".

### For Server (server)

1. Right-click the target resource folder in the server tree, and select [Delete] from the popup menu.  
The [Delete a Folder] dialog is displayed.
2. Click <OK>.  
The target resource folder is deleted.

From the command-line, execute `rcxadm folder delete`.

For details on the `rcxadm folder delete` command, refer to "1.3.9 `rcxadm folder`" of the "Reference Guide (Resource Management) CE".



## Note

If physical servers or chassis are registered in a resource folder, the resource folder cannot be deleted. Delete the folder after moving or deleting all physical servers and chassis from the target resource folder.

## 13.2.5 Moving a Resource

---

This section explains how to move a resource between resource folders.

1. Right-click the target resource in the tree, and select [Move to Folder] from the popup menu.  
The [Move a Resource] or [Move a Pool] dialog is displayed.
2. Select the destination resource folder.
3. Click <OK>.  
The target resource is moved to the destination resource folder.

When using tenants to segregate resources, movement of resources may be limited.

For details, refer to "[Chapter 13 Resource Folder and Tenant Operations](#)".

When the resource is an L-Server, execute `rcxadm lserver move` command.

For details on the `rcxadm lserver move` command, refer to "1.3.1 `rcxadm lserver`" of the "Reference Guide (Resource Management) CE".



## Note

- Storage resources with Thin Provisioning attributes cannot be moved to storage pools for which Thin Provisioning attributes are not configured.
- Storage resources with Thick Provisioning attributes cannot be moved to storage pools for which Thin Provisioning attributes are configured.
- When using datastores of VMware, they can be moved to both storage pools for which Thin Provisioning attributes are configured and storage pools for which Thin Provisioning attributes are not configured.  
For details, refer to "Linking with Thin Provisioning" in "4.3.1.2 Storage Configuration" of the "Setup Guide CE".
- When using disk resources with iSCSI connections or disk resources for virtual L-Server, they can be moved to both storage pools for which Thin Provisioning attributes are configured and storage pools for which Thin Provisioning attributes are not configured.

## 13.2.6 Moving Resource Folders

---

This section explains how to move a resource folder.

Use the following procedure to move a resource to another resource folder.

1. Right-click the target resource folder in the orchestration tree, and select [Move to Folder] from the popup menu.  
The [Move a Folder] dialog is displayed.
2. Select the destination resource folder.
3. Click <OK>.

The target resource folder is moved to the destination resource folder.

In this case, resources in the resource folder are also moved to the destination resource folder.

When using tenants to segregate resources, movement of resources may be limited.

For details, refer to "[Chapter 13 Resource Folder and Tenant Operations](#)".

From the command-line, execute `rcxadm folder move`.

For details on the `rcxadm folder move` command, refer to "1.3.9 `rcxadm folder`" of the "Reference Guide (Resource Management) CE".

## 13.3 Tenants

---

This section explains how to operate a tenant.

Tenants are composed of tenant folders and resource pools to store tenant resources, and users and user groups to manage tenants.



Only in Basic mode can tenant operations be performed using the tenant settings on the [Resource] tab.

### 13.3.1 Creating a Tenant Folder

---

This section explains how to create a tenant folder.

When creating tenant folders, perform the operation using the infrastructure administrator (`infra_admin`) or the administrator (`administrator`) role.

1. When registering a user from the ROR console menu, tenant registration in directory services must be prevented by Resource Orchestrator settings.

A definition file for directory service operations is used to define whether user information is registered in the directory service.

For details on the definition file for directory service operations, refer to "6.6.1 Settings for Tenant Management and Account Management" in the "Operation Guide CE".

This operation is not necessary when using internal authentication in Basic mode.

2. Check if user information is registered in the directory service. If no user information is registered, register it.

This operation is not necessary when using internal authentication in Basic mode.

3. Right-click the root folder in the orchestration tree, and select [Create]-[Tenant] from the popup menu.

The [Create a Tenant] dialog is displayed.

4. On the [Tenant] tab, set the following items.

#### Name

Enter a name for the tenant folder.

Enter up to 32 characters beginning with an alphanumeric character (upper or lower case), and including alphanumeric characters (upper or lower case), underscores ("\_"), or hyphens ("-").

## User information

### User Groups

Enter the name of the user group to register to the tenant folder.

The specified user group is created.

Enter up to 32 characters beginning with an alphanumeric character (upper or lower case), and including alphanumeric characters (upper or lower case), underscores ("\_"), or hyphens ("-").

The access scope and role type of the user group are set to the tenant\_admin of the tenant to be created.

### User ID

- When using directory service authentication or Single Sign-On authentication

Specify a user ID registered in the directory service.

- When using internal authentication

Enter a character string beginning with an alphabetic character and containing up to 32 alphanumeric characters, underscores ("\_"), hyphens ("-"), and periods ("."). User group names are case-sensitive.

### Password

For Basic mode, only when the internal authentication is used, the password will be displayed.

Enter the password corresponding to the user ID.

The string must be composed of alphanumeric characters (upper or lower case) and symbols, and can be up to 16 characters long.

### Confirm password

For Basic mode, only when the internal authentication is used, the password will be displayed.

Enter the password again.

### Label

Enter a label for the tenant folder.

Enter up to 32 alphanumeric characters or symbols.

### Comment

Enter any comments for the tenant folder.

Enter up to 256 alphanumeric characters or symbols.

5. On the [Pool] tab, set the following items.

#### Local pool information

When using a local pool, create a local pool under the tenant folder.

Clicking <Add> displays the [Add a Local Pool] dialog.

Enter the following items:

- Name
- Type
- Priority

#### Available global pool information

When using a global pool, a global pool is created in a tenant folder.

Clicking <Add> displays the [Add Global Pools] dialog.

Select the pool type of the global pool to add from "Pool type", and select a global pool from the list.

6. Click <OK>.

The created tenant folder is displayed in the tree.

From the command-line, execute `rcxadm tenant create`.

For details on the `rcxadm tenant create` command, refer to "1.3.13 rcxadm tenant" of the "Reference Guide (Resource Management) CE".



## Point

When creating a tenant folder, batch creation of resource pools, resource folders, users, and user groups are performed, but resources are not registered. Register resources, referring to "[Chapter 7 Registering Resources in Resource Pools](#)".

## Note

- You cannot specify a registered user for a user group and a user.
- Tenants cannot be created when a folder belonging to a tenant is selected.

## Changing the Default Value of the Role of the User Group Created During Tenant Creation

The default value of the user group role created when creating a tenant folder is `tenant_admin`. To change the default value of roles to administrator, create an empty definition file as follows:

### Location of the Definition File

[Windows]  
*Installation\_folder*\Manager\etc\customize\_data

[Linux]  
*/etc/opt/FJSVrcvmr/customize\_data*

### Definition File Name

`tenant_owner_admin.rcxprop`

## Tenant Folder Creation Default Definition File

When creating a tenant folder using the ROR console, the default value can be changed.

To change the default value in tenant folder creation, modify the tenant folder creation default definition file.

### Location of the Definition File

[Windows]  
*Installation\_folder*\Manager\etc\customize\_data

[Linux]  
*/etc/opt/FJSVrcvmr/customize\_data*

### Definition File Name

`tenant_config.xml`

### Definition File Format

```
<?xml version='1.0' encoding='utf-8'?>
<Tenant>
  <Pools>
    <Pool name="Resource Pool Name" type="Resource Pool Type">
      <Priority>Priority</Priority>
    </Pool>
  </Pools>
  <GlobalPoolLinks>
    <GlobalPoolLink>Global pool name</GlobalPoolLink>
  </GlobalPoolLinks>
</Tenant>
```

Table 13.2 List of Items Specified in Initial Values of Definition File for Tenant Folder Creation

Element Name	Description	Remarks (Possible Values, Examples)
Resource pool name (Pool name)	Name of the resource pool to create in the tenant folder	Specify the name of the resource pool to create in the tenant folder.  For the resource pool name, enter a character string beginning with an alphanumeric character, and containing up to 32 alphanumeric characters, underscores (" _"), and hyphens (" -").  If other values are configured, an error occurs when <OK> is clicked in the tenant creation window.
Resource pool types (Pool type)	Resource pool types	Specify the type of the resource pool to create in the tenant folder. It can be specified using the following methods:  <ul style="list-style-type: none"> <li>- vm (VM pool)</li> <li>- server (Server pool)</li> <li>- storage (Storage pool)</li> <li>- network (Network pool)</li> <li>- address (Address pool)</li> <li>- image (Image pool)</li> </ul> If other values are configured, "undefined" is displayed on the tenant creation window, and an error occurs when <OK> is clicked.
Priority (Priority)	Resource pool priority	Specify the priority for the resource pool.  For the priority order, specify a number between 1 and 10.  If the other values are configured, an error occurs when <OK> is clicked in the tenant creation window.
Global pool name (GlobalPoolLink)	Name of the global pool	Specify the name of the global pool to use inside the tenant folder, using the hierarchy described as follows:  <i>/Resource_folder_name/Global_pool_name</i>  The global pool names are not displayed in the tenant creation window, in the following cases:  <ul style="list-style-type: none"> <li>- When a resource pool which does not exist is specified</li> <li>- When something other than a resource pool is specified</li> </ul>

Example Definition File

An example definition file is indicated below.

```
<?xml version='1.0' encoding='utf-8'?>
<Tenant>
  <Pools>
    <Pool name="TenantVMHostPool" type="vm">
      <Priority>5</Priority>
    </Pool>
    <Pool name="TenantServerPool" type="server">
      <Priority>5</Priority>
    </Pool>
    <Pool name="TenantStoragePool" type="storage">
      <Priority>5</Priority>
    </Pool>
    <Pool name="TenantNetworkPool" type="network">
      <Priority>5</Priority>
    </Pool>
  </Pools>
</Tenant>
```

```

    </Pool>
    <Pool name="TenantAddressPool" type="address">
      <Priority>5</Priority>
    </Pool>
    <Pool name="TenantImagePool" type="image">
      <Priority>5</Priority>
    </Pool>
  </Pools>
  <GlobalPoolLinks>
    <GlobalPoolLink>/VMHostPool</GlobalPoolLink>
    <GlobalPoolLink>/ServerPool</GlobalPoolLink>
    <GlobalPoolLink>/StoragePool</GlobalPoolLink>
    <GlobalPoolLink>/NetworkPool</GlobalPoolLink>
    <GlobalPoolLink>/AddressPool</GlobalPoolLink>
    <GlobalPoolLink>/ImagePool</GlobalPoolLink>
  </GlobalPoolLinks>
</Tenant>

```

### Sample Definition File

Sample definition files that have appropriate resource pools configured for each operation form are provided.

Copy the sample definition files relevant to the tenant operations, to the storage location for the definition files.

#### - Installation Directories

[Windows]

*Installation\_folder*\Manager\etc\files\tenant\_config\_samples

[Linux]

/etc/opt/FJSVrcvmr/files/tenant\_config\_samples

#### - Sample Definition File

- Tenants where combinations of virtual and physical L-Servers are operated

lserver\_multi/tenant\_config.xml

- Tenants on which physical L-Servers are operated

lserver\_physical/tenant\_config.xml

- Tenants on which virtual L-Servers are operated

lserver\_vm/tenant\_config.xml

- Tenants which do not use resource pools

pool\_nothing/tenant\_config.xml

## 13.3.2 Viewing a Tenant Folder

---

This section explains how to view a tenant folder.

Tenant folders are displayed in the following format:

*tenant\_folder\_name* (*label*)

When *label* is not set, only *tenant\_folder\_name* is displayed.

If you select the [Resource List] tab with a target tenant folder selected in the orchestration tree, a list of information for the resources belonging to that tenant folder are displayed.

If you select the [Resource Details] tab, detailed information for the tenant folder is displayed.

The displayed tenant folders differ according to the privileges of the user.

- Users that can access all resources

All tenant folders are displayed in the tree.

- Users that have their access scope restricted by their role

Only the tenant folders that the user has privileges to view are displayed in the tree.

From the command-line, execute `rcxadm tenant list` or `rcxadm tenant show`.

For details on the `rcxadm tenant list` command and the `rcxadm tenant show` command, refer to "1.3.13 `rcxadm tenant`" of the "Reference Guide (Resource Management) CE".

### 13.3.3 Modifying the Basic Information

---

This section explains how to modify the basic information (tenant folder name, label, and comment) of tenant folders and global pools.

#### Modifying the Basic Information of Tenant Folders

1. Right-click the tenant folder in the orchestration tree, and select [Change Settings]-[Basic Information] from the popup menu.  
The [Modify Tenant Information] dialog is displayed.
2. Change the items you want to modify.
3. Click <OK>.

The basic information of the tenant folder is modified.

From the command-line, execute `rcxadm tenant modify`.

For details on the `rcxadm tenant modify` command, refer to "1.3.13 `rcxadm tenant`" of the "Reference Guide (Resource Management) CE".

#### Changing Settings for Global Pools

Explains how to change the global pool to register in the tenant folder.

1. Right-click the tenant folder in the orchestration tree, and select [Change Settings]-[Global pool] from the popup menu.  
The [Modify Accessible Global Pools] dialog is displayed.
2. Click <Add>, or after selecting the global pool for deletion, click <Delete> to change the global pool's settings.
3. Click <OK>.

The basic information of the global pool of the target tenant folder is modified.

From the command-line, execute `rcxadm tenant modify`.

For details on the `rcxadm tenant modify` command, refer to "1.3.13 `rcxadm tenant`" of the "Reference Guide (Resource Management) CE".

### 13.3.4 Deleting Tenant Folders

---

This section explains how to delete a tenant folder.

When a tenant folder is deleted, the resources in that tenant folder are also deleted.

Either move the resources in the tenant folder to another tenant folder in advance, or delete the tenant folder after deleting the resources.

1. Right-click the tenant folder in the orchestration tree, and select [Delete] from the popup menu.  
The [Delete a Tenant] dialog is displayed.
2. The name of the tenant folder to be deleted is displayed.

If resources are included in the target tenant folder to be deleted, a list of those resources is displayed in "Associated resources".

Confirm the list, and check the "Delete this tenant." checkbox.



When the "Delete this tenant." checkbox is checked, the <OK> button will be enabled.

3. Click <OK>.

The target tenant folder is deleted.

The user groups and users belonging to it are also deleted. When the user groups and users also have roles for other tenant folders, they are not deleted.

When using user management by Single Sign-On or directory services, although the user information from management information of Resource Orchestrator is deleted, the user information of the directory service is not deleted.

From the command-line, execute `rcxadm tenant delete`.

For details on the `rcxadm tenant delete` command, refer to "1.3.13 `rcxadm tenant`" of the "Reference Guide (Resource Management) CE".



## Note

When an L-Server is created in a tenant folder, deleting the tenant folder will also delete the L-Server. For details on how to delete an L-Server, refer to the cautionary notes of "11.4 Deleting an L-Server".

## 13.3.5 Moving a Tenant Folder

---

This section explains how to move a tenant folder.

Use the following procedure to move a tenant folder to another resource folder.

1. Right-click the tenant folder to move in the orchestration tree, and select [Move to Folder] from the popup menu.

The [Move a Tenant] dialog is displayed.

2. Select the destination resource folder.

3. Click <OK>.

The tenant folder is moved to the destination resource folder.

In this case, resources in the tenant folder are also moved to the destination.

From the command-line, execute `rcxadm tenant move`.

For details on the `rcxadm tenant move` command, refer to "1.3.13 `rcxadm tenant`" of the "Reference Guide (Resource Management) CE".

# Chapter 14 Network Device Resources

This chapter explains how to operate network devices.

## 14.1 Switchover of Maintenance Mode

This section explains operations temporarily excluding the network devices from the target of monitoring or auto-configuration in order to perform operations such as regular maintenance of network devices configuring network devices, or configuring a network device as the target of monitoring or auto-configurations after regular maintenance completion.

Perform the following operations to configure or release the maintenance mode settings of network devices.

### - Configuring Maintenance Mode

When configuring maintenance mode for a network device, the network device will be excluded temporarily from the target of monitoring or auto-configuration.

Maintenance mode is configured for the specified network device, by using the commands to specify the `-attr mode=maintenance` option.

### - Releasing Maintenance Mode

A network device can be configured as the target of monitoring or auto-configuration, by releasing the maintenance mode configured for the network devices.

Maintenance mode is released for the specified network device, by using the commands to specify the `-attr mode=active` option.



### Example

#### - When configuring maintenance mode

```
# /opt/FJSVrcvmr/bin/rcxadm netdevice set -name nd01 -attr mode=maintenance <RETURN>
```

#### - When releasing maintenance mode

```
# /opt/FJSVrcvmr/bin/rcxadm netdevice set -name nd01 -attr mode=active <RETURN>
```

The maintenance mode configuration status can be confirmed by using one of following methods:

#### - From the GUI:

1. Click the network device to confirm in the network device tree.
2. Select the [Resource Details] tab.
3. Confirm the maintenance mode status, referring to "Maintenance Mode" of "General".

#### - maintenance

Indicates that maintenance mode is configured.

#### - active

Indicates that maintenance mode is released.

#### - For Commands

Use the `rcxadm netdevice list` command to confirm the maintenance mode status.

Check the maintenance mode status in the "MAINTENANCE" displayed in the display results of the list subcommand.

#### - ON

Indicates that maintenance mode is configured.

- OFF

Indicates that maintenance mode is released.



For details on the `rcxadm netdevice` command, refer to "1.3.6 `rcxadm netdevice`" in the "Reference Guide (Resource Management) CE".



When configuring maintenance mode for a network device, auto-configuration is not executed on the network device. Therefore, when a network device configured for maintenance mode is in a redundancy configuration, it may be unable to keep the redundancy configuration depending on the configuration details.

When configuring maintenance mode for a network device with redundancy configuration, it is recommended not to perform operations (creation, modification, and deletion) for a tenant administrator.

The configuration details for which redundancy configurations cannot be maintained depends on the specifications of network devices configuring the network devices. For details, refer to the manuals of network devices.

## 14.2 Switchover of the Target of Auto-Configuration

When creating an L-Server, network devices which are the targets of auto-configuration are selected and deployed when automatic configuration is successful.

Use the following operations to configure whether network devices are the targets or are not targets of auto-configuration.

- Configuring a network device as the target of auto-configuration

When configuring a network device as the target of auto-configuration, an infrastructure administrator should use the commands to perform the operation.

The specified network device is configured as the target of auto-configuration, using the `rcxadm netdevice set` command with the `-attr auto_conf=true` option specified.

- Excluding a network device from auto-configuration

In following cases, the network device is excluded from the targets of auto-configuration:

- When an infrastructure administrator is temporarily excluding the network device from auto-configuration

The specified network device is excluded from the target of auto-configuration, by using the `rcxadm netdevice set` command with the `-attr mode=active` option specified.

- When auto-configuration fails due to problems (such as login failure or device failure) related to network devices

- When an infrastructure administrator is excluding the network device from the targets of auto-configuration during network device registration

By executing the `rcxadm netdevice create` command or the `rcxadm netconfig import` command after specifying "false" in the `AutoConfiguration` element of the network configuration information, it is excluded from the targets of auto-configuration during network device modification.

- When an infrastructure administrator is excluding the network device from the target of auto-configuration during network device modification

By executing the `rcxadm netdevice modify` command after specifying "false" in the `AutoConfiguration` tag of the network configuration information, it is excluded from the targets of auto-configuration during network device modification.

## Example

---

- When an infrastructure administrator is configuring the network device using auto-configuration

```
# /opt/FJSVrcvmr/bin/rcxadm netdevice set -name nd01 -attr auto_conf=true <RETURN>
```

- When an infrastructure administrator is excluding the network device from auto-configuration

```
# /opt/FJSVrcvmr/bin/rcxadm netdevice set -name nd01 -attr auto_conf=false <RETURN>
```

---

Use the `rcxadm netdevice show` command to confirm if the network device is the target of auto-configuration.

Confirm if the network device is the target of auto-configuration using "AutoConfiguration" displayed in the display results of the `show` subcommand.

- true  
Indicates that the network device is the target of auto-configuration.
- false  
Indicates that the network device is not the target of auto-configuration.

## See

---

- For details on the `rcxadm netdevice` command, refer to "1.3.6 `rcxadm netdevice`" in the "Reference Guide (Resource Management) CE".
  - For details on the `rcxadm netconfig` command, refer to "1.3.7 `rcxadm netconfig`" in the "Reference Guide (Resource Management) CE".
-



# Chapter 15 User Group Operations

This chapter explains user groups.

Only users with the infrastructure administrator role or multiple roles can create user groups.

For details on the command, refer to "1.6.2 rcxadm usergroup" of the "Reference Guide (Resource Management) CE".



## Note

User group operations can be only be performed in Basic mode.

## 15.1 Creating a User Group

This section explains how to create user groups.

Use the following procedure to create user groups:

1. In the ROR console, select [Settings]-[User Groups].

The [User Groups] dialog is displayed.

2. Click <Add>.

The [Register User Group] dialog is displayed.

3. Configure the following settings:

### Group Name

Enter a character string beginning with an alphanumeric character and containing up to 32 alphanumeric characters, underscores ("\_"), and hyphens ("-").

### Scopes/Roles

After clicking <Add>, select the access scope and role type to set for the user group.

### Label (Optional)

Enter a label for the user group.

Enter up to 32 alphanumeric characters or symbols.

### Comment (Optional)

Enter any comments for the user group.

Enter up to 256 alphanumeric characters or symbols.

4. Click <OK>.

The user group is created.

Execute the rcxadm usergroup create command.

For details on the rcxadm usergroup create command, refer to "1.6.2 rcxadm usergroup" of the "Reference Guide (Resource Management) CE".

## 15.2 Viewing a User Group

This section explains how to view a user group.

Use the following procedure to view a registered user group.

1. In the ROR console, select [Settings]-[User Groups].

The [User Groups] dialog is displayed.

A list of user groups (user groups and user accounts) is displayed.

From the command-line, execute `rcxadm usergroup list` or `rcxadm usergroup show`.

For details on the `rcxadm usergroup` command, refer to "1.6.2 `rcxadm usergroup`" of the "Reference Guide (Resource Management) CE".

## 15.3 Modifying a User Group

---

This section explains how to modify user groups.

Use the following procedure to modify user group settings:

1. In the ROR console, select [Settings]-[User Groups].

The [User Groups] dialog is displayed.

2. Select the user group to modify.

3. Click <Modify>.

The [Modify User Group] dialog is displayed.

4. Change the items you want to modify.

5. Click <OK>.

The user group information is modified.

Execute the `rcxadm usergroup modify` command.

For details on the `rcxadm usergroup modify` command, refer to "1.6.2 `rcxadm usergroup`" of the "Reference Guide (Resource Management) CE".

## 15.4 Deleting a User Group

---

This section explains how to delete user groups.

You cannot delete a user group if it has users registered.

Before deleting the user group, move all the users that belong to the user group to another user group, or delete them.

Use the following procedure to delete user groups:

1. In the ROR console, select [Settings]-[User Groups].

The [User Groups] dialog is displayed.

2. Select the user group to delete.

3. Click <Delete>.

The [Delete User Group] dialog is displayed.

4. Click <OK>.

The user group information is deleted.

From the command-line, execute `rcxadm usergroup delete`.

For details on the `rcxadm usergroup delete` command, refer to "1.6.2 `rcxadm usergroup`" of the "Reference Guide (Resource Management) CE".

# Chapter 16 Linking L-Servers with Configured Physical Servers or Virtual Machines

Explains how to link a configured physical server to a physical L-Server and how to link a configured virtual machine to a virtual L-Server.

## 16.1 Management Scope

The management scope varies depending on the resources used by the configured physical server or virtual machine.

Depending on which resources can be managed, L-Servers are referred to differently as follows:

- L-Server for Server Management

Refers to L-Servers that manage only servers.

- For Physical Servers

This applies when using the hardware listed in "[16.3.1 Manageable Hardware](#)".

- For Virtual Machines

This applies when using a physical server and when using server virtualization software.

- The hardware listed in "[16.3.1 Manageable Hardware](#)" and "[16.3.3 Manageable Storage](#)"
    - The server virtualization software described in "[16.3.4 When Using Server Virtualization Software](#)"

- L-Server for Server/Storage Management

- For Physical Servers

Refers to L-Servers that manage servers and storage.

This applies when using the hardware listed in "[16.3.1 Manageable Hardware](#)" and "[16.3.3 Manageable Storage](#)".

- For Virtual Machines

This applies when using a physical server and when using server virtualization software.

- The hardware listed in "[16.3.1 Manageable Hardware](#)" and "[16.3.3 Manageable Storage](#)"
    - The server virtualization software described in "[16.3.4 When Using Server Virtualization Software](#)"



### Note

When linking a configured physical server to a physical L-Server, only "L-Server for server management" is supported. "L-Server for server/storage management" cannot be created.

When disk and NIC information is successfully obtained from the configured physical server or virtual machine, that information is displayed. The output information for NICs differs depending on the L-Server type.

- For Physical L-Servers

MAC address, IP address (only for admin LAN)

- For Virtual L-Servers

MAC address

When admin server has been configured on a virtual machine, do not link that virtual machine to an L-Server.

## 16.2 Available Range

The functional range available when a configured physical server or virtual machine is linked to an L-Server is as follows:

Table 16.1 Functional Range Available When Using a Configured Physical Server as an L-Server

L-Server Function	Type of L-Server		
	Physical Server Using VIOM	Physical Server Using HBA address rename	Other Physical Servers
Starting	Yes	Yes	Yes
Stopping	Yes	Yes	Yes
Restarting	Yes	Yes	Yes
Modifying specifications	Yes (*1)	Yes (*1)	Yes (*1)
Modifying the basic information	Yes	Yes	Yes
Collecting cloning images	Yes	Yes	Yes
Backup and Restore	Yes	Yes	Yes
Attaching and detaching disks	No	No	No
Sharing disks among L-Servers	No	No	No
Changing physical server usage	No	No	No
Server redundancy	Yes (*2)	Yes (*2)	Yes (*2)
Spare server configuration checks	Yes	No	No
Alive monitoring (ping monitoring)	Yes (*3)	Yes (*3)	Yes (*3)
Deploying the network information	No	No	No
Admin LAN multiple subnet names	No	No	No
Network redundancy, tagVLAN	No	No	No
Modifying network resource settings	No	No	No
Starting the console	Yes	Yes	No
Batch power operations	Yes	Yes	Yes
PXE boot	No	No	No
iSCSI boot	No	No	No
Allocating and releasing resources	No	No	No
Blade chassis high availability	No	No	No
Storage chassis high availability	No	No	No
Disaster Recovery	No	No	No
Deletion	Yes	Yes	Yes
Releasing an L-Server	Yes	Yes	Yes

\*1: The following items can be modified.

- Server redundancy, spare server selection methods, and spare server pools
- Startup priority

\*2: Configured physical servers for which server switchover has been already set cannot be managed. Enable server redundancy by modifying specifications.

\*3: The settings of ping monitoring for physical servers are inherited. However, settings for ping monitoring cannot be configured using XML or the GUI as a physical L-Server.

Table 16.2 Functional Range Available When Using a Configured Virtual Machine as an L-Server

L-Server Function	Type of L-Server	
	L-Server for Server Management (*1)	L-Server for Server/Storage Management
Starting	Yes	Yes
Stopping	Yes	Yes
Restarting	Yes	Yes
Migration of L-Servers between servers (migration)	Yes (*2)	Yes (*2)
Modifying specifications	Yes (*3)	Yes (*3)
Modifying the basic information	Yes	Yes
Collecting cloning images	Yes (*4)	Yes (*4)
Attaching and detaching disks	No	Yes
Snapshot collection and restoration	Yes	Yes
Allocating and releasing resources	Yes	Yes
Starting the console	Yes	Yes
Batch power operations	Yes	Yes
Disaster Recovery	Yes	Yes
Deletion	Yes	Yes
Releasing an L-Server	Yes	Yes

\*1: For the following cases, it will be the L-Server for server management.

- When disk configurations cannot be supported by an L-Server
- When only Raw Device Mapping (RDM), a pass-through disk(Pass-through Disk), and a difference disk are included
- When a configuration including device paths which are not described, Raw Device Mapping(RDM), a path through disk (Pass-through Disk), or difference disks are included

In the following cases, the "L-Server for Server/Storage Management" is used.

- When using storage listed in "[16.3.3 Manageable Storage](#)", and the device paths for all disks that have been allocated to the virtual machine are found in the following list

[VMware]

- SCSI:0:1 - SCSI:0:6
- SCSI:0:8 - SCSI:0:14
- SCSI:1:0 - SCSI:1:6
- SCSI:1:8 - SCSI:1:14 AM
- SCSI:2:0 - SCSI:2:6
- SCSI:2:8 - SCSI:2:14 AM
- SCSI:3:0 - SCSI:3:6
- SCSI:3:8 - SCSI:3:14 AM

[Hyper-V]

- SCSI:0:1 - SCSI:0:14

- SCSI:1:0 - SCSI:1:14 AM
- SCSI:2:0 - SCSI:2:14 AM
- SCSI:3:0 - SCSI:3:14 AM

For virtual machines on VM host of VMware which is not managed by VM management software, power operations (starting, stopping or restarting) and modification of basic information (label/comment configurations) can be performed.

\*2: Datastores must be installed on a shared disk.

\*3: When CPU performance and memory size have been specified, the settings cannot be changed into "Unlimited".

\*4: For system disks, use SCSI:0:0 [VMware] or IDE:0:0 [Hyper-V]. If SCSI:0:0 [VMware] or IDE:0:0 [Hyper-V] is not used for the system disk, the L-Server creation process that accompanies cloning image deployment may fail. For Hyper-V, datastore must be installed on a shared disk.

## 16.3 Prerequisites

When linking a configured physical server to a physical L-Server, or when linking a configured virtual machine to a virtual L-Server, the available management scope varies depending on the configured hardware and software environments.

### 16.3.1 Manageable Hardware

When using the hardware listed in "Table 1.50 Required Hardware" in "1.5 Hardware Environment" of the "Setup Guide CE", only servers can be managed.

Table 16.3 Required Hardware

Software	Hardware	Remarks
Agent	PRIMERGY BX400 S1 PRIMERGY BX620 S6 PRIMERGY BX620 S5 PRIMERGY BX620 S4 PRIMERGY BX920 S2 PRIMERGY BX920 S1 PRIMERGY BX922 S2 PRIMERGY BX924 S2 PRIMERGY BX960 S1 PRIMERGY RX100 S6 PRIMERGY RX100 S5 PRIMERGY RX200 S6 PRIMERGY RX200 S5 PRIMERGY RX200 S4 PRIMERGY RX300 S6 PRIMERGY RX300 S5 PRIMERGY RX300 S4 PRIMERGY RX600 S5 PRIMERGY RX600 S4 PRIMERGY RX900 S1 PRIMERGY TX150 S7 PRIMERGY TX150 S6 PRIMERGY TX200 S6 PRIMERGY TX200 S5 PRIMERGY TX300 S6 PRIMERGY TX300 S5 PRIMERGY TX300 S4 PRIMEQUEST 1000 series servers Other PC servers	<ul style="list-style-type: none"> <li>- When using PRIMERGY BX series servers Only configurations where Fibre Channel cards are mounted in expansion slot 2 are supported.</li> <li>- When using servers other than the PRIMERGY BX series It is necessary to mount an IPMI-compatible (*1) server management unit (*2).</li> <li>- When server virtualization software is RHEL5-Xen Only PRIMEQUEST 1000 series servers are supported as managed servers.</li> <li>- When using iSCSI boot for physical L-Servers PRIMERGY BX900 and VIOM are required.</li> </ul>

\*1: Supports IPMI 2.0.

\*2: This usually indicates a Baseboard Management Controller (BMC).

For PRIMERGY, it is called an integrated Remote Management Controller (iRMC).

## 16.3.2 Manageable Servers

---

### For Physical Servers

- Connected with a SAN.
- Has 2 HBA ports on the server.
- An agent has been registered.



When not using VIOM or HBA address rename, disk information of connected SAN disks is not displayed.

## 16.3.3 Manageable Storage

---

Manageable storage differs depending on whether a physical server or a virtual machine is used.

### For Physical Servers

Servers and storage can be managed when using the hardware listed in "Table 1.50 Required Hardware" in "1.5 Hardware Environment" of the "Setup Guide CE", and in the following cases. In other cases, only servers can be managed.

- When using the ETERNUS storage or NetApp storage listed in "Table 1.52 Storage Units which can be Connected with L-Servers on Physical Servers" in "1.5 Hardware Environment" of the "Setup Guide CE"
- When using "Table 1.53 Fibre Channel Switches which can be used when Connecting ETERNUS Storage, NetApp Storage, EMC CLARiiON Storage, EMC Symmetrix DMX Storage, and EMC Symmetrix VMAX Storage with L-Servers on Physical Servers" in "1.5 Hardware Environment" of the "Setup Guide CE"
- When storage units are managed using the storage management software listed in "1.4.2.2 Required Software" of the "Setup Guide CE"
- When one AffinityGroup is operated for one physical server

### For Virtual Machines

The settings depend on the server virtualization software used.

In the following cases, both servers and storage can be managed.

[VMware]

- Virtual machines are managed using VMware and vCenter Server
- Datastores are used
- SAN storage supported by VMware, excluding built-in disks on the server and iSCSI storage, is used
- SCSI:0:0 is used for the system disk
- The following device paths are used for data disks
  - SCSI:0:1 - SCSI:0:6
  - SCSI:0:8 - SCSI:0:14
  - SCSI:1:0 - SCSI:1:6
  - SCSI:1:8 - SCSI:1:14 AM

- SCSI:2:0 - SCSI:2:6
- SCSI:2:8 - SCSI:2:14 AM
- SCSI:3:0 - SCSI:3:6
- SCSI:3:8 - SCSI:3:14 AM

### Note

When using Raw Device Mapping, or when using a device path other than those listed above, only servers can be managed.

For disks using any other device path, assign 56 or higher as the disk number.

When collecting a cloning image for deploying an L-Server, use SCSI:0:0 for the system disk.

[Hyper-V]

- Virtual machines are managed using SCVMM
- MSFC has been added to VM hosts
- A cluster disk has been configured as a shared cluster volume
- A SAN volume has been configured as a cluster disk
- SAN storage supported by Hyper-V, excluding built-in disks on the server and iSCSI storage, is used
- IDE:0:0 is used for the system disk
- The following device paths are used for data disks
  - SCSI:0:1 - SCSI:0:14
  - SCSI:1:0 - SCSI:1:14 AM
  - SCSI:2:0 - SCSI:2:14 AM
  - SCSI:3:0 - SCSI:3:14 AM

### Note

When using pass-through devices or difference disks, or when using a device path other than those listed above, only servers can be managed.

For disks using any other device path, assign 60 or higher as the disk number.

When collecting a cloning image for deploying an L-Server, use IDE:0:0 for the system disk.

## 16.3.4 When Using Server Virtualization Software

Virtual machines of server virtualization software supported by Resource Orchestrator that are managed by VM management software can be managed as virtual L-Servers.

For the server virtualization software supported by Resource Orchestrator, refer to "1.4.2.1 Required Basic Software" and "1.4.2.2 Required Software" of the "Setup Guide CE".

Server virtualization software supported by this function is VMware and Hyper-V.

### Note

If "1.4.2.2 Required Software" of the "Setup Guide CE" is not installed, a new L-Server cannot be deployed on that VM host.

When using VMware, the virtual machine on a VM host which is not managed with VM management software can be linked to an L-Server. Power operations (starting up, stopping, and restarting) and modification of basic information (label/comments) can be performed for the L-Server.



When using Hyper-V, the virtual machine on a VM host which is not managed with VM management software cannot be linked to an L-Server.

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## 16.4 Installation

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This section explains the installation method to link a configured physical server to a physical L-Server, and the installation method to link a configured virtual machine to a virtual L-Server.

### 16.4.1 Preparations

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#### Preparations

For details, refer to the procedure in "D.2 Pre-setup Preparations (Servers)" of the "Setup Guide CE".

#### Setup

Register the resources of configured physical servers and VM hosts to Resource Orchestrator.

When linking a configured physical server to an L-Server, perform the following procedure described in "D.6 Setup" in the "Setup Guide CE":

When linking a configured virtual machine to an L-Server, perform the following procedure described in "E.2.5 Setup" or "E.2.4 Setup" in the "Setup Guide CE":

1. Register Resources

When linking a configured physical server to an L-Server, perform the following procedure:

- a. Register Storage Management Software
- b. Register Managed Servers

When linking a configured virtual machine to an L-Server, perform the following procedure:

- a. Register VM Management Software
- b. Register Managed Servers

2. Register Resources in Resource Pools

When linking a configured physical server to an L-Server, perform the following procedure to register a resource in a resource pool.

- a. Register physical server resources in a server pool.  
In the [Register Resources] dialog for the server pool, check the "Display servers with OS installed" checkbox and specify a physical server with an OS installed.
- b. Register the disks that are connected to the physical server to be linked with the L-Server in a storage pool.
- c. Register address set resources.  
Specify the scope including MAC/WWN addresses being used by the configured physical server.
- d. Register network resources.  
Specify IP addresses not being used by the configured physical server or the virtual machine.  
When the IP address used for a configured physical server, a virtual machine, or other devices is included in the subnet address scope, specify the IP address as the "IP addresses to be excluded".

When linking a configured virtual machine to an L-Server, perform the following procedure to register a resource in a resource pool.

- a. Register VM host resources in a VM pool.
- b. Register the virtual storage that is used for a virtual machine to be linked with the L-Server in a storage pool.

- c. Register network resources.

Specify IP addresses not being used by the configured physical server or the virtual machine.

When the IP address used for a configured physical server, a virtual machine, or other devices is included in the subnet address scope, specify the IP address as the "IP addresses to be excluded".

## Confirmation

Perform the procedure described in "[16.4.2 For Physical Servers](#)" or "[16.4.3 For Virtual Machines](#)", and confirm the configured physical server or virtual machine linked to an L-Server, using the following procedure:

- Confirmation from the GUI

Select the L-Server in the orchestration tree, display the [Resource Details] tab, and check the information is displayed in "Controlled resources" on the "Status" table.

In "Controlled resources", the following text strings are displayed.

- When "Server" is displayed

A physical L-Server or a server is managed by a virtual L-Server.

- When "Server,Storage" is displayed

A server or a storage device is managed by a virtual L-Server.

- Confirmation from the Command Line

Execute the `rcxadm lserver show` command and check that the scope of the controlled resources (ControlledResources) is displayed.

For details, refer to "1.3.1 rcxadm lserver" of the "Reference Guide (Resource Management) CE".

For the scope of controlled resources, the following text strings are displayed.

- When "Server" is displayed

A physical L-Server or a server is managed by a virtual L-Server.

- When "Server,Storage" is displayed

A server or a storage device is managed by a virtual L-Server.

## 16.4.2 For Physical Servers

---

Use the following procedure to use a physical server as a physical L-Server:

1. In the ROR console orchestration tree, right-click a physical server in the registered server pool, and select [Convert to L-Server] from the popup menu.

The [Convert to L-Server] dialog is displayed.

2. Enter the following items:

### L-Server Name

Enter a name for the L-Server.

When the physical server name starts with an alphanumeric character (upper or lower case) and consists of 64 or less characters, including alphanumeric characters (upper or lower case), underscores ("\_"), or hyphens ("-"), the physical server name is displayed as the default L-Server name.

Enter up to 64 characters beginning with an alphanumeric character (upper or lower case), and including alphanumeric characters (upper or lower case), underscores ("\_"), or hyphens ("-").

### Destination folder

Select a resource folder or a tenant folder to store L-Servers.

If omitted, the L-Server is stored in the root folder of the user that executed the physical L-Server.

#### Label (Optional)

Enter a label for the L-Server.

Enter up to 32 alphanumeric characters or symbols.

#### Comment (Optional)

Enter any comments for the L-Server.

Enter up to 256 alphanumeric characters or symbols.

#### 3. Click <OK>.

The physical server becomes manageable as a physical L-Server.

From the command-line, execute `rcxadm lserver convert`.

For details on the `rcxadm lserver convert` command, refer to "1.3.1 `rcxadm lserver`" of the "Reference Guide (Resource Management CE)".

## 16.4.3 For Virtual Machines

---

Use the following procedure to use a virtual machine as a virtual L-Server:

#### 1. In the ROR console orchestration tree, right-click a VM host in the registered VM pool, and select [Convert to L-Server] from the popup menu.

The [Convert to L-Server] dialog is displayed.

#### 2. Enter the following items:

##### Batch Folder Settings (optional)

Select a resource folder or a tenant folder to store L-Servers.

If omitted, the L-Server is stored in the root folder of the user that executed the physical L-Server.

##### VM guests

Displays virtual machines that were created on the specified VM host, that have not been linked to L-Servers. In addition to the virtual machine name, the OS type, L-Server name, and the destination folder are displayed.

When the virtual machine name starts with an alphanumeric character (upper or lower case) and consists of 64 or less characters, including alphanumeric characters (upper or lower case), underscores ("\_"), hyphens ("-"), or periods("."), the virtual machine name is displayed as the default L-Server name.

Select a virtual machine to use as a virtual L-Server.

To use all virtual machines registered on the specified VM host, click <Select all>.

##### Details (optional)

Set the L-Server name, label, comment, and destination folder.

Clicking <Details> displays the [VM Guest Setting] dialog.

For the information that can be specified for each item, refer to "[16.4.2 For Physical Servers](#)".

For the L-Server name, enter up to 64 characters beginning with an alphabetical character (upper or lower case), and including alphanumeric characters (upper or lower case), underscores ("\_"), periods("."), and hyphens("-").

Enter the desired items and click <OK> to reflect the settings on the items displayed in the VM guest list.

#### 3. Click <OK>.

The virtual machine becomes manageable as a virtual L-Server.

From the command-line, execute `rcxadm lserver convert`.

For details on the `rcxadm lserver convert` command, refer to "1.3.1 `rcxadm lserver`" of the "Reference Guide (Resource Management CE)".



## Note

When operating an admin server on a virtual machine on VMware or Hyper-V environment, do not link that virtual machine to an L-Server.

VMware FT secondary virtual machines cannot be linked with L-Servers.

[VMware]

When the limit values of CPU/memory of a virtual machine linked with an L-Server have been set to "Unlimited", different methods are used for calculating the number of possible L-Servers and modifying L-Server specifications.

For details on the calculation method, refer to "[Max. Number of Possible L-Servers View](#)" in "[12.4 Viewing a Resource Pool](#)".

For details on modifying specifications, refer to "[16.5 Changing Configuration](#)".

[Hyper-V]

When a virtual machine with a network adapter that has never been started before is linked with a L-Server, the MAC address the L-Server uses on the network might be set to "00:00:00:00:00:00". In that case, cancel the link between the virtual machine and L-Server and assign a static MAC address to that virtual machine using VM management software, or start the virtual machine, wait for 3 minutes, and then create the link with the L-Server.

For a virtual L-Server linked with a configured virtual machine, a hyphen ("-") is displayed for "Usage" in the "Disk Information" displayed on the [Resource Details] tab on the ROR console.

---

## 16.5 Changing Configuration

This section explains how to change configurations of L-Servers linked to configured physical servers or virtual machines.

For details on configuration changes, refer to "[Chapter 3 Changing Resources](#)".

From the command-line, execute `rcxadm lserver modify`.

For details on the `rcxadm lserver modify` command, refer to "1.3.1 `rcxadm lserver`" of the "Reference Guide (Resource Management) CE".



## Note

Disks cannot be attached or detached to and from L-Servers which do not manage storage.

---

## 16.6 Reverting L-Servers

This section explains how to revert the link between an L-Server and a configured physical server or virtual machine.

Use the following procedure to release the link to an L-Server.

1. Right-click the target L-Server in the orchestration tree, and select [Revert] from the popup menu.

A confirmation dialog is displayed.

2. Click <OK>.

The link between the L-Server and the configured physical server or virtual machine can be reverted.

From the command-line, execute `rcxadm lserver revert`.

For details on the `rcxadm lserver revert` command, refer to "1.3.1 `rcxadm lserver`" of the "Reference Guide (Resource Management) CE".

However, for L-Servers created using Resource Orchestrator, the link between the L-Server and a physical server or virtual machine cannot be reverted.

## Appendix A sFormat of CSV System Configuration Files

This appendix explains the format of the CSV system configuration files used by Resource Orchestrator's pre-configuration function.

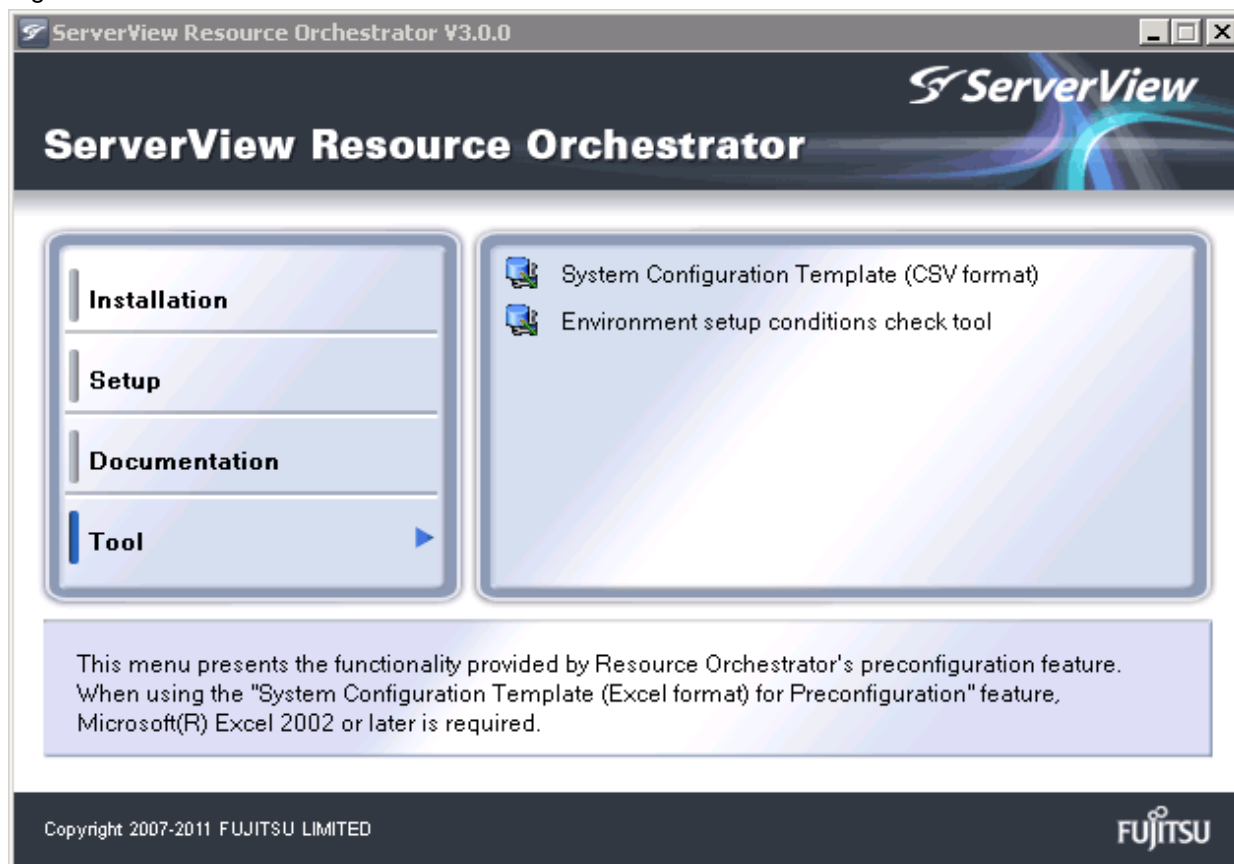
### A.1 Obtaining the System Configuration File (CSV Format)

The system configuration files can be obtained as follows.

- From the selection window of the Resource Orchestrator DVD-ROM [Windows]

Setting the Resource Orchestrator DVD-ROM in the CD-ROM drive automatically displays the screen below. Select "Tool" and click "System Configuration Template (CSV format)". The CSV file will be opened from the associated application (such as Excel). Check the file content and save it.

Figure A.1 Selection Window



#### Information

If the above window does not open, execute "RcSetup.exe" from the DVD-ROM drive.

- From the Resource Orchestrator DVD-ROM

Set the Resource Orchestrator DVD-ROM in the DVD-ROM drive and copy the following file.

[Windows]

*DVD-ROM\_drive*\template\ja\template.csv

[Linux]

*DVD-ROM\_mount\_point*/template/ja/template.csv

- From the ROR console

The System Configuration Template can be obtained from a Resource Orchestrator manager installation.

1. Open and log in to the ROR console according to "7.1 Login" of the "Setup Guide CE".
2. Select [File]-[Download Template]-[CSV Format] from the ROR console menu.  
Displays the [File Download] window.
3. Click <Save>.
4. Specify the destination directory and the file name.
5. Click <Save>.

## A.2 File Format

---

The system configuration files (CSV format) used for pre-configuration are comma (",") delimited.  
The format of each line is given below:

- File Format Definition

The first line of the file must begin with the following:

```
RCXCSV,V3.4
```



Resource Orchestrator can import the following system configuration file formats.

- RCXCSV,V1.0
- RCXCSV,V2.0
- RCXCSV,V3.0
- RCXCSV,V3.1
- RCXCSV,V3.2
- RCXCSV,V3.3
- RCXCSV,V3.4

However, system definition files are always exported in the most recent format: importing a file in an older format and re-exporting it will produce a file in the latest format.



Although each RCXCSV version has a different format, those formats are retro-compatible (newer formats include all the information defined in older formats).

As detailed below, some sections (described in "[A.3 Resource Definitions](#)") are only available with the latest format(s).

- RCXCSV V2.0 and Later  
"LanSwitchNet", "ServerAgent", "ServerVMHost", "PowerDevice", "Memo"
- RCXCSV V3.0 and Later  
"VMManager"
- RCXCSV V3.1  
"SPARCEnterprise"

- RCXCSV V3.2  
"PRIMERGYPartitionModelChassis", "PRIMERGYPartitionModelServer"
- RCXCSV V3.1  
"Subnet", "SPARCEnterprisePartitionModelChassis", "SPARCEnterprisePartitionModelServer", "MonitorSetting"
- RCXCSV V3.4  
"VIOManager"

- Comments

The following lines are assumed to be comments and are skipped:

- Lines that begin with the symbol ("#")



### Example

```
#Development environment
definition
```

- Lines that consist of only blank spaces (" "), tab characters, or linefeed code
- Lines that contain only commas (",")
- Unrecognized resource definition

- Resource Definitions

Create the resource definition using the following format. Describe the same type of resource in the same section.

- Resource Definition Format

```
[Section name]
Section Header
Operation column, Parameter [,parameter]...
```

- Section Name

This describes the resource type.

- Section Header

This describes the parameter type unique to the resource.



### Note

Do not enter any comments between the section name and section header.

- Operation Column

This describes the operation type for the resource. The following characters can be used in the operation column.

- new  
Register
- change  
Modify
- Hyphens, ("-")  
Do nothing

- Parameter

This describes the parameter value to be set.

### Note

The order of operation and parameter columns should follow the order defined in section header under "[A.3 Resource Definitions](#)".

### Allowed Characters

For details on the characters allowed for each resource definition, refer to "[A.3 Resource Definitions](#)". Optional parameters can be omitted by using hyphens ("-").

However, hyphens ("-") are seen as valid characters for user names, passwords, and SNMP communities. Note that if extra commas (",") are added to the end of a line, those will be simply ignored without errors.

Backslashes ("\") and double quotations ( " ) will be displayed differently in the ROR console from how they appear in the system configuration file.

Refer to the following table for details on such differences.

**Table A.1 Differences between System Configuration Files' Contents and Display in the ROR Console**

Content of a System Configuration File (CSV)	Display in the ROR Console
\\	\
\n	Line break
""	"
, (*1)	,

\*1: The whole value must be enclosed by double quotations ( " ).



### Example

- CSV Content

```
"a\nb,\n"
```

- Display in the ROR Console

```
A
b,\n
```

### Order of Section Definition

Section order and section name are shown below.

Moreover, the section definition order is fixed.

**Table A.2 Section Order and Section Names**

Order	Section Name
1	Subnet
2	VIOManager
3	Chassis
4	PRIMERGYPartitionModelChassis
5	SPARCEnterprisePartitionModelChassis
6	LanSwitch
7	LanSwitchNet



Order	Section Name
8	Server
9	SPARCEnterprise
10	PRIMERGYPartitionModelServer
11	ServerNet
12	SPARCEnterprisePartitionModelServer
13	ServerWWNN (*1)
14	SpareServer (*1)
15	VMMManager
16	ServerAgent (*2, *3)
17	ServerVMHost (*2, *3)
18	MonitorSetting
19	PowerDevice
20	Memo (*2)

\*1: When loading from the system configuration template in the Excel format, the operation column information will be skipped.

\*2: When loading from the system configuration template in the Excel format, the whole section will be skipped.

\*3: Do not enter the information of the same physical server both in the "ServerAgent" and "ServerVMHost" section.

System backup information is automatically added to the end of the system configuration file when exporting in the CSV format. The sections after the line below contain the backup information. The backup information is skipped when loading from the system configuration template in the Excel format.

#Do not edit the following information, which is used to recover the manager.

Do not modify the backup information, as it is automatically created. Note that these sections do not have to be defined if the system configuration file is created for new system configuration.

### Note

- If a system configuration file (CSV format) is imported and then exported, the line order after export may differ from the line order before import.

The following information will also be deleted:

- Comments lines
- Strings enclosed in parenthesis "(" indicating omitted values
- Extra commas at the end of lines (",")
- As with chassis for server blades, and chassis for LAN switch blades, items that need to be registered in advance to enable registration of other should be defined in the system configuration file or registered in advance.

### Character Code

The system configuration files (CSV format) used for pre-configuration are saved using ASCII (often referred to as "ANSI" in Windows systems). When files that use a character code other than ASCII are imported, the system may not operate correctly.

When directly editing configuration files using a text editor, please do not save the file using a character code other than ASCII.

## A.3 Resource Definitions

This section explains the resource definition information specified system configuration files.

## Admin LAN Subnet Data

### - Section Name

Enter [Subnet] as the section name.

### - Section Header

operation

Enter the desired operation for the current line. Enter a hyphen ("-") to skip this line.

subnet\_name

Enter the subnet name.

Enter a character string beginning with an alphabetic character and containing up to 16 alphanumeric characters, underscores (" \_"), hyphens ("-"), and periods (".").

network\_address

Enter the network address for the subnet used as the admin LAN.

Enter valid values for the network address.

subnet\_mask

Enter valid values for the subnet mask.

gateway

Enter the settings for the gateway used for communication with the admin server on the admin LAN.

## VIOM Data

### - Section Name

Enter [VIOManager] as the section name.

### - Section Header

operation

Enter the desired operation for the current line. Enter a hyphen ("-") to skip this line.

name

Specify "VIOM".

ip\_address

Enter the IP address of the terminal on which VIOM is installed.

Specify "127.0.0.1".

login\_name

Enter the name of a VIOM user account.

When specifying a domain, use the following syntax: "*domain\_name*\user\_name".

login\_passwd

Enter the password of the above VIOM user account.

passwd\_enc

Enter one of the following.

- If login\_passwd is plain text

"plain"

- If the password is encrypted

"encrypted"

## Chassis Data

### - Section Name

Enter [Chassis] as the section name.

### - Section Header

operation

Enter the desired operation for the current line. Enter a hyphen ("-") to skip this line.

chassis\_name

Enter the name that will be used to identify the chassis.

Enter up to 10 characters, including alphanumeric characters and hyphens ("-"). This name should start with an alphabet character.



Chassis names should be unique between all chassis. Names are not case-sensitive.

ip\_address

Enter the same IP address as that set on the management blade.

Enter a string of numeric values (between 0 and 255) and periods.



IP addresses should be unique between all resources.

snmp\_community\_name

Enter the same SNMP community (read-write permission) as that set on the management blade.

Enter up to 32 characters, including alphanumeric characters, underscores ("\_"), and hyphens ("-").

## PRIMEQUEST Chassis Management Data

### - Section Name

Enter [PRIMERGYPartitionModelChassis] as the section name.

### - Section Header

operation

Enter the desired operation for the current line. Enter a hyphen ("-") to skip this line.

chassis\_name

Enter the name that will be used to identify the chassis.

Enter up to 10 characters, including alphanumeric characters and hyphens ("-"). This name should start with an alphabet character.



Chassis names should be unique between all chassis.

Names are not case-sensitive.

ip\_address

Enter the same IP address as that set on the management board.

Enter a string of numeric values (between 0 and 255) and periods.

 **Note**

IP addresses should be unique between all resources.

**snmp\_community\_name**

Enter the same SNMP community (read-write permission) as that set on the management board.  
Enter up to 32 characters, including alphanumeric characters, underscores ("\_"), and hyphens ("-").

**mgmt\_user\_name**

Enter the name of a remote server management user account with administrative privileges.  
This user name must be between 8 and 16 alphanumeric characters long.

**mgmt\_passwd**

Enter the password of the remote server management account.  
This password must be between 8 and 16 alphanumeric characters long.

**mgmt\_passwd\_enc**

Enter one of the following.

- If mgmt\_passwd is plain text  
"plain"
- If the password is encrypted  
"encrypted"

**SPARC Enterprise M4000/M5000/M8000/M9000 Chassis Data****- Section Name**

Enter [SPARCEnterprisePartitionModelChassis] as the section name.

**- Section Header****operation**

Enter the desired operation for the current line. Enter a hyphen ("-") to skip this line.

**chassis\_name**

Enter the name that will be used to identify the chassis.  
Enter up to 10 characters, including alphanumeric characters and hyphens ("-"). This name should start with an alphabet character.

 **Note**

Chassis names should be unique between all chassis.  
Names are not case-sensitive.

**ip\_address**

Enter the same IP address as that configured on the XSCF.  
Enter a string of numeric values (between 0 and 255) and periods.

 **Note**

IP addresses should be unique between all resources.

snmp\_community\_name

Enter the name of a SNMP community (with read permission) configured on this server's remote management controller (XSCF).  
Enter up to 32 characters, including alphanumeric characters, underscores ("\_"), and hyphens ("-").

mgmt\_user\_name

Enter the name of a remote management controller (XSCF) user account with administrative privileges ("platadm" privileges).  
Enter a string of up to 31 alphanumeric characters, hyphens ("-"), and underscores ("\_"). This name must start with an alphabet character.

mgmt\_passwd

Enter the password of the remote management controller (XSCF) user account.  
Enter up to 32 characters, including alphanumeric characters, blank spaces (" "), and any of the following symbols.  
"! ", "@ ", "# ", "\$ ", "% ", "^ ", "& ", "\* ", "[ ", " ] ", "{ ", " } ", "( ", " ) ", "- ", "+ ", "= ", "~ ", " ", "> ", "< ", "/ ", " ", "? ", "; ", ":"

mgmt\_passwd\_enc

Enter one of the following.

- If mgmt\_passwd is plain text  
"plain"
- If the password is encrypted  
"encrypted"

## LAN Switch Blade Data

### - Section Name

Enter [LanSwitch] as the section name.

### - Section Header

operation

Enter the desired operation for the current line. Enter a hyphen ("-") to skip this line.

chassis\_name

Enter the chassis name (the value of "chassis\_name" in the [Chassis] section).

slot\_no

Enter the slot number where the LAN switch blade is installed. Enter a number between 1 and 8.

switch\_name

Enter the name to assign to this LAN switch blade.  
Enter up to 15 characters, including alphanumeric characters, underscores ("\_"), and hyphens ("-").



.....  
LAN switch blade names should be unique between all LAN switch blades. The names are case-sensitive.  
.....

ip\_address

Enter the same IP address as that set on the LAN switch blade.  
Enter a string of numeric values (between 0 and 255) and periods.



.....  
IP addresses should be unique between all resources.  
.....

#### snmp\_community\_name

Enter the same SNMP community (read-only permission) as that set on the LAN switch blade.  
Enter a string of up to 32 alphanumeric characters, underscores ("\_"), and hyphens ("-").

#### user\_name

Enter the name of the user account used to remotely log into the LAN switch blade.  
Enter up to 64 characters, including alphanumeric characters (upper or lower case), underscores ("\_"), or hyphens ("-").

#### passwd

Enter the password of the above user account (for remote login).  
Enter a string of up to 80 alphanumeric characters and symbols (ASCII character codes: 0x20, 0x21 or 0x23 to 0x7e) and no double-quotations (""). Passwords entered in this field are seen as plain text passwords.

#### passwd\_enc

Enter one of the following.

- If passwd is plain text  
"plain"
- If the password is encrypted  
"encrypted"

#### privileged\_passwd

Enter the admin password of the above user account.  
Enter a string of up to 80 alphanumeric characters and symbols (ASCII character codes: 0x20, 0x21 or 0x23 to 0x7e) and no double-quotations (""). Passwords entered in this field are seen as plain text passwords.

#### privileged\_passwd\_enc

Enter one of the following.

- If privileged\_passwd is plain text  
"plain"
- If the password is encrypted  
"encrypted"

#### product\_name

Enter the model of the LAN switch blade. Note that if a hyphen ("-") is entered, it is treated as "BX600 GbE Switch Blade 30/12".  
One of the following models can be entered.

- PY CB Eth Switch/IBP 1Gb 36/12
- PY CB Eth Switch/IBP 1Gb 36/8+2
- PY CB Eth Switch/IBP 1Gb 18/6
- PY CB Eth Switch/IBP 10Gb 18/8
- BX600 GbE Switch Blade 30/12
- PRIMERGY BX600 GbE Switch 16/2x10Gb
- PRIMERGY BX600 GbE Switch 16x1Gb
- Cisco Catalyst Blade Switch 3040

## VLAN Data for LAN Switch Blades

### - Section Name

Enter [LanSwitchNet] as the section name.

- **Section Header**

operation

Enter the desired operation for the current line. Enter a hyphen ("-") to skip this line.

chassis\_name

Enter the chassis name (the value of "chassis\_name" in the [Chassis] section).

port\_no

Enter the port number of an external LAN switch blade port. Enter numeric characters. The port number that can be specified is different depending on the model type.

For details, refer to the manual of the LAN switch blade to be used.

vlan\_id (optional)

Enter the VLAN ID and tag type ("/T" for tagged or "/U" for untagged) to be assigned to the specified LAN switch blade port.

Enter a VLAN ID followed by tag types. To specify multiple VLAN IDs, separate each set of VLAN settings using semicolons (";"). Both tagged ("/T") and untagged ("/U") VLAN IDs can be used together, but only one untagged ("/U") type is allowed.



**Example**

10/U

10/U;20/T;30/T

10/T;20/T



**Note**

If a hyphen ("-") is entered, VLAN settings will not be performed.

This section will be ignored for PRIMERGY BX900/BX400 LAN switch blades operating in IBP mode.

## Server Management Information

- **Section Name**

Enter [Server] as the section name.

- **Section Header**

operation

Enter the desired operation for the current line. Enter a hyphen ("-") to skip this line.

chassis\_name

Enter the chassis name (the value of "chassis\_name" in the [Chassis] section).



**Note**

This field is only required for PRIMERGY BX servers.

slot\_no

Enter the slot number where the server blade is installed. Enter a number between 1 and 18.



**Note**

- This field is only required for PRIMERGY BX servers.

- When a server blade is registered, Resource Orchestrator does not check the actual slot position, or whether it has been installed properly.
- When registering multi-slot servers, enter only the master slot number.

server\_name

Enter the resource name that will be used to identify the server. Enter up to 15 characters, including alphanumeric characters and hyphens ("-"). This name should start with an alphabet character. If enclosed by parentheses "()", this server will be seen as being in a switched over state, and this line will be ignored when importing the system definition file.



Server names should be unique between all servers. Names are not case-sensitive.

ip\_address

Enter the same IP address as that set within the server's operating system.  
Enter a string of numeric values (between 0 and 255) and periods.



IP addresses should be unique between all resources.

mac\_address

Enter the MAC address of the admin LAN network interface: NIC1 (Index1).  
Enter a string delimited by hyphens ("-") or colons (":") ("xx-xx-xx-xx-xx-xx" or "xx:xx:xx:xx:xx:xx").

second\_mac\_address

Enter the MAC address of the network interface used for the HBA address rename setup service or for admin LAN redundancy.  
The second network interface (Index 2) should be used.  
Enter a string delimited by hyphens ("-") or colons (":") ("xx-xx-xx-xx-xx-xx" or "xx:xx:xx:xx:xx:xx").



- This field can be omitted in the following cases.
  - When not using the HBA address rename setup service
  - When not using GLS for admin LAN redundancy on the managed server
  - For a spare server whose primary servers are not using admin LAN redundancy
- The "second\_mac\_address" header is the equivalent of the "hbaar\_mac\_address" header defined in RCXCSV V3.0.  
"hbaar\_mac\_address" can only be used when "RCXCSV,V3.0" is specified at the top of the imported system configuration file.  
However, this header is automatically changed to "second\_mac\_address" when exporting a new system configuration file.

snmp\_community\_name

Enter the name of the SNMP community (read permission) assigned to this server.  
Enter up to 32 characters, including alphanumeric characters, underscores ("\_"), and hyphens ("-").



This field is not necessary when using servers other than the PRIMERGY series.



#### ipmi\_ip\_address

Enter the IP address of this server's remote management controller.  
Enter a string of numeric values (between 0 and 255) and periods.

#### Note

IP addresses should be unique between all resources.

#### ipmi\_user\_name

Enter the name of a remote management controller user account with administrative privileges.  
Enter a string of up to 16 alphanumeric characters and symbols (ASCII character codes: 0x20 to 0x7e).

#### Note

If the name of the current administrator account on the remote management controller is longer than 16 characters, either create a new account or rename the current account (within 16 characters).

#### ipmi\_passwd

Enter the password of the remote management controller user account.  
Enter a string of up to 16 alphanumeric characters and symbols (ASCII character codes: 0x20 to 0x7e).  
This field can be omitted if no password has been set for this user account.

#### Note

If the password of the current administrator account on the remote management controller is longer than 16 characters, either create a new account or change its password (within 16 characters).

#### ipmi\_passwd\_enc

Enter one of the following.

- If ipmi\_passwd is plain text  
"plain"
- If the password is encrypted  
"encrypted"

#### admin\_lan1\_nic\_number

The index of the NIC to use for the admin LAN.  
Enter a number (1 or larger).

#### Note

This field is only required for PRIMERGY BX servers.

#### admin\_lan2\_nic\_number

The Index number of NICs used for the HBA address rename setup service or for admin LAN redundancy.  
Enter a number (1 or larger).  
For the following cases, enter a hyphen ("-").

- When not using the HBA address rename setup service
- When redundancy of the admin LAN for managed servers does not use GLS
- When not using as the spare server of a managed server with redundancy configured



This field is only required for PRIMERGY BX servers.

#### admin\_lan\_nic\_redundancy

Enter one of the following.

- When using the NIC specified in the admin\_lan2\_nic\_number as the backup for admin LAN redundancy  
"ON"
- When not using the NIC specified in the admin\_lan2\_nic\_number as the backup for admin LAN redundancy  
"OFF"

### SPARC Enterprise Server Data

#### - Section Name

Enter [SPARCEnterprise] as the section name.

#### - Section Header

operation

Enter the desired operation for the current line. Enter a hyphen ("-") to skip this line.

server\_name

Enter the resource name that will be used to identify the server. Enter up to 15 characters, including alphanumeric characters and hyphens ("-"). This name should start with an alphabet character.

ip\_address

Enter the same IP address as that set within the server's operating system. Enter a string of numeric values (between 0 and 255) and periods.

mgmt\_snmp\_community\_name

Enter the name of a SNMP community (with read permission) configured on this server's remote management controller (ILOM/XSCF).

Enter up to 32 characters, including alphanumeric characters, underscores ("\_"), and hyphens ("-").

mgmt\_ip\_address

Enter the IP address of this server's remote management controller (ILOM/XSCF).

Enter a string of numeric values (between 0 and 255) and periods.



IP addresses should be unique between all resources.

mgmt\_protocol

Enter the type of the remote management controller (ILOM/XSCF) to manage servers.

- For M3000 servers  
"XSCF"
- For T series servers  
"ILOM"

### mgmt\_user\_name

Enter the user name (For ILOM, Admin privileges, and for XSCF, platadm privileges) of a remote management controller to manage servers (ILOM/XSCF).

- For XSCF

Enter up to 31 characters, including alphanumeric characters, underscores ("\_"), or hyphens ("-"). This name should start with an alphabet character.

- For ILOM

Enter between 4 and 16 characters, including alphanumeric characters, underscores ("\_"), or hyphens ("-"). This name should start with an alphabet character.

### mgmt\_passwd

Enter the password of the remote management controller (ILOM/XSCF) to manage a server.

- For XSCF

Enter up to 32 characters, including alphanumeric characters, blank spaces (" "), and any of the following symbols.

- For ILOM

Enter between 8 and 16 characters, including alphanumeric characters, blank spaces (" "), and any of the following symbols.

!" , "@" , "#" , "\$" , "%" , "^" , "&" , "\*" , "[" , "]" , "{" , "}" , "(" , ")" , "-" , "+" , "=" , "~" , "\_" , ">" , "<" , "/" , "" , "?" , ";" , ":"

### mgmt\_passwd\_enc

Enter one of the following.

- If mgmt\_passwd is plain text

"plain"

- If the password is encrypted

"encrypted"

## PRIMEQUEST Server Management Data

- **Section Name**

Enter [PRIMERGYPartitionModelServer] as the section name.

- **Section Header**

operation

Enter the desired operation for the current line. Enter a hyphen ("-") to skip this line.

chassis\_name

Enter the chassis name (the value of "chassis\_name" in the [PRIMERGYPartitionModelChassis] section).

partition\_no

The number of a partition. Enter a number between 0 and 3.

server\_name

Enter the resource name that will be used to identify the server. Enter up to 15 characters, including alphanumeric characters and hyphens ("-"). This name should start with an alphabet character. If enclosed by parentheses "()", this server will be seen as being in a switched over state, and this line will be ignored when importing the system definition file.



### Note

Server names should be unique between all servers. Names are not case-sensitive.

ip\_address

Enter the same IP address as that set within the server's operating system.  
Enter a string of numeric values (between 0 and 255) and periods.



IP addresses should be unique between all resources.

boot\_option

Specify the boot option configured from BIOS when installing the OS.

- When installing using a legacy boot  
"legacy"
- When installing using UEFI  
"uefi"



[Linux]  
The boot option specification will be disabled, and always be treated as "legacy".

## Server Blade VLAN Data

- **Section Name**

Enter [ServerNet] as the section name.

- **Section Header**

operation

Enter the desired operation for the current line. Enter a hyphen ("-") to skip this line.

server\_name

Enter the server name (the value of "server\_name" in the [Server] section).

nic\_no

This is the index number of the server blade's network interface. Enter a number between 1 and 12.

vlan\_id (optional)

Enter the VLAN ID and tag type ("/T" or "/U") to be assigned to the LAN switch blade port connected to this server's network interface.

Enter a VLAN ID followed by tag types. To specify multiple VLAN IDs, separate each set of VLAN settings using semicolons (";"). Both tagged ("/T") and untagged ("/U") VLAN IDs can be used together, but only one untagged ("/U") type is allowed.



10/U  
10/U;20/T;30/T  
10/T;20/T

## Note

If a hyphen ("-") is entered, VLAN settings will not be performed.

Use the following NIC indexes to specify LAN expansion cards (if any was mounted).

- PRIMERGY BX600 Servers  
7, 8
- PRIMERGY BX900/BX400 Servers  
5 to 12

This section will be ignored for PRIMERGY BX900/BX400 LAN switch blades operating in IBP mode.

## SPARC Enterprise M4000/M5000/M8000/M9000 Server Data

### - Section Name

Enter [SPARCEnterprisePartitionModelServer] as the section name.

### - Section Header

operation

Enter the desired operation for the current line. Enter a hyphen ("-") to skip this line.

chassis\_name

Enter the chassis name (the "chassis\_name" in the [SPARCEnterprisePartitionModelChassis] section).

partition\_no

The number of a partition. Enter a number between 0 and 23.

server\_name

Enter the resource name that will be used to identify the server.

Enter up to 15 characters, including alphanumeric characters and hyphens ("-"). This name should start with an alphabet character.

## Note

Server names should be unique between all servers.

Names are not case-sensitive.

ip\_address

Enter the same IP address as that set within the server's operating system.

Enter a string of numeric values (between 0 and 255) and periods.

## Note

IP addresses should be unique between all resources.

## HBA address rename Information of a Server

### - Section Name

Enter [ServerWWNN] as the section name.

- **Section Header**

operation

Enter the desired operation for the current line. Enter a hyphen ("-") to skip this line.

server\_name

Enter the server name (the value of "server\_name" in the [Server] section).

port\_count

This is the number of ports that use HBA address rename. Enter a number between 1 and 2.

wwnn

Enter the 16-digit hexadecimal WWNN string of the physical server which uses the HBA address rename function. Enter a hexadecimal string using alphanumeric characters, with "20 0" as the first three characters.



.....  
All WWNNs should be unique between all resources (WWNNs are not case-sensitive). Names are not case-sensitive.  
.....

## Server Switchover Management Information

- **Section Name**

Enter [SpareServer] as the section name.

- **Section Header**

operation

Enter the desired operation for the current line. Enter a hyphen ("-") to skip this line.

server\_name

Enter the server name (the value of "server\_name" in the [Server] section).

spare\_server

Enter the physical server name of a server to be assigned as a spare server.

To specify multiple spare servers, separate each server name using semicolons (";"). To remove current spare server settings, enter "-DELETE".

vlan\_switch (optional)

Specify whether VLAN settings or port group settings should be automatically transferred to the spare server when a server switchover occurs. Enter "ON", "OFF" or a hyphen ("-").

auto\_switch (optional)

This value defines whether or not to trigger an automatic switchover upon detection of a server failure. Enter "ON", "OFF" or a hyphen ("-").

boot\_type

Enter the boot type of the server. Enter one of the following.

- For SAN boot  
"SAN"
- For local boot  
"local"
- When using the VIOM server profile to conduct boot settings  
Hyphens, ("-")

spare\_server\_force\_off

Enter whether the spare server is turned off forcibly, when switching over to the spare server. Enter "ON", "OFF" or a hyphen ("-").

spare\_server\_with\_vm\_guest

Enter whether the server is switched to a VM host on which a VM guest exists. Enter "ON", "OFF" or a hyphen ("-").

## VM Management Software Information

### - Section Name

Enter [VMMManager] as the section name.

### - Section Header

operation

Enter the desired operation for the current line. Enter a hyphen ("-") to skip this line.

name

Enter the name used to identify this VM management software. Enter one of the following.

- When using VMware vCenter Server as VM management software.  
"vCenterServer"
- When using System Center Virtual Machine Manager as VM management software.  
"SCVMM"

ip\_address

Enter the IP address used to connect to this VM management software or a hyphen ("-").

Enter a string of numeric values (between 0 and 255) and periods.

If a hyphen ("-") is entered, this VM management software will be seen as being installed on the admin server.

product

Enter the name of this VM management software. Enter one of the following.

- When using VMware vCenter Server as VM management software.  
"vmware-vc"
- When using System Center Virtual Machine Manager as VM management software.  
"ms-scvmm"

login\_name

Enter the name of the user account set for this VM management software.

Use a string of up to 84 alphanumeric characters and symbols (ASCII character codes: from 0x21 to 0x7e). When specifying a domain, use the following syntax: "*domain\_name\user\_name*".

login\_passwd

Enter the password for this VM management software.

Use a string of up to 128 alphanumeric characters and symbols (ASCII character codes: from 0x21 to 0x7e).

passwd\_enc

Enter one of the following.

- If login\_passwd is plain text  
"plain"
- If the password is encrypted  
"encrypted"

## Server Agent Management Information

### - Section Name

Enter [ServerAgent] as the section name.

This is required when registering multiple agents together (for Windows or Linux managed servers).

### - Section Header

operation

Enter the desired operation for the current line. Enter a hyphen ("-") to skip this line.

The "change" operation cannot be used for this section.

server\_name

Enter the server name (the value of "server\_name" in the [Server] section).

## VM Host Management Information

### - Section Name

Enter [ServerVMHost] as the section name.

This is required when registering multiple agents together (for VM host managed servers).

### - Section Header

operation

Enter the desired operation for the current line. Enter a hyphen ("-") to skip this line.

server\_name

Enter the server name (the value of "server\_name" in the [Server] section).

vm\_login\_name

Enter the name of the user account used to remotely log into the VM Host.

vm\_login\_passwd

Enter the password of the above user account (for remote login).

vm\_passwd\_enc

Enter one of the following.

- If the password is plain text

"plain"

- If the password is encrypted

"encrypted"

## Monitoring Settings

### - Section Name

Enter [MonitorSetting] as the section name.

### - Section Header

operation

Enter the desired operation for the current line. Enter a hyphen ("-") to skip this line.



server\_name

Enter the server name (the value of "server\_name" in the [Server] section).

ping\_timeout

Enter the time-out value (in seconds) for ping control.  
Enter a number from 5 to 3,600.

recovery\_action

Enter a recovery process. Enter one of the following.

- Reboot  
"reboot"
- Reboot (Forced)  
"force\_reboot"
- Switchover  
"switchover"
- Reboot and Switchover  
"reboot\_and\_switchover"
- Reboot (Forced) and Switchover  
"force\_reboot\_and\_switchover"

reboot\_count

Enter the number of times to reboot. Enter a number from 1 to 3.

## Power Monitoring Device Data

### - Section Name

Enter [PowerDevice] as the section name.

### - Section Header

operation

Enter the desired operation for the current line. Enter a hyphen ("-") to skip this line.

device\_name

Enter the name that will be used to identify the power monitoring device.  
Enter up to 15 characters, including alphanumeric characters and hyphens ("-"). This name should start with an alphabet character.

### Note

.....  
Device names should be unique between all power monitoring devices. The names are case-sensitive.  
.....

ip\_address

Enter the same IP address as that set on the power monitoring device.  
Enter a string of numeric values (between 0 and 255) and periods.

### Note

.....  
IP addresses should be unique between all resources.  
.....

snmp\_community\_name

Enter the same SNMP community (read-only permission) as that set on the power monitoring device.  
Enter up to 32 characters, including alphanumeric characters, underscores ("\_"), and hyphens ("-").

voltage

Enter the voltage (V) that is being supplied to the power monitoring device. Enter a number between 10 and 999.



Resource Orchestrator calculates power consumption data using the electrical current value obtained from the power monitoring device and its specified voltage.

comment (optional)

Enter any comments for the power monitoring device.  
Enter up to 128 alphanumeric characters or symbols (ASCII characters 0x20 to 0x7e).



A line break is counted as one character. Use "Alt+Enter" to enter line breaks.

## Memo

### - Section Name

Enter [Memo] as the section name.

This is required when registering the labels, comments, and contact information (displayed in BladeViewer) using the pre-configuration function.

### - Section Header

operation

Enter the desired operation for the current line. Enter a hyphen ("-") to skip this line.

resource\_type

Enter the type of the resource for which to set this memo. Enter one of the following.

- When a physical server including a VM host is specified  
"physical\_server"
- When a VM guest is specified  
"vm\_guest"
- When contact information is specified  
"common"

resource\_name

Enter the name of the resource name for which to set this memo. Enter one of the following.

- When "resource\_type" is "physical\_server"  
Enter one of the following.
  - Server name ("server\_name" of [ServerAgent] section)
  - VM host name ("server\_name" of [ServerVMHost] section)

- When "resource\_type" is "vm\_guest"  
Enter the registered VM guest name
- When "resource\_type" is "common"  
Do not enter any characters.

label (optional)

This label is used to identify the applications running on each server. Enter up to 32 alphanumeric characters or symbols (ASCII characters 0x20 to 0x7e). Note that if the value of "resource\_type" is "common", do not enter anything.



Line breaks ("n") are not available.

comment (optional)

This is a comment that can be set as an option for each application. If the "resource\_type" is "common", this can be used for the contact details, maintenance information, or other information. Enter up to 256 alphanumeric characters or symbols (ASCII characters 0x20 to 0x7e).

## A.4 Examples of CSV format

This section shows an example of the system configuration file in the CSV format.

```

RCXCSV,V3.4

# ServerView Resource Orchestrator
# System configuration file

[Subnet]
operation,subnet_name,network_address,subnet_mask,gateway
-,subnet1,172.16.0.0,255.255.0.0,172.16.0.1
-,subnet2,192.168.1.0,255.255.255.0,192.168.1.1

[VIOManager]
operation,name,ip_address,login_name,login_passwd,passwd_enc
-,VIOM,127.0.0.1,administrator,administrator,plain

[Chassis]
operation,chassis_name,ip_address,snmp_community_name
-,chassis01,192.168.3.150,public

[PRIMERGYPartitionModelChassis]
operation,chassis_name,ip_address,snmp_community_name,mgmt_user_name,mgmt_passwd,mgmt_passwd_enc
-,pqchassis0,192.168.3.207,public,administrator,administrator,plain
-,pqchassis1,192.168.3.208,public,administrator,administrator,plain

[SPARCEnterprisePartitionModelChassis]
operation,chassis_name,ip_address,snmp_community_name,mgmt_user_name,mgmt_passwd,mgmt_passwd_enc
-,spechassis,192.168.3.212,public,fujitsu,fujitsu,plain

[LanSwitch]
operation,chassis_name,slot_no,switch_name,ip_address,snmp_community_name,user_name,passwd,passwd_enc,privile
ged_passwd,privileged_passwd_enc,product_name
-,chassis01,1,switch-01,192.168.3.161,public,admin,admin,plain,admin,plain,BX600 GbE Switch Blade 30/12
-,chassis01,2,switch-02,192.168.3.162,public,admin,admin,plain,admin,plain,BX600 GbE Switch Blade 30/12

```

[LanSwitchNet]

operation,chassis\_name,slot\_no,port\_no,vlan\_id

-,chassis01,1,31,1/U;10/T;20/T  
-,chassis01,1,32,1/U  
-,chassis01,1,33,1/U  
-,chassis01,1,34,1/U  
-,chassis01,1,35,1/U  
-,chassis01,1,36,1/U  
-,chassis01,1,37,1/U  
-,chassis01,1,38,1/U  
-,chassis01,1,39,1/U  
-,chassis01,1,40,1/U  
-,chassis01,1,41,1/U  
-,chassis01,1,42,1/U  
-,chassis01,1,43,1/U  
-,chassis01,1,44,1/U  
-,chassis01,2,31,1/U;10/T;20/T  
-,chassis01,2,32,1/U  
-,chassis01,2,33,1/U  
-,chassis01,2,34,1/U  
-,chassis01,2,35,1/U  
-,chassis01,2,36,1/U  
-,chassis01,2,37,1/U  
-,chassis01,2,38,1/U  
-,chassis01,2,39,1/U  
-,chassis01,2,40,1/U  
-,chassis01,2,41,1/U  
-,chassis01,2,42,1/U  
-,chassis01,2,43,1/U  
-,chassis01,2,44,1/U

[Server]

operation,chassis\_name,slot\_no,server\_name,ip\_address,mac\_address,second\_mac\_address,snmp\_community\_name,ipmi\_ip\_address,ipmi\_user\_name,ipmi\_passwd,ipmi\_passwd\_enc,admin\_lan1\_nic\_number,admin\_lan2\_nic\_number,admin\_lan\_nic\_redundancy

-,chassis01,1,blade001,192.168.3.151,,,,,,1,4,ON  
-,chassis01,7,blade002,192.168.3.157,,,,,,1,4,ON  
-,chassis01,9,blade003,192.168.3.159,,,,,,1,4,ON  
-,,,rackmount001,192.168.3.200,00:E5:35:0C:34:AB,,public,192.168.3.199,admin,admin,plain,,OFF  
-,,,rackmount002,192.168.3.202,00:E5:35:0C:34:AC,,public,192.168.3.201,admin,admin,plain,,OFF

[SPARCEnterprise]

operation,server\_name,ip\_address,mgmt\_snmp\_community\_name,mgmt\_ip\_address,mgmt\_protocol,mgmt\_user\_name,mgmt\_passwd,mgmt\_passwd\_enc

-,spe001,192.168.3.203,public,192.168.3.204,XSCF,fujitsu,fujitsu,plain  
-,spe002,192.168.3.205,public,192.168.3.206,ILOM,fujitsu,fujitsu,plain

[PRIMERGYPartitionModelServer]

operation,chassis\_name,partition\_no,server\_name,ip\_address,boot\_option

-,pqchassis0,0,pqserver01,192.168.3.209,legacy  
-,pqchassis0,1,pqserver02,192.168.3.210,legacy  
-,pqchassis0,2,pqserver03,192.168.3.211,legacy

[ServerNet]

operation,server\_name,nic\_no,vlan\_id

-,blade001,1,1/U;10/T;20/T  
-,blade001,3,1/U  
-,blade001,5,1/U

-blade002,1,1/U;10/T;20/T  
-blade002,3,1/U  
-blade002,5,1/U  
-blade003,1,1/U  
-blade003,3,1/U  
-blade003,5,1/U  
-blade001,2,1/U  
-blade001,4,1/U  
-blade001,6,1/U  
-blade002,2,1/U  
-blade002,4,1/U  
-blade002,6,1/U  
-blade003,2,1/U  
-blade003,4,1/U  
-blade003,6,1/U

[SPARCEnterprisePartitionModelServer]

operation,chassis\_name,partition\_no,server\_name,ip\_address

-,spechassis,3,speserver3,192.168.3.213

-,spechassis,4,speserver4,192.168.3.214

[ServerWWNN]

operation,server\_name,port\_count,wwnn

-,blade001,1,20 00 00 17 42 51 00 01

-,blade002,1,20 00 00 17 42 51 00 02

[SpareServer]

operation,server\_name,spare\_server,vlan\_switch,auto\_switch,boot\_type,spare\_server\_force\_off,spare\_server\_with\_vm\_guest

-,blade001,blade003,ON,ON,local,OFF,OFF

[VMManager]

operation,name,ip\_address,product,login\_name,login\_passwd,passwd\_enc

-,vCenterServer,127.0.0.1,vmware-vc,Administrator,admin,plain

[ServerAgent]

operation,server\_name

-,blade001

-,rackmount001

-,rackmount002

[ServerVMHost]

operation,server\_name,vm\_login\_name,vm\_login\_passwd,vm\_passwd\_enc

-,blade002,admin,admin,plain

[MonitorSetting]

operation,server\_name,ping\_timeout,recovery\_action,reboot\_count

-,blade001,600,reboot\_and\_switchover,3

[PowerDevice]

operation,device\_name,ip\_address,snmp\_community\_name,voltage,comment

-,ups1,192.168.3.196,public,100,SmartUPS

-,ups2,192.168.3.197,public,100,SmartUPS

[Memo]

operation,resource\_type,resource\_name,label,comment

-,common,,,"TEL:0000-0000"

## Appendix B Maintenance Mode

This appendix explains the maintenance mode available in Resource Orchestrator and how to use it.

Maintenance mode is used during hardware maintenance of managed servers. It is also used during the installation and maintenance of physical OS's and VM hosts. Maintenance mode avoids unwanted error notifications and disables execution of Auto-Recovery upon server failure.

The following operations can be performed on a server that has been placed into maintenance mode:

- Maintenance LED

Maintenance LEDs can be controlled.

- Backup and Restore

System images can be backed up and restored.

- Cloning

Cloning images can be collected and deployed.

Use the following procedures to set and release maintenance mode:

- Setting Maintenance Mode

In the ROR console server resource tree, right-click the server (or the physical OS or VM host on the server) to place into maintenance mode, and select [Maintenance Mode]-[Set] from the popup menu.

- Releasing Maintenance Mode

In the ROR console server resource tree, right-click the server (or the physical OS or VM host on the server) to place into active mode, and select [Maintenance Mode]-[Release] from the popup menu.



### Note

When using ServerView Deployment Manager, depending on the operation, servers may be rebooted or temporarily shutdown. This also affects servers managed using Resource Orchestrator.

It is recommended to place affected servers into maintenance mode before running operations from ServerView Deployment Manager. Then, the maintenance mode should be released once finished.

# Glossary

---

---

## access path

A logical path configured to enable access to storage volumes from servers.

---

## active mode

The state where a managed server is performing operations.

Managed servers must be in active mode in order to use Auto-Recovery.

Move managed servers to maintenance mode in order to perform backup or restoration of system images, or collection or deployment of cloning images.

---

## active server

A physical server that is currently operating.

---

## admin client

A terminal (PC) connected to an admin server, which is used to operate the GUI.

---

## admin LAN

A LAN used to manage resources from admin servers.

It connects managed servers, storage, and network devices.

---

## admin server

A server used to operate the manager software of Resource Orchestrator.

---

## affinity group

A grouping of the storage volumes allocated to servers. A function of ETERNUS.

Equivalent to the LUN mapping of EMC.

---

## agent

The section (program) of Resource Orchestrator that operates on managed servers.

---

## aggregate

A unit for managing storage created through the aggregation of a RAID group.

Aggregates can contain multiple FlexVols.

---

## alias name

A name set for each ETERNUS LUN to distinguish the different ETERNUS LUNs.

---

## Auto Deploy

A function for deploying VMware ESXi5.0 to servers using the PXE boot mechanism.

---

## Automatic Storage Layering

A function that optimizes perform and cost by automatically rearranging data in storage units based on the frequency of access.

---

## Auto-Recovery

A function which continues operations by automatically switching over the system image of a failed server to a spare server and restarting it in the event of server failure.

This function can be used when managed servers are in a local boot configuration, SAN boot configuration, or a configuration such as iSCSI boot where booting is performed from a disk on a network.

- When using a local boot configuration

The system is recovered by restoring a backup of the system image of the failed server onto a spare server.

- When booting from a SAN or a disk on a LAN

The system is restored by having the spare server inherit the system image on the storage.

Also, when a VLAN is set for the public LAN of a managed server, the VLAN settings of adjacent LAN switches are automatically switched to those of the spare server.

---

## backup site

An environment prepared in a different location, which is used for data recovery.

---

## BACS (Broadcom Advanced Control Suite)

An integrated GUI application (comprised from applications such as BASP) that creates teams from multiple NICs, and provides functions such as load balancing.

---

## BASP (Broadcom Advanced Server Program)

LAN redundancy software that creates teams of multiple NICs, and provides functions such as load balancing and failover.

---

## blade server

A compact server device with a thin chassis that can contain multiple server blades, and has low power consumption.

As well as server blades, LAN switch blades, management blades, and other components used by multiple server blades can be mounted inside the chassis.

---

## blade type

A server blade type.

Used to distinguish the number of server slots used and servers located in different positions.

---

## BladeViewer

A GUI that displays the status of blade servers in a style similar to a physical view and enables intuitive operation.

BladeViewer can also be used for state monitoring and operation of resources.

---

## BMC (Baseboard Management Controller)

A Remote Management Controller used for remote operation of servers.

---

## boot agent

An OS for disk access that is distributed from the manager to managed servers in order to boot them when the network is started during image operations.

---

## CA (Channel Adapter)

An adapter card that is used as the interface for server HBAs and fibre channel switches, and is mounted on storage devices.

---

## CCM (ETERNUS SF AdvancedCopy Manager Copy Control Module)

This is a module that does not require installation of the ETERNUS SF AdvancedCopy Manager agent on the server that is the source of the backup, but rather uses the advanced copy feature of the ETERNUS disk array to make backups.

---

## chassis

A chassis used to house server blades and partitions.

Sometimes referred to as an enclosure.

---

## cloning

Creation of a copy of a system disk.



---

## cloning image

A backup of a system disk, which does not contain server-specific information (system node name, IP address, etc.), made during cloning.

When deploying a cloning image to the system disk of another server, Resource Orchestrator automatically changes server-specific information to that of the target server.

---

## Cloud Edition

The edition which can be used to provide private cloud environments.

---

## data center

A facility that manages client resources (servers, storage, networks, etc.), and provides internet connections and maintenance/operational services.

---

## directory service

A service for updating and viewing the names (and associated attributes) of physical/logical resource names scattered across networks, based on organizational structures and geographical groups using a systematic (tree-shaped structure) management methodology.

---

## disk resource

The unit for resources to connect to an L-Server. An example being a virtual disk provided by LUN or VM management software.

---

## DN (Distinguished Name)

A name defined as a line of an RDN, which contains an entry representing its corresponding object and higher entry.

---

## Domain

A system that is divided into individual systems using partitioning. Also used to indicate a partition.

---

## DR Option

The option that provides the function for remote switchover of servers or storage in order to perform disaster recovery.

---

## Dual-Role Administrators

The administrators with both infrastructure administrator's and tenant administrator's role.

---

## dynamic LUN mirroring

This is a feature whereby a mirror volume is generated at the remote site when a volume is generated at the local site, and copies are maintained by performing REC.

---

## dynamic memory

A function that optimizes physical memory allocation for virtual machines, depending on their execution status on Hyper-V.

---

## end host mode

This is a mode where the uplink port that can communicate with a downlink port is fixed at one, and communication between uplink ports is blocked.

---

## environmental data

Measured data regarding the external environments of servers managed using Resource Orchestrator.

Measured data includes power data collected from power monitoring targets.

---

## ESC (ETERNUS SF Storage Cruiser)

Software that supports stable operation of multi-vendor storage system environments involving SAN, DAS, or NAS. Provides configuration management, relation management, trouble management, and performance management functions to integrate storage related resources such as ETERNUS.

---

## ETERNUS SF AdvancedCopy Manager

This is storage management software that makes highly reliable and rapid backups, restorations and replications using the advanced copy feature of the ETERNUS disk array.

---

## Express

The edition which provides server registration, monitoring, and visualization.

---

## FC switch (Fibre Channel Switch)

A switch that connects Fibre Channel interfaces and storage devices.

---

## Fibre Channel

A method for connecting computers and peripheral devices and transferring data.

Generally used with servers requiring high-availability, to connect computers and storage systems.

---

## Fibre Channel port

The connector for Fibre Channel interfaces.

When using ETERNUS storage, referred to as an FC-CA port, when using NetApp storage, referred to as an FC port, when using EMC CLARiON, referred to as an SP port, when using EMC Symmetrix DMX or EMC Symmetrix VMAX, referred to as a DIRECTOR port.

---

## fibre channel switch blade

A fibre channel switch mounted in the chassis of a blade server.

---

## FlexVol

A function that uses aggregates to provide virtual volumes.

Volumes can be created in an instant.

---

## FTRP

The pool for physical disks created by Automatic Storage Layering for ETERNUS.

In Resource Orchestrator, FTRPs are used as virtual storage resources on which Thin Provisioning attributes are configured.

---

## FTV

The virtual volumes created by Automatic Storage Layering for ETERNUS.

In Resource Orchestrator, FTVs are used as disk resources on which Thin Provisioning attributes are configured.

---

## global pool

A resource pool that contains resources that can be used by multiple tenants.

It is located in a different location from the tenants.

By configuring a global pool with the attributes of a tenant, it becomes possible for tenant administrators to use the pool.

---

## GLS (Global Link Services)

Fujitsu network control software that enables high availability networks through the redundancy of network transmission channels.

---

## GSPB (Giga-LAN SAS and PCI\_Box Interface Board)

A board which mounts onboard I/O for two partitions and a PCIe (PCI Express) interface for a PCI box.

---

## GUI (Graphical User Interface)

A user interface that displays pictures and icons (pictographic characters), enabling intuitive and easily understandable operation.

---

## HA (High Availability)

The concept of using redundant resources to prevent suspension of system operations due to single problems.

---

## hardware initiator

A controller which issues SCSI commands to request processes.  
In iSCSI configurations, NICs fit into this category.

---

## hardware maintenance mode

In the maintenance mode of PRIMEQUEST servers, a state other than Hot System Maintenance.

---

## HBA (Host Bus Adapter)

An adapter for connecting servers and peripheral devices.  
Mainly used to refer to the FC HBAs used for connecting storage devices using Fibre Channel technology.

---

## HBA address rename setup service

The service that starts managed servers that use HBA address rename in the event of failure of the admin server.

---

## HBAAR (HBA address rename)

I/O virtualization technology that enables changing of the actual WWN possessed by an HBA.

---

## host affinity

A definition of the server HBA that is set for the CA port of the storage device and the accessible area of storage.  
It is a function for association of the Logical Volume inside the storage which is shown to the host (HBA) that also functions as security internal to the storage device.

---

## Hyper-V

Virtualization software from Microsoft Corporation.  
Provides a virtualized infrastructure on PC servers, enabling flexible management of operations.

---

## I/O virtualization option

An optional product that is necessary to provide I/O virtualization.  
The WWNN address and MAC address provided is guaranteed by Fujitsu Limited to be unique.  
Necessary when using HBA address rename.

---

## IBP (Intelligent Blade Panel)

One of operation modes used for PRIMERGY switch blades.  
This operation mode can be used for coordination with ServerView Virtual I/O Manager (VIOM), and relations between server blades and switch blades can be easily and safely configured.

---

## ICT governance

A collection of principles and practices that encourage desirable behavior in the use of ICT (Information and Communication Technology) based on an evaluation of the impacts and risks posed in the adoption and application of ICT within an organization or community.

---

## ILOM (Integrated Lights Out Manager)

The name of the Remote Management Controller for SPARC Enterprise T series servers.

---

## image file

A system image or a cloning image. Also a collective term for them both.

---

---

## infrastructure administrator

A user who manages the resources comprising a data center.

infra\_admin is the role that corresponds to the users who manage resources.

Infrastructure administrators manage all of the resources comprising a resource pool (the global pool and local pools), provide tenant administrators with resources, and review applications by tenant users to use resources.

---

## IPMI (Intelligent Platform Management Interface)

IPMI is a set of common interfaces for the hardware that is used to monitor the physical conditions of servers, such as temperature, power voltage, cooling fans, power supply, and chassis.

These functions provide information that enables system management, recovery, and asset management, which in turn leads to reduction of overall TCO.

---

## IQN (iSCSI Qualified Name)

Unique names used for identifying iSCSI initiators and iSCSI targets.

---

## iRMC (integrated Remote Management Controller)

The name of the Remote Management Controller for Fujitsu's PRIMERGY servers.

---

## iSCSI

A standard for using the SCSI protocol over TCP/IP networks.

---

## iSCSI boot

A configuration function that enables the starting and operation of servers via a network.

The OS and applications used to operate servers are stored on iSCSI storage, not the internal disks of servers.

---

## iSCSI storage

Storage that uses an iSCSI connection.

---

## LAG (Link Aggregation Group)

A single logical port created from multiple physical ports using link aggregation.

---

## LAN switch blades

A LAN switch that is mounted in the chassis of a blade server.

---

## LDAP (Lightweight Directory Access Protocol)

A protocol used for accessing Internet standard directories operated using TCP/IP.

LDAP provides functions such as direct searching and viewing of directory services using a web browser.

---

## license

The rights to use specific functions.

Users can use specific functions by purchasing a license for the function and registering it on the manager.

---

## link aggregation

Function used to multiplex multiple ports and use them as a single virtual port.

By using this function, it becomes possible to use a band equal to the total of the bands of all the ports.

Also, if one of the multiplexed ports fails its load can be divided among the other ports, and the overall redundancy of ports improved.

---

## local pool

A resource pool that contains resources that can only be used by a specific tenant.

They are located in tenants.

---

---

## logical volume

A logical disk that has been divided into multiple partitions.

---

## L-Platform

A resource used for the consolidated operation and management of systems such as multiple-layer systems (Web/AP/DB) comprised of multiple L-Servers, storage, and network devices.

---

## L-Platform template

A template that contains the specifications for servers, storage, network devices, and images that are configured for an L-Platform.

---

## LSB (Logical System Board)

A system board that is allocated a logical number (LSB number) so that it can be recognized from the domain, during domain configuration.

---

## L-Server

A resource defined using the logical specifications (number of CPUs, amount of memory, disk capacity, number of NICs, etc.) of the servers, and storage and network devices connected to those servers.

An abbreviation of Logical Server.

---

## L-Server template

A template that defines the number of CPUs, memory capacity, disk capacity, and other specifications for resources to deploy to an L-Server.

---

## LUN (Logical Unit Number)

A logical unit defined in the channel adapter of a storage unit.

---

## MAC address (Media Access Control address)

A unique identifier that is assigned to Ethernet cards (hardware).

Also referred to as a physical address.

Transmission of data is performed based on this identifier. Described using a combination of the unique identifying numbers managed by/assigned to each maker by the IEEE, and the numbers that each maker assigns to their hardware.

---

## maintenance mode

The state where operations on managed servers are stopped in order to perform maintenance work.

In this state, the backup and restoration of system images and the collection and deployment of cloning images can be performed.

However, when using Auto-Recovery it is necessary to change from this mode to active mode. When in maintenance mode it is not possible to switch over to a spare server if a server fails.

---

## managed server

A collective term referring to a server that is managed as a component of a system.

---

## management blade

A server management unit that has a dedicated CPU and LAN interface, and manages blade servers.

Used for gathering server blade data, failure notification, power control, etc.

---

## Management Board

The PRIMEQUEST system management unit.

Used for gathering information such as failure notification, power control, etc. from chassis.

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---

## manager

The section (program) of Resource Orchestrator that operates on admin servers. It manages and controls resources registered with Resource Orchestrator.

---

## master slot

A slot that is recognized as a server when a server that occupies multiple slots is mounted.

---

## member server

A collective term that refers to a server in a Windows network domain that is not a domain controller.

---

## migration

The migration of a VM guest to a different VM host. The following two types of migration are available:

- Cold migration  
Migration of an inactive (powered-off) VM guest.
  - Live migration  
Migration of an active (powered-on) VM guest.
- 

## multi-slot server

A server that occupies multiple slots.

---

## NAS (Network Attached Storage)

A collective term for storage that is directly connected to a LAN.

---

## network device

The unit used for registration of network devices. L2 switches and firewalls fit into this category.

---

## network map

A GUI function for graphically displaying the connection relationships of the servers and LAN switches that compose a network.

---

## network view

A window that displays the connection relationships and status of the wiring of a network map.

---

## NFS (Network File System)

A system that enables the sharing of files over a network in Linux environments.

---

## NIC (Network Interface Card)

An interface used to connect a server to a network.

---

## OS

The OS used by an operating server (a physical OS or VM guest).

---

## overcommit

A function to virtually allocate more resources than the actual amount of resources (CPUs and memory) of a server. This function is used to enable allocation of more disk resources than are mounted in the target server.

---

## PDU (Power Distribution Unit)

A device for distributing power (such as a power strip). Resource Orchestrator uses PDUs with current value display functions as Power monitoring devices.

---

---

## physical LAN segment

A physical LAN that servers are connected to.

Servers are connected to multiple physical LAN segments that are divided based on their purpose (public LANs, backup LANs, etc.). Physical LAN segments can be divided into multiple network segments using VLAN technology.

---

## physical network adapter

An adapter, such as a LAN, to connect physical servers or VM hosts to a network.

---

## physical OS

An OS that operates directly on a physical server without the use of server virtualization software.

---

## physical server

The same as a "server". Used when it is necessary to distinguish actual servers from virtual servers.

---

## pin-group

This is a group, set with the end host mode, that has at least one uplink port and at least one downlink port.

---

## Pool Master

On Citrix XenServer, it indicates one VM host belonging to a Resource Pool.

It handles setting changes and information collection for the Resource Pool, and also performs operation of the Resource Pool.

For details, refer to the Citrix XenServer manual.

---

## port backup

A function for LAN switches which is also referred to as backup port.

---

## port VLAN

A VLAN in which the ports of a LAN switch are grouped, and each LAN group is treated as a separate LAN.

---

## port zoning

The division of ports of fibre channel switches into zones, and setting of access restrictions between different zones.

---

## power monitoring devices

Devices used by Resource Orchestrator to monitor the amount of power consumed.

PDUs and UPSs with current value display functions fit into this category.

---

## power monitoring targets

Devices from which Resource Orchestrator can collect power consumption data.

---

## pre-configuration

Performing environment configuration for Resource Orchestrator on another separate system.

---

## primary server

The physical server that is switched from when performing server switchover.

---

## primary site

The environment that is usually used by Resource Orchestrator.

---

## private cloud

A private form of cloud computing that provides ICT services exclusively within a corporation or organization.

---

---

## public LAN

A LAN used for operations by managed servers.  
Public LANs are established separately from admin LANs.

---

## rack

A case designed to accommodate equipment such as servers.

---

## rack mount server

A server designed to be mounted in a rack.

---

## RAID (Redundant Arrays of Inexpensive Disks)

Technology that realizes high-speed and highly-reliable storage systems using multiple hard disks.

---

## RAID management tool

Software that monitors disk arrays mounted on PRIMERGY servers.  
The RAID management tool differs depending on the model or the OS of PRIMERGY servers.

---

## RDM (Raw Device Mapping)

A function of VMware. This function provides direct access from a VMware virtual machine to a LUN.

---

## RDN (Relative Distinguished Name)

A name used to identify the lower entities of a higher entry.  
Each RDN must be unique within the same entry.

---

## Remote Management Controller

A unit used for managing servers.  
Used for gathering server data, failure notification, power control, etc.

- For Fujitsu PRIMERGY servers  
iRMC2
  - For SPARC Enterprise  
ILOM (T series servers)  
XSCF (M series servers)
  - For HP servers  
iLO2 (integrated Lights-Out)
  - For Dell/IBM servers  
BMC (Baseboard Management Controller)
- 

## Remote Server Management

A PRIMEQUEST feature for managing partitions.

---

## Reserved SB

Indicates the new system board that will be embedded to replace a failed system board if the hardware of a system board embedded in a partition fails and it is necessary to disconnect the failed system board.

---

## resource

General term referring to the logical definition of the hardware (such as servers, storage, and network devices) and software that comprise a system.

---



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## resource folder

An arbitrary group of resources.

---

## resource pool

A unit for management of groups of similar resources, such as servers, storage, and network devices.

---

## resource tree

A tree that displays the relationships between the hardware of a server and the OS operating on it using hierarchies.

---

## role

A collection of operations that can be performed.

---

## ROR console

The GUI that enables operation of all functions of Resource Orchestrator.

---

## ruleset

A collection of script lists for performing configuration of network devices, configured as combinations of rules based on the network device, the purpose, and the application.

---

## SAN (Storage Area Network)

A specialized network for connecting servers and storage.

---

## SAN boot

A configuration function that enables the starting and operation of servers via a SAN.

The OS and applications used to operate servers are stored on SAN storage, not the internal disks of servers.

---

## SAN storage

Storage that uses a Fibre Channel connection.

---

## script list

Lists of scripts for the automation of operations such as status and log display, and definition configuration of network devices.

Used to execute multiple scripts in one operation. The scripts listed in a script list are executed in the order that they are listed.

As with individual scripts, they can be created by the infrastructure administrator, and can be customized to meet the needs of tenant administrators.

They are used to configure virtual networks for VLANs on physical networks, in cases where it is necessary to perform auto-configuration of multiple switches at the same time, or to configure the same rules for network devices in redundant configurations.

The script lists contain the scripts used to perform automatic configuration.

There are the following eight types of script lists:

- script lists for setup
- script lists for setup error recovery
- script lists for modification
- script lists for modification error recovery
- script lists for setup (physical server added)
- script lists for setup error recovery (physical server added)
- script lists for deletion (physical server deleted)
- script lists for deletion

---

## server

A computer (operated with one operating system).

---

## server blade

A server blade has the functions of a server integrated into one board.  
They are mounted in blade servers.

---

## server management unit

A unit used for managing servers.  
A management blade is used for blade servers, and a Remote Management Controller is used for other servers.

---

## server name

The name allocated to a server.

---

## server NIC definition

A definition that describes the method of use for each server's NIC.  
For the NICs on a server, it defines which physical LAN segment to connect to.

---

## server virtualization software

Basic software which is operated on a server to enable use of virtual machines. Used to indicate the basic software that operates on a PC server.

---

## ServerView Deployment Manager

Software used to collect and deploy server resources over a network.

---

## ServerView Operations Manager

Software that monitors a server's (PRIMERGY) hardware state, and notifies of errors by way of the network.  
ServerView Operations Manager was previously known as ServerView Console.

---

## ServerView RAID

One of the RAID management tools for PRIMERGY.

---

## ServerView Update Manager

This is software that performs jobs such as remote updates of BIOS, firmware, drivers, and hardware monitoring software on servers being managed by ServerView Operations Manager.

---

## ServerView Update Manager Express

Insert the ServerView Suite DVD1 or ServerView Suite Update DVD into the server requiring updating and start it.

This is software that performs batch updates of BIOS, firmware, drivers, and hardware monitoring software.

---

## Single Sign-On

A system among external software which can be used without login operations, after authentication is executed once.

---

## slave slot

A slot that is not recognized as a server when a server that occupies multiple slots is mounted.

---

## SMB (Server Message Block)

A protocol that enables the sharing of files and printers over a network.

---

## SNMP (Simple Network Management Protocol)

A communications protocol to manage (monitor and control) the equipment that is attached to a network.

---

## software initiator

An initiator processed by software using OS functions.

---

## Solaris Container

Solaris server virtualization software.

On Solaris servers, it is possible to configure multiple virtual Solaris servers that are referred to as a Solaris zone.

---

## Solaris zone

A software partition that virtually divides a Solaris OS space.

---

## SPARC Enterprise Partition Model

A SPARC Enterprise model which has a partitioning function to enable multiple system configurations, separating a server into multiple areas with operating OS's and applications in each area.

---

## spare server

A server which is used to replace a failed server when server switchover is performed.

---

## storage blade

A blade-style storage device that can be mounted in the chassis of a blade server.

---

## storage management software

Software for managing storage units.

---

## storage resource

Collective term that refers to virtual storage resources and disk resources.

---

## storage unit

Used to indicate the entire secondary storage as one product.

---

## surrogate pair

A method for expressing one character as 32 bits.

In the UTF-16 character code, 0xD800 - 0xDBFF are referred to as "high surrogates", and 0xDC00 - 0xDFFF are referred to as "low surrogates". Surrogate pairs use "high surrogate" + "low surrogate".

---

## switchover state

The state in which switchover has been performed on a managed server, but neither fallback nor continuation have been performed.

---

## System Board

A board which can mount up to 2 Xeon CPUs and 32 DIMMs.

---

## system disk

The disk on which the programs (such as the OS) and files necessary for the basic functions of servers (including booting) are installed.

---

## system image

A copy of the contents of a system disk made as a backup.

Different from a cloning image as changes are not made to the server-specific information contained on system disks.

---

---

## tenant

A unit for the division and segregation of management and operation of resources based on organizations or operations.

---

## tenant administrator

A user who manages the resources allocated to a tenant.

tenant\_admin is the role for performing management of resources allocated to a tenant.

Tenant administrators manage the available space on resources in the local pools of tenants, and approve or reject applications by tenant users to use resources.

---

## tenant folder

A resource folder that is created for each tenant, and is used to manage the resources allocated to a tenant.

L-Servers and local pools are located in tenant folders. Also, it is possible to configure a global pool that tenant administrators can use.

---

## tenant user

A user who uses the resources of a tenant, or creates and manages L-Platforms, or a role with the same purpose.

---

## Thick Provisioning

Allocation of the actual requested capacity when allocating storage resources.

---

## Thin Provisioning

Allocating of only the capacity actually used when allocating storage resources.

---

## tower server

A standalone server with a vertical chassis.

---

## TPP (Thin Provisioning Pool)

One of resources defined using ETERNUS. Thin Provisioning Pools are the resource pools of physical disks created using Thin Provisioning.

---

## TPV (Thin Provisioning Volume)

One of resources defined using ETERNUS. Thin Provisioning Volumes are physical disks created using the Thin Provisioning function.

---

## UNC (Universal Naming Convention)

Notational system for Windows networks (Microsoft networks) that enables specification of shared resources (folders, files, shared printers, shared directories, etc.).



### Example

.....  
\\hostname\dir\_name  
.....

---

## UPS (Uninterruptible Power Supply)

A device containing rechargeable batteries that temporarily provides power to computers and peripheral devices in the event of power failures.

Resource Orchestrator uses UPSs with current value display functions as power monitoring devices.

---

## URL (Uniform Resource Locator)

The notational method used for indicating the location of information on the Internet.

---

## VIOM (ServerView Virtual-IO Manager)

The name of both the I/O virtualization technology used to change the MAC addresses of NICs and the software that performs the virtualization.

Changes to values of WWNs and MAC addresses can be performed by creating a logical definition of a server, called a server profile, and assigning it to a server.

---

## Virtual Edition

The edition that can use the server switchover function.

---

## Virtual I/O

Technology that virtualizes the relationship of servers and I/O devices (mainly storage and network) thereby simplifying the allocation of and modifications to I/O resources to servers, and server maintenance.

For Resource Orchestrator it is used to indicate HBA address rename and ServerView Virtual-IO Manager (VIOM).

---

## virtual server

A virtual server that is operated on a VM host using a virtual machine.

---

## virtual storage resource

This refers to a resource that can dynamically create a disk resource.

An example being RAID groups or logical storage that is managed by server virtualization software (such as VMware datastores).

In Resource Orchestrator, disk resources can be dynamically created from ETERNUS RAID groups, NetApp aggregates, and logical storage managed by server virtualization software.

---

## virtual switch

A function provided by server virtualization software to manage networks of VM guests as virtual LAN switches.

The relationships between the virtual NICs of VM guests and the NICs of the physical servers used to operate VM hosts can be managed using operations similar to those of the wiring of normal LAN switches.

A function provided by server virtualization software in order to manage L-Server (VM) networks as virtual LAN switches.

Management of relationships between virtual L-Server NICs, and physical server NICs operating on VM hosts, can be performed using an operation similar to the connection of a normal LAN switch.

---

## VLAN (Virtual LAN)

A splitting function, which enables the creation of virtual LANs (seen as differing logically by software) by grouping ports on a LAN switch.

Using a Virtual LAN, network configuration can be performed freely without the need for modification of the physical network configuration.

---

## VLAN ID

A number (between 1 and 4,095) used to identify VLANs.

Null values are reserved for priority tagged frames, and 4,096 (FFF in hexadecimal) is reserved for mounting.

---

## VM (Virtual Machine)

A virtual computer that operates on a VM host.

---

## VM guest

A virtual server that operates on a VM host, or an OS that is operated on a virtual machine.

---

## VM Home Position

The VM host that is home to VM guests.

---

## VM host

A server on which server virtualization software is operated, or the server virtualization software itself.

---

---

## VM maintenance mode

One of the settings of server virtualization software, that enables maintenance of VM hosts.

For example, when using high availability functions (such as VMware HA) of server virtualization software, by setting VM maintenance mode it is possible to prevent the moving of VM guests on VM hosts undergoing maintenance.

For details, refer to the manuals of the server virtualization software being used.

---

## VM management software

Software for managing multiple VM hosts and the VM guests that operate on them.

Provides value adding functions such as movement between the servers of VM guests (migration).

---

## VMware

Virtualization software from VMware Inc.

Provides a virtualized infrastructure on PC servers, enabling flexible management of operations.

---

## VMware DPM (VMware Distributed Power Management)

A function of VMware. This function is used to reduce power consumption by automating power management of servers in VMware DRS clusters.

---

## VMware DRS (VMware Distributed Resource Scheduler)

A function of VMware. This function is used to monitor the load conditions on an entire virtual environment and optimize the load dynamically.

---

## VMware Teaming

A function of VMware. By using VMware Teaming it is possible to perform redundancy by connecting a single virtual switch to multiple physical network adapters.

---

## Web browser

A software application that is used to view Web pages.

---

## WWN (World Wide Name)

A 64-bit address allocated to an HBA.

Refers to a WWNN or a WWPN.

---

## WWNN (World Wide Node Name)

A name that is set as a common value for the Fibre Channel ports of a node. However, the definitions of nodes vary between manufacturers, and may also indicate devices or adapters. Also referred to as a node WWN.

---

## WWPN (World Wide Port Name)

A name that is a unique value and is set for each Fibre Channel port (HBA, CA, fibre channel switch ports, etc.), and is the IEEE global MAC address.

As the Fibre Channel ports of the same WWPN are unique, they are used as identifiers during Fibre Channel port login. Also referred to as a port WWN.

---

## WWPN zoning

The division of ports into zones based on their WWPN, and setting of access restrictions between different zones.

---

## Xen

A type of server virtualization software.

---

## XSB (eXtended System Board)

Unit for domain creation and display, composed of physical components.

---

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## XSCF (eXtended System Control Facility)

The name of the Remote Management Controller for SPARC Enterprise M series servers.

---

## zoning

A function that provides security for Fibre Channels by grouping the Fibre Channel ports of a Fibre Channel switch into zones, and only allowing access to ports inside the same zone.