

FUJITSU Software

ServerView Resource Orchestrator

Cloud Edition V3.2.0

A decorative horizontal band with a red-to-dark-red gradient, featuring abstract, glowing white and red lines that swirl and intersect, creating a sense of motion and technology.

Setup Guide

Windows/Linux

J2X1-7610-07ENZ0(09)
November 2016

Preface

Purpose of This Document

This manual provides information on the operations and settings required for setup of FUJITSU Software ServerView Resource Orchestrator Cloud Edition (hereinafter Resource Orchestrator).

Intended 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.

Structure of This Document

This manual is composed as follows:

[Chapter 1 Flow of Setup for Resource Orchestrator](#)

Explains the overall flow of setup operations when using Resource Orchestrator.

[Chapter 2 Installation](#)

Explains how to install Resource Orchestrator.

[Chapter 3 SSL Communication Environment Settings for the ROR Console](#)

Explains the environment settings necessary for SSL communications.

[Chapter 4 License Setup and Confirmation](#)

Explains how to set up and confirm the licenses necessary to use Resource Orchestrator.

[Chapter 5 Importing a Certificate to a Browser](#)

Explains how to import the site certificate necessary when using a test site, to a browser.

[Chapter 6 Settings for the HBA address rename Setup Service](#)

Explains how to configure the HBA address rename setup service.

[Chapter 7 Configuration when Creating Physical L-Servers](#)

Explains how to perform configuration when creating a physical L-Server.

[Chapter 8 Configuration when Creating Virtual L-Servers](#)

Explains how to perform configuration when creating a virtual L-Server.

[Chapter 9 Post-Installation Procedures](#)

Explains how to post-installation procedures.

[Chapter 10 Saving Environment Settings](#)

Explains how to save environment settings.

[Chapter 11 Uninstallation](#)

Explains how to uninstall Resource Orchestrator.

[Appendix A Installing VM Hosts on Physical L-Servers](#)

Explains how to install VM hosts on physical L-Servers.

Appendix B Customizing the Dashboard

Explains how to customize the dashboard.

Appendix C Upgrading from Earlier Versions

Explains how to upgrade from earlier versions of Resource Coordinator.

Appendix D Configuration when Using Ethernet Fabrics (Converged Fabric)

Explains how to configure the settings when using an Ethernet Fabric as a network device.

Appendix E Migration Procedure when Using Active Directory with a Redundant Configuration

Explains the migration procedure for changing operation of the Active Directory used for the Single Sign-On function of ServerView Operations Manager from one server to two servers.

Appendix F Sending SNMP Traps

Explains the function used to send the details of Resource Orchestrator events to other products as SNMP traps.

Appendix G Definition Files

This section explains how to use Resource Orchestrator to create the definition files required to manage (monitor and automatically configure, etc.) network devices.

Appendix H Coordination with Other Products

Explains how to coordinate use of Resource Orchestrator and other products.

Appendix I Co-Existence with Other Products

Explains co-existence with other products.

Appendix J Configuring and Deleting SELinux [Linux]

Explains the methods for configuring SELinux and deleting the settings for SELinux necessary for operation using Resource Orchestrator, when SELinux is enabled (Enforcing mode).

Appendix K Displaying the ROR Console in Chinese

Explains how to display the ROR console in Chinese.

Web Site URLs

URLs provided as reference sources within the main text are correct as of November 2016.

Document Conventions

The notation in this manual conforms to the following conventions.

- When there is different information for the different versions of Resource Orchestrator, it is indicated as follows:

[All Editions]	Sections relevant for all editions
[Cloud Edition]	Sections related to Cloud Edition
[Virtual Edition]	Sections related to Virtual Edition

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

[Windows Manager]	Sections related to Windows manager
[Linux Manager]	Sections related to Linux manager
[Windows]	Sections related to Windows
[Linux]	Sections related to Linux

[Red Hat Enterprise Linux]	Sections related to Red Hat Enterprise Linux
[Solaris]	Sections related to Solaris
[VMware]	Sections related to VMware
[Horizon View]	Sections related to VMware Horizon View
[Hyper-V]	Sections related to Hyper-V
[Xen]	Sections related to RHEL5-Xen
[KVM]	Sections related to RHEL-KVM
[Solaris Zones]	Sections related to Solaris Zones (Solaris 10) and Solaris Zones (Solaris 11)
[Solaris Zones (Solaris 10)]	Sections related to Solaris Zones with Solaris 10 VM hosts
[Solaris Zones (Solaris 11)]	Sections related to Solaris Zones with Solaris 11 VM hosts
[OVM for x86]	Sections related to Oracle VM Server for x86 2.2 and Oracle VM Server for x86 3.x
[OVM for x86 2.2]	Sections related to Oracle VM Server for x86 2.2
[OVM for x86 3.x]	Sections related to Oracle VM Server for x86 3.2 and Oracle VM Server for x86 3.3
[OVM for SPARC]	Sections related to Oracle VM Server for SPARC
[Citrix Xen]	Sections related to Citrix XenServer
[Physical Servers]	Sections related to physical servers

- Unless specified otherwise, the blade servers mentioned in this manual refer to PRIMERGY BX servers.
- Oracle Solaris may also be indicated as Solaris, Solaris Operating System, or Solaris OS.
- Oracle Solaris Zones may also be indicated as Solaris Containers or Solaris Container.
- Oracle VM Server for x86 may also be indicated as Oracle VM.
- In Resource Orchestrator, the following servers are referred to as SPARC Enterprise.
 - SPARC Enterprise M3000/M4000/M5000/M8000/M9000
 - SPARC Enterprise T5120/T5140/T5220/T5240/T5440
- In Resource Orchestrator, the following servers are referred to as SPARC M10.
 - SPARC M10-1/M10-4/M10-4S
- Fujitsu M10 is the product name used for SPARC M10 when they are sold outside Japan.
- References and character strings or values requiring emphasis are indicated using double quotes (").
- GUI items are shown enclosed by 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 "#".
- When using Resource Orchestrator on Windows 8 and Windows Server 2012, please note the following. When OS operations are explained in this manual, the examples assume OSs up to Windows 7 and Windows Server 2008. When using Resource Orchestrator on Windows 8 or Windows Server 2012, take explanations regarding the [Start] menu as indicating the [Apps] screen. The [Apps] screen can be displayed by right-clicking on the [Start] screen and then right-clicking [All apps].

- When using Resource Orchestrator on Windows 8.1 and Windows Server 2012 R2, please note the following.
When OS operations are explained in this manual, the examples assume OSs up to Windows 7 and Windows Server 2008. When using Resource Orchestrator on Windows 8.1 or Windows Server 2012 R2, take explanations regarding the [Start] menu as indicating the [Apps] screen.
The [Apps] screen can be displayed by swiping the [Start] screen from bottom to top, or clicking the downward facing arrow on the lower-left of the [Start] screen.

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.

Regarding Installation Folder Paths

The installation folder path may be given as C:\Fujitsu\ROR in this manual.

Replace it as shown below.

[Virtual Edition]

- When using Windows 64-bit (x64)
C:\Program Files (x86)\Resource Orchestrator
- When using Windows 32-bit (x86)
C:\Program Files\Resource Orchestrator

[Cloud Edition]

C:\Program Files (x86)\Resource Orchestrator

Command Examples

The paths used in command examples may be abbreviated. When using commands, execute them using the paths in the "Name" column in the "Reference Guide (Command) VE" and the "Reference Guide (Command/XML) CE".

Abbreviations

The following abbreviations are used in this manual:

Abbreviation	Products
Windows	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 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) 2012 Standard Microsoft(R) Windows Server(R) 2012 Datacenter Microsoft(R) Windows Server(R) 2012 R2 Essentials Microsoft(R) Windows Server(R) 2012 R2 Standard Microsoft(R) Windows Server(R) 2012 R2 Datacenter Windows Vista(R) Business Windows Vista(R) Enterprise Windows Vista(R) Ultimate Windows(R) 7 Professional

Abbreviation	Products
	Windows(R) 7 Ultimate Windows(R) 8 Pro Windows(R) 8 Enterprise Windows(R) 8.1 Pro Windows(R) 8.1 Enterprise
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
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 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 2012	Microsoft(R) Windows Server(R) 2012 Standard Microsoft(R) Windows Server(R) 2012 Datacenter Microsoft(R) Windows Server(R) 2012 R2 Essentials Microsoft(R) Windows Server(R) 2012 R2 Standard Microsoft(R) Windows Server(R) 2012 R2 Datacenter
Windows PE	Microsoft(R) Windows(R) Preinstallation Environment
Windows Vista	Windows Vista(R) Business Windows Vista(R) Enterprise Windows Vista(R) Ultimate
Windows 7	Windows(R) 7 Professional Windows(R) 7 Ultimate
Windows 8	Windows(R) 8 Pro Windows(R) 8 Enterprise Windows(R) 8.1 Pro Windows(R) 8.1 Enterprise
Windows 10	Windows(R) 10 Pro Windows(R) 10 Enterprise
Linux	Red Hat(R) Enterprise Linux(R) AS (v.4 for x86) Red Hat(R) Enterprise Linux(R) ES (v.4 for x86) Red Hat(R) Enterprise Linux(R) AS (v.4 for EM64T) Red Hat(R) Enterprise Linux(R) ES (v.4 for EM64T) Red Hat(R) Enterprise Linux(R) AS (4.5 for x86) Red Hat(R) Enterprise Linux(R) ES (4.5 for x86) Red Hat(R) Enterprise Linux(R) AS (4.5 for EM64T) Red Hat(R) Enterprise Linux(R) ES (4.5 for EM64T) Red Hat(R) Enterprise Linux(R) AS (4.6 for x86) Red Hat(R) Enterprise Linux(R) ES (4.6 for x86) Red Hat(R) Enterprise Linux(R) AS (4.6 for EM64T) Red Hat(R) Enterprise Linux(R) ES (4.6 for EM64T) Red Hat(R) Enterprise Linux(R) AS (4.7 for x86) Red Hat(R) Enterprise Linux(R) ES (4.7 for x86)

Abbreviation	Products
	Red Hat(R) Enterprise Linux(R) AS (4.7 for EM64T)
	Red Hat(R) Enterprise Linux(R) ES (4.7 for EM64T)
	Red Hat(R) Enterprise Linux(R) AS (4.8 for x86)
	Red Hat(R) Enterprise Linux(R) ES (4.8 for x86)
	Red Hat(R) Enterprise Linux(R) AS (4.8 for EM64T)
	Red Hat(R) Enterprise Linux(R) ES (4.8 for EM64T)
	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) 5.8 (for x86)
	Red Hat(R) Enterprise Linux(R) 5.8 (for Intel64)
	Red Hat(R) Enterprise Linux(R) 5.9 (for x86)
	Red Hat(R) Enterprise Linux(R) 5.9 (for Intel64)
	Red Hat(R) Enterprise Linux(R) 5.10 (for x86)
	Red Hat(R) Enterprise Linux(R) 5.10 (for Intel64)
	Red Hat(R) Enterprise Linux(R) 5.11 (for x86)
	Red Hat(R) Enterprise Linux(R) 5.11 (for Intel64)
	Red Hat(R) Enterprise Linux(R) 6 (for x86)
	Red Hat(R) Enterprise Linux(R) 6 (for Intel64)
	Red Hat(R) Enterprise Linux(R) 6.1 (for x86)
	Red Hat(R) Enterprise Linux(R) 6.1 (for Intel64)
	Red Hat(R) Enterprise Linux(R) 6.2 (for x86)
	Red Hat(R) Enterprise Linux(R) 6.2 (for Intel64)
	Red Hat(R) Enterprise Linux(R) 6.3 (for x86)
	Red Hat(R) Enterprise Linux(R) 6.3 (for Intel64)
	Red Hat(R) Enterprise Linux(R) 6.4 (for x86)
	Red Hat(R) Enterprise Linux(R) 6.4 (for Intel64)
	Red Hat(R) Enterprise Linux(R) 6.5 (for x86)
	Red Hat(R) Enterprise Linux(R) 6.5 (for Intel64)
	Red Hat(R) Enterprise Linux(R) 6.6 (for x86)
	Red Hat(R) Enterprise Linux(R) 6.6 (for Intel64)
	Red Hat(R) Enterprise Linux(R) 6.7 (for x86)
	Red Hat(R) Enterprise Linux(R) 6.7 (for Intel64)
	Red Hat(R) Enterprise Linux(R) 6.8 (for x86)
	Red Hat(R) Enterprise Linux(R) 6.8 (for Intel64)
	Red Hat(R) Enterprise Linux(R) 7.0 (for Intel64)
	SUSE(R) Linux Enterprise Server 10 Service Pack 2 for x86
	SUSE(R) Linux Enterprise Server 10 Service Pack 2 for EM64T
	SUSE(R) Linux Enterprise Server 10 Service Pack 3 for x86
	SUSE(R) Linux Enterprise Server 10 Service Pack 3 for EM64T
	SUSE(R) Linux Enterprise Server 11 for x86
	SUSE(R) Linux Enterprise Server 11 for EM64T
	SUSE(R) Linux Enterprise Server 11 Service Pack 1 for x86

Abbreviation	Products
	SUSE(R) Linux Enterprise Server 11 Service Pack 1 for EM64T Oracle Enterprise Linux Release 6.7 for x86 (32bit) Oracle Enterprise Linux Release 6.7 for 86_64 (64bit) Oracle Enterprise Linux Release 7.2 for x86 (32bit) Oracle Enterprise Linux Release 7.2 for x86_64 (64bit)
Red Hat Enterprise Linux	Red Hat(R) Enterprise Linux(R) AS (v.4 for x86) Red Hat(R) Enterprise Linux(R) ES (v.4 for x86) Red Hat(R) Enterprise Linux(R) AS (v.4 for EM64T) Red Hat(R) Enterprise Linux(R) ES (v.4 for EM64T) Red Hat(R) Enterprise Linux(R) AS (4.5 for x86) Red Hat(R) Enterprise Linux(R) ES (4.5 for x86) Red Hat(R) Enterprise Linux(R) AS (4.5 for EM64T) Red Hat(R) Enterprise Linux(R) ES (4.5 for EM64T) Red Hat(R) Enterprise Linux(R) AS (4.6 for x86) Red Hat(R) Enterprise Linux(R) ES (4.6 for x86) Red Hat(R) Enterprise Linux(R) AS (4.6 for EM64T) Red Hat(R) Enterprise Linux(R) ES (4.6 for EM64T) Red Hat(R) Enterprise Linux(R) AS (4.7 for x86) Red Hat(R) Enterprise Linux(R) ES (4.7 for x86) Red Hat(R) Enterprise Linux(R) AS (4.7 for EM64T) Red Hat(R) Enterprise Linux(R) ES (4.7 for EM64T) Red Hat(R) Enterprise Linux(R) AS (4.8 for x86) Red Hat(R) Enterprise Linux(R) ES (4.8 for x86) Red Hat(R) Enterprise Linux(R) AS (4.8 for EM64T) Red Hat(R) Enterprise Linux(R) ES (4.8 for EM64T) 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) 5.8 (for x86) Red Hat(R) Enterprise Linux(R) 5.8 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.9 (for x86) Red Hat(R) Enterprise Linux(R) 5.9 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.10 (for x86) Red Hat(R) Enterprise Linux(R) 5.10 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.11 (for x86) Red Hat(R) Enterprise Linux(R) 5.11 (for Intel64) Red Hat(R) Enterprise Linux(R) 6 (for x86) Red Hat(R) Enterprise Linux(R) 6 (for Intel64) Red Hat(R) Enterprise Linux(R) 6.1 (for x86) Red Hat(R) Enterprise Linux(R) 6.1 (for Intel64) Red Hat(R) Enterprise Linux(R) 6.2 (for x86) Red Hat(R) Enterprise Linux(R) 6.2 (for Intel64) Red Hat(R) Enterprise Linux(R) 6.3 (for x86)

Abbreviation	Products
	Red Hat(R) Enterprise Linux(R) 6.3 (for Intel64) Red Hat(R) Enterprise Linux(R) 6.4 (for x86) Red Hat(R) Enterprise Linux(R) 6.4 (for Intel64) Red Hat(R) Enterprise Linux(R) 6.5 (for x86) Red Hat(R) Enterprise Linux(R) 6.5 (for Intel64) Red Hat(R) Enterprise Linux(R) 6.6 (for x86) Red Hat(R) Enterprise Linux(R) 6.6 (for Intel64) Red Hat(R) Enterprise Linux(R) 6.7 (for x86) Red Hat(R) Enterprise Linux(R) 6.7 (for Intel64) Red Hat(R) Enterprise Linux(R) 6.8 (for x86) Red Hat(R) Enterprise Linux(R) 6.8 (for Intel64) Red Hat(R) Enterprise Linux(R) 7.0 (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) 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) 5.8 (for x86) Red Hat(R) Enterprise Linux(R) 5.8 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.9 (for x86) Red Hat(R) Enterprise Linux(R) 5.9 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.10 (for x86) Red Hat(R) Enterprise Linux(R) 5.10 (for Intel64) Red Hat(R) Enterprise Linux(R) 5.11 (for x86) Red Hat(R) Enterprise Linux(R) 5.11 (for Intel64)
Red Hat Enterprise Linux 6	Red Hat(R) Enterprise Linux(R) 6 (for x86) Red Hat(R) Enterprise Linux(R) 6 (for Intel64) Red Hat(R) Enterprise Linux(R) 6.1 (for x86) Red Hat(R) Enterprise Linux(R) 6.1 (for Intel64) Red Hat(R) Enterprise Linux(R) 6.2 (for x86) Red Hat(R) Enterprise Linux(R) 6.2 (for Intel64) Red Hat(R) Enterprise Linux(R) 6.3 (for x86) Red Hat(R) Enterprise Linux(R) 6.3 (for Intel64) Red Hat(R) Enterprise Linux(R) 6.4 (for x86) Red Hat(R) Enterprise Linux(R) 6.4 (for Intel64) Red Hat(R) Enterprise Linux(R) 6.5 (for x86) Red Hat(R) Enterprise Linux(R) 6.5 (for Intel64) Red Hat(R) Enterprise Linux(R) 6.6 (for x86) Red Hat(R) Enterprise Linux(R) 6.6 (for Intel64) Red Hat(R) Enterprise Linux(R) 6.7 (for x86) Red Hat(R) Enterprise Linux(R) 6.7 (for Intel64) Red Hat(R) Enterprise Linux(R) 6.8 (for x86) Red Hat(R) Enterprise Linux(R) 6.8 (for Intel64)
Red Hat Enterprise Linux 7	Red Hat(R) Enterprise Linux(R) 7.0 (for Intel64)

Abbreviation	Products
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) 6.1 (for x86) Virtual Machine Function Red Hat(R) Enterprise Linux(R) 6.1 (for Intel64) Virtual Machine Function 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 Red Hat(R) Enterprise Linux(R) 6.3 (for x86) Virtual Machine Function Red Hat(R) Enterprise Linux(R) 6.3 (for Intel64) Virtual Machine Function Red Hat(R) Enterprise Linux(R) 6.4 (for x86) Virtual Machine Function Red Hat(R) Enterprise Linux(R) 6.4 (for Intel64) Virtual Machine Function Red Hat(R) Enterprise Linux(R) 6.5 (for x86) Virtual Machine Function Red Hat(R) Enterprise Linux(R) 6.5 (for Intel64) Virtual Machine Function Red Hat(R) Enterprise Linux(R) 6.6 (for x86) Virtual Machine Function Red Hat(R) Enterprise Linux(R) 6.6 (for Intel64) Virtual Machine Function Red Hat(R) Enterprise Linux(R) 6.7 (for x86) Virtual Machine Function Red Hat(R) Enterprise Linux(R) 6.7 (for Intel64) Virtual Machine Function Red Hat(R) Enterprise Linux(R) 6.8 (for x86) Virtual Machine Function Red Hat(R) Enterprise Linux(R) 6.8 (for Intel64) Virtual Machine Function
Xen	Citrix XenServer(R) 5.5 Citrix Essentials(TM) for XenServer 5.5, Enterprise Edition Citrix XenServer(R) 6.0 Citrix Essentials(TM) for XenServer 6.0, Enterprise Edition Red Hat(R) Enterprise Linux(R) 5.3 (for x86) Linux Virtual Machine Function Red Hat(R) Enterprise Linux(R) 5.3 (for Intel64) Linux Virtual Machine Function 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 Red Hat(R) Enterprise Linux(R) 5.5 (for x86) Linux Virtual Machine Function Red Hat(R) Enterprise Linux(R) 5.5 (for Intel64) Linux Virtual Machine Function Red Hat(R) Enterprise Linux(R) 5.6 (for x86) Linux Virtual Machine Function Red Hat(R) Enterprise Linux(R) 5.6 (for Intel64) Linux Virtual

Abbreviation		Products
		Machine Function Red Hat(R) Enterprise Linux(R) 5.7 (for x86) Linux Virtual Machine Function Red Hat(R) Enterprise Linux(R) 5.7 (for Intel64) Linux Virtual Machine Function Red Hat(R) Enterprise Linux(R) 5.8 (for x86) Linux Virtual Machine Function Red Hat(R) Enterprise Linux(R) 5.8 (for Intel64) Linux Virtual Machine Function Red Hat(R) Enterprise Linux(R) 5.9 (for x86) Linux Virtual Machine Function Red Hat(R) Enterprise Linux(R) 5.9 (for Intel64) Linux Virtual Machine Function Red Hat(R) Enterprise Linux(R) 5.10 (for x86) Linux Virtual Machine Function Red Hat(R) Enterprise Linux(R) 5.10 (for Intel64) Linux Virtual Machine Function Red Hat(R) Enterprise Linux(R) 5.11 (for x86) Linux Virtual Machine Function Red Hat(R) Enterprise Linux(R) 5.11 (for Intel64) Linux Virtual Machine Function
XenServer 6		Citrix XenServer(R) 6.0 Citrix Essentials(TM) for XenServer 6.0, Enterprise Edition
DOS		Microsoft(R) MS-DOS(R) operating system, DR DOS(R)
SUSE Linux Enterprise Server		SUSE(R) Linux Enterprise Server 10 Service Pack 2 for x86 SUSE(R) Linux Enterprise Server 10 Service Pack 2 for EM64T SUSE(R) Linux Enterprise Server 10 Service Pack 3 for x86 SUSE(R) Linux Enterprise Server 10 Service Pack 3 for EM64T SUSE(R) Linux Enterprise Server 11 for x86 SUSE(R) Linux Enterprise Server 11 for EM64T SUSE(R) Linux Enterprise Server 11 Service Pack 1 for x86 SUSE(R) Linux Enterprise Server 11 Service Pack 1 for EM64T
Oracle Enterprise Linux		Oracle Enterprise Linux Release 6.7 for x86 (32bit) Oracle Enterprise Linux Release 6.7 for 86_64 (64bit) Oracle Enterprise Linux Release 7.2 for x86 (32bit) Oracle Enterprise Linux Release 7.2 for x86_64 (64bit)
Solaris		Oracle Solaris 10 05/09 (Update7) Oracle Solaris 11 11/11 Oracle Solaris 11.1 Oracle Solaris 11.2
OVM for x86 2.2		Oracle(R) VM Server for x86 2.2
OVM for x86 3.x	OVM for x86 3.2	Oracle VM Server for x86 v3.2.x
	OVM for x86 3.3	Oracle VM Server for x86 v3.3.x
OVM for SPARC		Oracle(R) VM Server for SPARC
Oracle VM Manager		Oracle(R) VM Manager
Citrix XenServer		Citrix XenServer(R) 6.0 Citrix XenServer(R) 6.0.2 Citrix XenServer(R) 6.1.0 Citrix XenServer(R) 6.2.0
ESC		ETERNUS SF Storage Cruiser
GLS		PRIMECLUSTER GLS

Abbreviation	Products
Navisphere	EMC Navisphere Manager
Solutions Enabler	EMC Solutions Enabler
MSFC	Microsoft Failover Cluster
Solaris	Oracle Solaris 10 05/09 (Update7) Oracle Solaris 11 11/11 Oracle Solaris 11.1 Oracle Solaris 11.2
SCVMM	System Center Virtual Machine Manager 2008 R2 System Center 2012 Virtual Machine Manager System Center 2012 R2 Virtual Machine Manager
VMware	VMware vSphere(R) 4 VMware vSphere(R) 4.1 VMware vSphere(R) 5 VMware vSphere(R) 5.1 VMware vSphere(R) 5.5 VMware vSphere(R) 6
VMware ESX	VMware(R) ESX(R)
VMware ESX 4	VMware(R) ESX(R) 4
VMware ESXi	VMware(R) ESXi(TM)
VMware ESXi 5.0	VMware(R) ESXi(TM) 5.0
VMware ESXi 5.1	VMware(R) ESXi(TM) 5.1
VMware ESXi 5.5	VMware(R) ESXi(TM) 5.5
VMware ESXi 6.0	VMware(R) ESXi(TM) 6.0
VMware Infrastructure Client	VMware(R) Infrastructure Client
VMware Tools	VMware(R) Tools
VMware vSphere 4.0	VMware vSphere(R) 4.0
VMware vSphere 4.1	VMware vSphere(R) 4.1
VMware vSphere 5	VMware vSphere(R) 5
VMware vSphere 5.1	VMware vSphere(R) 5.1
VMware vSphere 5.5	VMware vSphere(R) 5.5
VMware vSphere 6.0	VMware vSphere(R) 6.0
VMware vSphere Client	VMware vSphere(R) Client
VMware vCenter Server	VMware(R) vCenter(TM) Server
VMware vClient	VMware(R) vClient(TM)
VMware FT	VMware(R) Fault Tolerance
VMware DRS	VMware(R) Distributed Resource Scheduler
VMware DPM	VMware(R) Distributed Power Management
VMware Storage VMotion	VMware(R) Storage VMotion
VMware vDS	VMware(R) vNetwork Distributed Switch
VMware Horizon View	VMware Horizon View 5.2.x VMware Horizon View 5.3.x VMware Horizon 6.0 (with View)
VIOM	ServerView Virtual-IO Manager

Abbreviation	Products
SVOM	ServerView Operations Manager
BladeLogic	BMC BladeLogic Server Automation
Excel	Microsoft(R) Office Excel(R) 2003 Microsoft(R) Office Excel(R) 2007 Microsoft(R) Office Excel(R) 2010 Microsoft(R) Office Excel(R) 2013
Excel 2003	Microsoft(R) Office Excel(R) 2003
Excel 2007	Microsoft(R) Office Excel(R) 2007
Excel 2010	Microsoft(R) Office Excel(R) 2010
Excel 2013	Microsoft(R) Office Excel(R) 2013
Internet Explorer	Windows(R) Internet Explorer(R) 8 Windows(R) Internet Explorer(R) 9 Windows(R) Internet Explorer(R) 10 Internet Explorer(R) 11
Firefox	Firefox(R)
ServerView Agent	ServerView SNMP Agents for MS Windows (32bit-64bit) ServerView Agents Linux ServerView Agents VMware for VMware ESX Server
RCVE	ServerView Resource Coordinator VE
ROR	FUJITSU Software ServerView Resource Orchestrator
ROR VE	FUJITSU Software ServerView Resource Orchestrator Virtual Edition
ROR CE	FUJITSU Software ServerView Resource Orchestrator Cloud Edition
Resource Coordinator	Systemwalker Resource Coordinator Systemwalker Resource Coordinator Virtual server Edition
Resource Coordinator VE	ServerView Resource Coordinator VE Systemwalker Resource Coordinator Virtual server Edition
Resource Orchestrator	FUJITSU Software ServerView Resource Orchestrator
SVFAB	ServerView Fabric Manager

Export Administration Regulation Declaration

Exportation/release of this document may require necessary procedures in accordance with the regulations of your resident country and/or US export control laws.

Trademark Information

- BMC, BMC Software, and the BMC Software logo are the exclusive properties of BMC Software, Inc., are registered with the U.S. Patent and Trademark Office, and may be registered or pending registration in other countries.
- Citrix(R), Citrix XenServer(R), Citrix Essentials(TM), and Citrix StorageLink(TM) are trademarks of Citrix Systems, Inc. and/or one of its subsidiaries, and may be registered in the United States Patent and Trademark Office and in other countries.
- EMC, EMC², CLARiiON, Symmetrix, and Navisphere are trademarks or registered trademarks of EMC Corporation.
- HP is a registered trademark of Hewlett-Packard Company.
- Linux is a trademark or registered trademark of Linus Torvalds in the United States and other countries.

- Microsoft, Windows, MS-DOS, Windows Server, Windows Vista, Excel, Active Directory, and Internet Explorer are either registered trademarks or trademarks of Microsoft Corporation in the United States and other countries.
- Firefox is a trademark or registered trademark of the Mozilla Foundation in the United States and other countries.
- NetApp is a registered trademark of Network Appliance, Inc. in the US and other countries. Data ONTAP, Network Appliance, and Snapshot are trademarks of Network Appliance, Inc. in the US and other countries.
- Oracle and Java are registered trademarks of Oracle and/or its affiliates in the United States and other countries.
- Oracle is a registered trademark of Oracle Corporation and/or its affiliates.
- Red Hat, RPM and all Red Hat-based trademarks and logos are trademarks or registered trademarks of Red Hat, Inc. in the United States and other countries.
- SUSE is a registered trademark of SUSE LINUX AG, a Novell business.
- VMware, the VMware "boxes" logo and design, Virtual SMP, and VMotion are registered trademarks or trademarks of VMware, Inc. in the United States and/or other jurisdictions.
- ServerView and Systemwalker are registered trademarks of FUJITSU LIMITED.
- All other brand and product names are trademarks or registered trademarks of their respective owners.

Notices

- The contents of this manual shall not be reproduced without express written permission from FUJITSU LIMITED.
- The contents of this manual are subject to change without notice.

Revision History

Month/Year Issued, Edition	Manual Code
November 2011, First Edition	J2X1-7610-01ENZ0(00)
December 2011, Edition 1.1	J2X1-7610-01ENZ0(01)
January 2012, Edition 1.2	J2X1-7610-01ENZ0(02)
February 2012, Edition 1.3	J2X1-7610-01ENZ0(03)
March 2012, Edition 1.4	J2X1-7610-01ENZ0(04)
April 2012, Edition 1.5	J2X1-7610-01ENZ0(05)
July 2012, Second Edition	J2X1-7610-02ENZ0(00)
October 2012, Third Edition	J2X1-7610-03ENZ0(00)
December 2012, Fourth Edition	J2X1-7610-04ENZ0(00)
January 2013, Fifth Edition	J2X1-7610-05ENZ0(00)
January 2013, Edition 5.1	J2X1-7610-05ENZ0(01)
January 2013, Edition 5.2	J2X1-7610-05ENZ0(02)
March 2013, Edition 5.3	J2X1-7610-05ENZ0(03)
June 2013, Edition 5.4	J2X1-7610-05ENZ0(04)
August 2013, Edition 5.5	J2X1-7610-05ENZ0(05)
December 2013, Sixth Edition	J2X1-7610-06ENZ0(00)
December 2013, Edition 6.1	J2X1-7610-06ENZ0(01)
February 2014, Edition 6.2	J2X1-7610-06ENZ0(02)
April 2014, Edition 6.3	J2X1-7610-06ENZ0(03)

Month/Year Issued, Edition	Manual Code
June 2014, Edition 6.4	J2X1-7610-06ENZ0(04)
April 2015, Seventh Edition	J2X1-7610-07ENZ0(00)
May 2015, Edition 7.1	J2X1-7610-07ENZ0(01)
July 2015, Edition 7.2	J2X1-7610-07ENZ0(02)
August 2015, Edition 7.3	J2X1-7610-07ENZ0(03)
September 2015, Edition 7.4	J2X1-7610-07ENZ0(04)
December 2015, Edition 7.5	J2X1-7610-07ENZ0(05)
January 2016, Edition 7.6	J2X1-7610-07ENZ0(06)
June 2016, Edition 7.7	J2X1-7610-07ENZ0(07)
September 2016, Edition 7.8	J2X1-7610-07ENZ0(08)
November 2016, Edition 7.9	J2X1-7610-07ENZ0(09)

Copyright

Copyright 2010-2016 FUJITSU LIMITED

Contents

Chapter 1 Flow of Setup for Resource Orchestrator.....	1
1.1 Flow of Setup for System Administrators.....	3
1.1.1 Installing Software on Admin Servers.....	3
1.1.2 Manager Installation.....	3
1.1.3 Login to the ROR Console.....	3
1.1.4 License Setup.....	3
1.1.5 Configuration after Manager Installation.....	4
1.1.6 Notifying the Infrastructure Administrator of Infrastructure Configuration Information.....	4
1.2 Flow of Setup for Infrastructure Administrators.....	4
1.2.1 Obtaining Infrastructure Configuration Information.....	5
1.2.2 Configuring Resources.....	5
1.2.2.1 When Creating a Physical L-Server.....	5
1.2.2.2 When Creating a Virtual L-Server.....	6
1.2.3 Registering Network Devices.....	6
1.2.4 Creating and Releasing Global Templates and Registering Accounting Information.....	7
1.2.5 Configuring Tenants.....	7
1.2.6 Notification of tenant information.....	7
1.2.6.1 When Automatically Configuring and Operating Network Devices Using User Customization Mode.....	8
1.2.6.2 When Automatically Configuring and Operating Network Devices Using Simple Configuration Mode.....	8
1.3 Flow of Setup for Tenant Administrators.....	9
1.4 Flow of Operations for Tenant Users.....	10
Chapter 2 Installation.....	11
2.1 Manager Installation.....	11
2.1.1 Manager Installation [Windows Manager].....	11
2.1.1.1 Preparations.....	11
2.1.1.2 Software Preparation and Checks.....	11
2.1.1.3 Collecting and Checking Required Information.....	16
2.1.1.4 Checking Used Port Numbers.....	18
2.1.1.5 Configuration Parameter Checks.....	19
2.1.1.6 Installation.....	20
2.1.2 Manager Installation [Linux Manager].....	22
2.1.2.1 Preparations.....	22
2.1.2.2 Software Preparation and Checks.....	22
2.1.2.3 Collecting and Checking Required Information.....	28
2.1.2.4 Checking Used Port Numbers.....	30
2.1.2.5 Configuration Parameter Checks.....	31
2.1.2.6 Installation.....	32
2.2 Agent Installation.....	34
2.2.1 Preparations.....	35
2.2.1.1 Software Preparation and Checks.....	35
2.2.1.2 Collecting and Checking Required Information.....	40
2.2.2 Installation [Windows] [Hyper-V].....	42
2.2.3 Installation [Linux] [VMware] [Xen] [KVM].....	44
2.2.4 Installation [Solaris] [Solaris Zones] [OVM for SPARC].....	45
2.3 Agent (Dashboard Function) Installation.....	46
2.3.1 Preparations.....	47
2.3.2 Exclusive Software Checks.....	47
2.3.3 Installation [Windows] [Hyper-V].....	47
2.3.4 Installation [Linux].....	47
2.3.5 Installation [Solaris] [Solaris Zones].....	48
2.4 HBA address rename Setup Service Installation.....	48
2.4.1 Preparations.....	49
2.4.1.1 Software Preparation and Checks.....	49
2.4.1.2 Collecting and Checking Required Information.....	49

2.4.2 Installation [Windows].....	50
2.4.3 Installation [Linux].....	51
Chapter 3 SSL Communication Environment Settings for the ROR Console.....	53
3.1 Obtaining Certificates and Registering them with Certificate Authorities.....	53
3.1.1 Creating the Interstage Certificate Environment and the Application to Obtain the Certificate that is used for SSL Communication.....	53
3.1.2 Registering Certificates used in SSL Communication.....	55
3.2 Importing a Certificate to ServerView SSO Authentication Server.....	56
Chapter 4 License Setup and Confirmation.....	59
Chapter 5 Importing a Certificate to a Browser.....	60
Chapter 6 Settings for the HBA address rename Setup Service.....	62
Chapter 7 Configuration when Creating Physical L-Servers.....	64
7.1 Creating Definition Files.....	64
7.1.1 Creating Definition Files Combining Ports of SAN Storage.....	64
7.1.2 Format Selection for the Names of Virtual Storage Resources and Disk Resources Managed by ESC.....	66
7.1.3 Configuration of Priority for Resource Selection on Thin Provisioning on Thin Provisioning and Automatic Storage Layering.....	68
7.1.4 Creating Mirroring Definition Files for Dynamic LUN Mirroring.....	69
7.1.5 Definition File for EMC Storage.....	70
7.1.6 Configuration when Creating a Physical L-Server without Specifying a Model Name in the L-Server Template.....	71
7.1.7 Setting the Number of FCs Fitted and their Position for Each Physical Server.....	74
7.1.8 Definition File for Alive Monitoring.....	75
7.1.9 Definition File for Admin LAN Uplink Set.....	77
7.1.10 Definition File for iSCSI Network.....	77
7.1.11 Definition File for FalconStor NSS.....	78
7.2 Registering Resources with Resource Orchestrator.....	79
7.3 Registering Resources in Resource Pools.....	82
7.3.1 Automatic Network Configuration.....	83
7.3.2 Manual Network Configuration.....	86
7.4 Creating L-Server Templates.....	87
7.5 Creating L-Servers.....	87
7.5.1 Creating an L-Server Using an L-Server Template.....	87
7.5.2 Creating an L-Server Specifying Individual Specifications.....	88
7.5.3 Manual OS Installation.....	89
7.5.4 Installation of an Operating System Using PXE Boot.....	92
7.6 Collecting and Registering Cloning Images.....	93
7.6.1 When Collecting a Cloning Image from an L-Server after OS Installation.....	93
7.7 [OS] Tab Configuration.....	95
7.8 Network Redundancy and VLAN Settings of L-Servers.....	95
7.9 Methods for Selecting Physical Servers Automatically.....	99
7.10 Advisory Notes for Physical L-Server Usage.....	101
Chapter 8 Configuration when Creating Virtual L-Servers.....	102
8.1 Definition Files Commonly Shared when Creating Virtual L-Servers.....	103
8.1.1 Overcommit Definition Files.....	104
8.1.2 VM Specific Information Definition File.....	105
8.1.3 Definition Files of Priority for Resource Selection on Thin Provisioning.....	109
8.1.4 Definition Files when Creating a Virtual L-Server Using a Server which cannot Use ServerView Agents.....	110
8.1.5 Definition Files when Creating a Virtual L-Server Using VMware ESXi on Another Vendor's Servers.....	112
8.1.6 Definition File for Alive Monitoring.....	114
8.1.7 OS Property Definition File.....	116
8.2 VMware.....	120
8.2.1 Creating Definition Files.....	120
8.2.2 Registering Resources with Resource Orchestrator.....	126

8.2.3 Registering Resources in Resource Pools.....	127
8.2.4 Automatic Network Configuration.....	128
8.2.5 Manual Network Configuration.....	134
8.2.6 Creating L-Server Templates.....	135
8.2.7 Creating L-Servers.....	136
8.2.8 Collecting Cloning Images.....	137
8.2.9 [OS] Tab Configuration.....	139
8.2.10 Advisory Notes for VMware Usage.....	142
8.2.11 Overcommit.....	143
8.2.12 Participating in an Active Directory Domain.....	146
8.2.13 Usage of GUIRunOnce.....	147
8.3 Hyper-V.....	148
8.3.1 Creating Definition Files.....	148
8.3.2 Registering Resources with Resource Orchestrator.....	148
8.3.3 Registering Resources in Resource Pools.....	150
8.3.4 Automatic Network Configuration.....	151
8.3.5 Manual Network Configuration.....	158
8.3.6 Create L-Server Templates.....	166
8.3.7 Creating L-Servers.....	166
8.3.8 Collecting and Deleting Cloning Images.....	168
8.3.9 [OS] Tab Configuration.....	171
8.3.10 Advisory Notes for Hyper-V Usage.....	174
8.3.11 Overcommit.....	178
8.4 RHEL5-Xen.....	182
8.4.1 Creating Definition Files.....	182
8.4.2 Registering Resources with Resource Orchestrator.....	183
8.4.3 Registering Resources in Resource Pools.....	183
8.4.4 Manual Network Configuration.....	184
8.4.5 Creating L-Server Templates.....	186
8.4.6 Creating L-Servers.....	186
8.4.7 Advisory Notes for RHEL5-Xen Usage.....	187
8.5 OVM for x86 2.2.....	189
8.5.1 Creating Definition Files.....	189
8.5.2 Registering Resources with Resource Orchestrator.....	189
8.5.3 Registering Resources in Resource Pools.....	190
8.5.4 Manual Network Configuration.....	191
8.5.5 Creating L-Server Templates.....	193
8.5.6 Creating L-Servers.....	193
8.5.7 Collecting Cloning Images.....	193
8.5.8 [OS] Tab Configuration.....	194
8.5.9 Advisory Notes for OVM for x86 2.2 Usage.....	195
8.6 RHEL-KVM.....	198
8.6.1 Creating Definition Files.....	198
8.6.2 Registering Resources with Resource Orchestrator.....	201
8.6.3 Registering Resources in Resource Pools.....	203
8.6.4 Manual Network Configuration.....	209
8.6.5 Creating L-Server Templates.....	211
8.6.6 Creating L-Servers.....	211
8.6.7 Collecting Cloning Images.....	214
8.6.8 [OS] Tab Configuration.....	220
8.6.9 Advisory Notes for RHEL-KVM Usage.....	222
8.6.10 Overcommit.....	225
8.7 Solaris Zones.....	226
8.7.1 Creating Definition Files.....	226
8.7.2 Registering Resources with Resource Orchestrator.....	232
8.7.3 Registering Resources in Resource Pools.....	233
8.7.4 Manual Network Configuration.....	237

8.7.5 Creating and Importing Cloning Images.....	239
8.7.5.1 When Using Solaris Zones (Solaris 11).....	239
8.7.5.2 When Using Solaris Zones (Solaris 10).....	244
8.7.6 Creating L-Server Templates.....	245
8.7.7 Creating L-Servers.....	246
8.7.8 [OS] Tab Configuration.....	246
8.7.9 Configuration Required after Creating an L-Server [Solaris Zones (Solaris 11)].....	248
8.7.10 Advisory Notes for Solaris Zone Usage.....	249
8.7.11 Overcommit.....	251
8.7.12 Managing Solaris Zones Configured on a Guest Domain of OVM for SPARC.....	252
8.8 OVM for SPARC.....	253
8.8.1 Creating Definition Files.....	253
8.8.2 Registering Resources with Resource Orchestrator.....	260
8.8.3 Registering Resources in Resource Pools.....	261
8.8.4 Manual Network Configuration.....	265
8.8.5 Creating L-Server Templates.....	267
8.8.6 Creating L-Servers.....	268
8.8.7 [OS] Tab Configuration.....	270
8.8.8 Advisory Notes for OVM for SPARC Usage.....	272
8.8.9 Overcommit.....	278
8.9 Citrix XenServer.....	279
8.9.1 Creating Definition Files.....	279
8.9.2 Registering Resources with Resource Orchestrator.....	282
8.9.3 Registering Resources in Resource Pools.....	283
8.9.4 Manual Network Configuration.....	285
8.9.5 Create L-Server Templates.....	286
8.9.6 Creating L-Servers.....	287
8.9.7 Collecting and Registering Cloning Images.....	287
8.9.8 [OS] Tab Configuration.....	288
8.9.9 Linking to an L-Server.....	290
8.9.10 Advisory Notes for Citrix XenServer Usage.....	290
8.9.11 Overcommit.....	292
8.9.12 Customization Function of Guest OS.....	293
8.10 OVM for x86 3.x.....	295
8.10.1 Creating Definition Files.....	295
8.10.2 Registering Resources with Resource Orchestrator.....	298
8.10.3 Registering Resources in Resource Pools.....	299
8.10.4 Manual Network Configuration.....	301
8.10.5 Create L-Server Templates.....	302
8.10.6 Creating L-Servers.....	303
8.10.7 Collecting and Registering Cloning Images.....	303
8.10.8 [OS] Tab Configuration.....	304
8.10.9 Linking to an L-Server.....	306
8.10.10 Advisory Notes for OVM for x86 3.x Usage.....	306
8.10.11 Overcommit.....	307
8.10.12 Customization Function of Guest OS.....	307
8.11 Advisory Notes for Virtual L-Server Usage.....	311
8.12 Overcommit Settings.....	312
Chapter 9 Post-Installation Procedures.....	313
9.1 Settings for Sending Email.....	313
9.1.1 Stopping the Manager.....	313
9.1.2 Settings for Email Sent from Tenant Management.....	313
9.1.3 Settings for Email Sent from the [L-Platforms] Tab.....	314
9.1.4 Email Sent from the Usage Charge Calculator.....	315
9.1.5 Starting the Manager.....	316
9.1.6 Settings for Email Sent via the Application Process.....	316

9.1.7 Settings for Email Sent from the Dashboard.....	318
9.2 Application Process Settings.....	319
9.2.1 Stopping the Manager.....	319
9.2.2 Setting Application Process Settings.....	319
9.2.3 Setting Application Process to be Used.....	320
9.2.4 Starting the Manager.....	321
9.2.5 Role Settings for the Display of the Application List Tab.....	321
9.3 Customizing the Dashboard.....	321
9.4 Setting the Host Names for Virtual Servers.....	321
9.4.1 Setting Method.....	322
9.4.2 Setting Form.....	323
9.5 Setting the Method for Setting Resource Names.....	325
9.5.1 Setting Method.....	325
9.5.2 Setting Form.....	326
9.6 Settings for the Overcommit Function.....	328
9.7 Editing the Environment Setup File for the L-Platform API.....	331
9.8 Settings when RHEL5-Xen is Used.....	331
9.9 System Disk Settings for Physical L-Servers.....	332
9.10 Setting for the Restarting Managers.....	333
9.11 Changing Multiple Operations of Managers.....	333
9.12 Editing the License Agreement.....	333
9.13 Editing the User Agreement when Registering a User.....	334
9.14 Editing the Home Messages.....	336
Chapter 10 Saving Environment Settings.....	337
Chapter 11 Uninstallation.....	338
11.1 Manager Uninstallation.....	338
11.1.1 Preparations.....	338
11.1.2 Uninstallation [Windows Manager].....	339
11.1.3 Uninstallation [Linux Manager].....	340
11.1.4 Post-uninstallation Procedure.....	342
11.1.4.1 SMEE Uninstallation [Linux].....	342
11.1.4.2 Securecrypto Library RunTime Uninstallation [Linux].....	342
11.1.4.3 Cautions about SMEE and Securecrypto Library RunTime Uninstallation [Linux].....	342
11.1.4.4 Deleting the Registered Certificate of ServerView Operations Manager.....	343
11.2 Agent Uninstallation.....	344
11.2.1 Uninstallation [Windows] [Hyper-V].....	344
11.2.2 Uninstallation [Linux] [VMware] [Xen] [KVM].....	344
11.2.3 Uninstallation [Solaris] [Solaris Zones] [OVM for SPARC].....	345
11.3 HBA address rename Setup Service Uninstallation.....	346
11.3.1 Uninstallation [Windows].....	346
11.3.2 Uninstallation [Linux].....	347
11.4 Uninstallation of "Uninstall (Middleware)".....	348
Appendix A Installing VM Hosts on Physical L-Servers.....	350
A.1 Installation.....	350
A.2 Changing Configuration.....	351
A.3 Deletion.....	352
A.4 Advisory Notes for Installation of VM Hosts on Physical L-Servers.....	352
Appendix B Customizing the Dashboard.....	353
B.1 Customizing the Alert Function.....	353
B.1.1 Customizing Email Sending Settings.....	355
B.1.2 Customizing Monitored Pools.....	356
B.1.3 Customizing Threshold Values.....	359
B.1.4 Adding Alert Filters.....	360
B.2 Changing the Schedule for Deleting Event Data.....	360

B.3 The Interstage Business Process Manager Analytics Management Console.....	361
B.3.1 Access Method.....	361
B.3.2 Methods to Access Analytics Studio.....	362
B.3.3 Changing the Password of the Administrator.....	362
B.3.4 Restarting the Analytics Server.....	362
Appendix C Upgrading from Earlier Versions.....	363
C.1 Overview.....	363
C.1.1 Upgrading from Earlier Versions.....	363
C.1.2 Upgrading from Other Editions of This Version.....	364
C.2 Manager.....	365
C.3 Agent.....	377
C.4 HBA address rename Setup Service.....	383
C.5 Client.....	384
C.6 Transferring Users and Tenants.....	384
C.6.1 Changing Already Registered Directory Service Connection Information.....	385
C.6.2 Registering CA Certificates of ServerView Operations Manager.....	386
C.6.3 Moving Information in the Directory Service Used in Earlier Versions.....	387
C.6.4 Transferring Tenants and Tenant Administrators.....	387
C.7 Installation of Systemwalker Service Quality Coordinator [Windows Manager].....	389
C.7.1 Preparations.....	389
C.7.2 Installation of Systemwalker Service Quality Coordinator Manager.....	389
C.7.3 Installation of the Systemwalker Service Quality Coordinator Operation Management Client.....	391
Appendix D Configuration when Using Ethernet Fabrics (Converged Fabric).....	393
D.1 Performing Preconfiguration.....	393
D.2 Creating the Network Configuration Information.....	393
D.3 Registering Network Devices.....	393
D.4 Automatic Network Configuration.....	393
D.5 Creating Definition Files for the Port Profile Configuration Function.....	394
D.6 Registering Network Resources.....	394
Appendix E Migration Procedure when Using Active Directory with a Redundant Configuration.....	395
Appendix F Sending SNMP Traps.....	396
Appendix G Definition Files.....	398
G.1 Definition Files (For Both Physical L-Servers and Virtual L-Servers).....	398
G.2 Definition Files (For Physical L-Servers).....	399
G.3 Definition Files (For Virtual L-Servers).....	401
G.3.1 Definition Files (VMware).....	402
G.3.2 Definition Files (Hyper-V).....	403
G.3.3 Definition Files (RHEL5-Xen).....	404
G.3.4 Definition Files (OVM for x86 2.2).....	404
G.3.5 Definition Files (RHEL-KVM).....	404
G.3.6 Definition Files (Solaris Zones).....	404
G.3.7 Definition Files (OVM for SPARC).....	405
G.3.8 Definition Files (OVM for x86 3.x).....	405
G.3.9 Definition Files (Citrix XenServer).....	406
G.4 Definition Files (Network).....	406
Appendix H Coordination with Other Products.....	407
H.1 Coordination with BMC BladeLogic Server Automation.....	407
H.1.1 Coordination for Creation and Operation of Virtual L-Servers.....	407
H.1.2 Coordination of Registration and Deletion of Managed Servers, Cloning, and Software Deployment.....	409
H.2 SNMP Trap Settings Using CA Spectrum.....	412
H.3 Settings for Using VDI Coordination.....	415
H.3.1 VMware Horizon View.....	415

Appendix I Co-Existence with Other Products.....	424
I.1 Advisory Notes for Environments with Systemwalker Centric Manager or ETERNUS SF Storage Cruiser.....	424
I.2 Co-Existence with ServerView Deployment Manager.....	426
I.2.1 Overview.....	426
I.2.2 Restricted Functions.....	427
Appendix J Configuring and Deleting SELinux [Linux].....	428
J.1 Configuring SELinux.....	428
J.1.1 Manager.....	428
J.1.2 Agent.....	429
J.1.3 HBA address rename Setup Service.....	431
J.1.4 ServerView Trap Server for Linux.....	431
J.2 Deleting the SELinux Settings.....	432
J.2.1 Manager.....	432
J.2.2 Agent.....	432
J.2.3 HBA address rename Setup Service.....	432
J.2.4 ServerView Trap Server for Linux.....	432
Appendix K Displaying the ROR Console in Chinese.....	434
K.1 Support Scope.....	434
K.2 Operation.....	435
K.2.1 ROR Console.....	435
K.2.2 Commands.....	436
K.2.3 XML Definition Files.....	436
K.3 Term Correspondence Table.....	436

Chapter 1 Flow of Setup for Resource Orchestrator

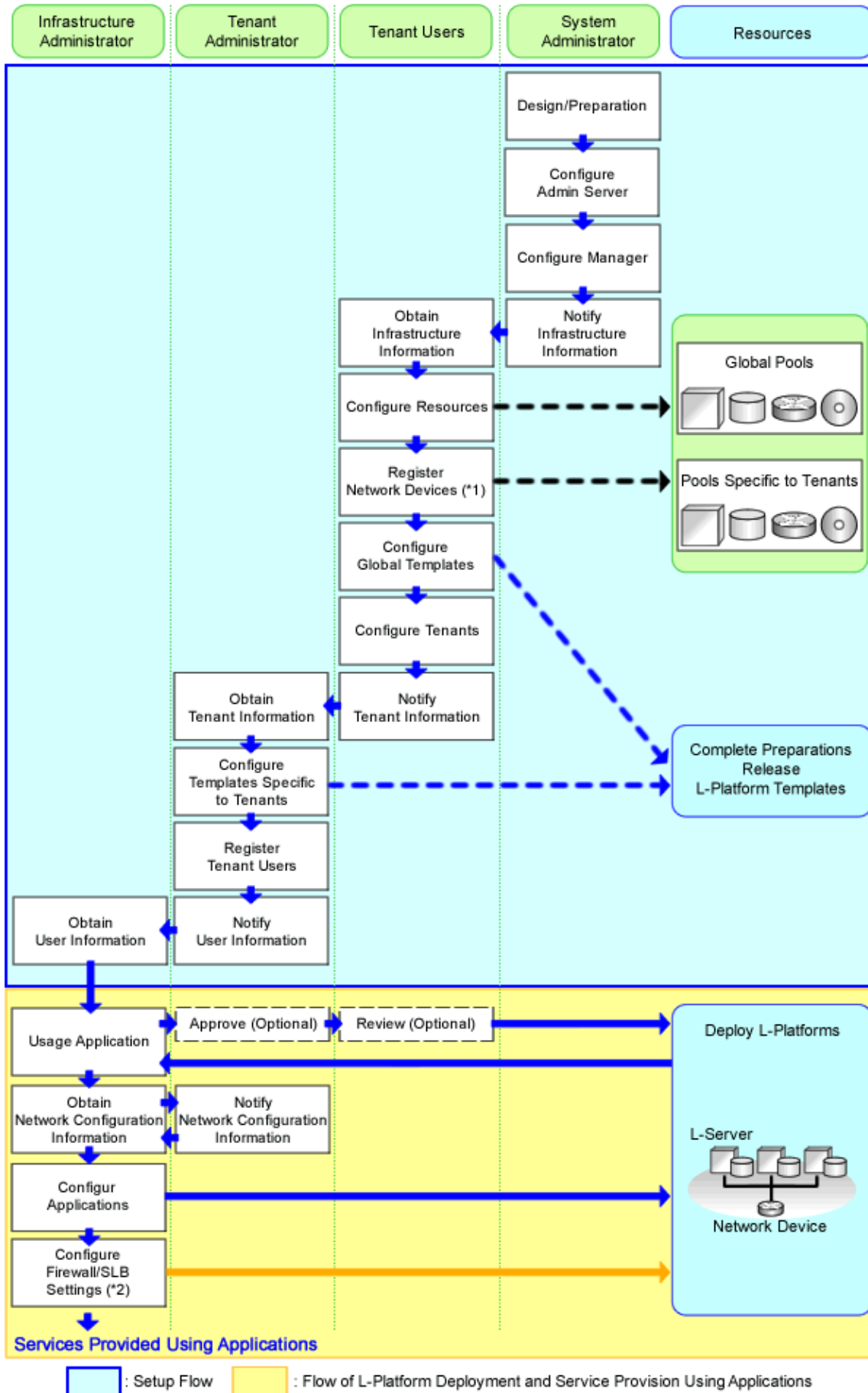
This chapter explains the overall flow of setup when using Resource Orchestrator.

An overview of setup operations when using Resource Orchestrator is given below.

Flow of Setup and Service Provision Using Business Applications

In Resource Orchestrator, the flow of setup and services provision using business applications is as shown below.

Figure 1.1 Flow of Setup and Service Provision Using Business Applications



- *1: Necessary when using firewalls, server load balancers (SLB), or L2 switches.
- *2: Necessary when using firewalls or server load balancers (SLB).

1.1 Flow of Setup for System Administrators

This section explains flow of setup for system administrators.

Table 1.1 Overview of Setup for System Administrators

Operation Overview		Tabs Used on the ROR Console
Installing Software on Admin Servers		-
Manager Installation and Configuration	Manager installation	-
	Login to the ROR Console	-
	License Setup	[Resource]
	Configuration after Manager Installation	-
Notifying the Infrastructure Administrator of Infrastructure Configuration Information		-

-: There are no tabs that can be used on the ROR console.

1.1.1 Installing Software on Admin Servers

Configure an admin server.

Perform installation of software on the admin server.

1. Install an OS
2. Install required software

1.1.2 Manager Installation

Install the manager. Configure the SSL communication environment settings for log in to the ROR console.

1. Install the manager

Install the manager of Resource Orchestrator.

For details, refer to "[2.1 Manager Installation](#)".

2. Configure SSL Communications on the ROR Console

SSL communication is used to access the ROR console from a browser.

When replacing the certificate used for SSL communication from the test certificate created by default with another certificate, refer to "[Chapter 3 SSL Communication Environment Settings for the ROR Console](#)".

When using the test certificate, it is not necessary to change the certificates.

1.1.3 Login to the ROR Console

Log in to Resource Orchestrator.

Refer to "Chapter 2 Login and Logout" in the "User's Guide for Infrastructure Administrators CE".

1.1.4 License Setup

Configure licenses.

For details, refer to "[Chapter 4 License Setup and Confirmation](#)".

1.1.5 Configuration after Manager Installation

After installing the manager, perform the following configuration.

1. Import a Certificate to a Browser

In order to use a test site certificate, the certificate must be installed to the Web browser.

For details, refer to "[Chapter 5 Importing a Certificate to a Browser](#)".

2. Register Infrastructure Administrators

The administrator role, which is the role that combines infrastructure administrator and tenant administrator roles, is assigned to the user created when installing Resource Orchestrator.

Resource Orchestrator can be configured and operated by this user or another user registered with the infrastructure administrator role, in order to prevent the operation of an L-Platform from being stopped by erroneous operations.

For details on how to register network resources, refer to "3.1 Registering User Accounts" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

1.1.6 Notifying the Infrastructure Administrator of Infrastructure Configuration Information

The system administrator notifies the infrastructure administrator of the details designed for Resource Orchestrator setup or the following infrastructure configuration information that has been configured in advance.

- Physical system configuration of hardware managed by the infrastructure administrator (servers, storage, and networks)
 - Connection information between devices (connection ports, connection types, etc.)
- Hardware information managed by the infrastructure administrator
 - Vendor name
 - Model name

- Resource information managed in Resource Orchestrator

To manage resources in Resource Orchestrator, it is necessary to register them.

For details, refer to "[1.2.2 Configuring Resources](#)".

- Information such as segments or IP addresses used in an L-Platform

For details on the segments or IP addresses allocated to an L-Platform, refer to "9.1.3 Physical Network Design for the Public LAN and iSCSI LAN" in the "Design Guide CE".

- Configuration information when using a firewall or a server load balancer on an L-Platform
 - When using the firewall address conversion functions, the virtual IP address used in the function
 - When using the server load balancer, the virtual IP addresses used in the server load balancing functions

1.2 Flow of Setup for Infrastructure Administrators

This section explains flow of setup for infrastructure administrators.

Procedures differ depending on the type of L-Server which comprises an L-Platform or the server hardware being used, and the network configuration which is connected to an L-Server.

Table 1.2 Overview of Setup for Infrastructure Administrators

Operation Overview	Tabs Used on the ROR Console
Obtaining infrastructure configuration information	-
Resource configuration	[Resource]
Network device registration (*1)	[Resource]

Operation Overview	Tabs Used on the ROR Console
Creating and releasing global templates and registering accounting information (*2)	[Template] [Usage Charge]
Tenant configuration	[Tenant]
Notification of Tenant Information	-

*1: Necessary when using firewalls, server load balancers, or L2 switches.

*2: It is necessary to register accounting information when using accounting.

Information

User Accounts

When creating new user accounts, changing passwords, or modifying permission levels during setup, refer to "Chapter 3 Managing User Accounts" in the "Operation Guide CE".

1.2.1 Obtaining Infrastructure Configuration Information

The infrastructure administrator obtains the information necessary for installing Resource Orchestrator from the system administrator.

1.2.2 Configuring Resources

Select the [Resource] tab of the ROR console and configure resource settings.

Procedures differ depending on the type of L-Server which comprises an L-Platform and the server hardware being used.

L-Servers for Infrastructure Administrators

L-Servers for Infrastructure Administrators can only be used only infrastructure administrators. Tenant administrators and tenant users are not able to use those L-Servers.

Normally, L-Servers can only be used by tenant administrators and tenant users.

The purposes of creation are as follow:

- To collect cloning images (collection is performed by infrastructure administrators)

For details on collecting cloning images, refer to "17.5.1 Collecting and Registering" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- To install VM hosts on physical L-Servers

Refer to "[Appendix A Installing VM Hosts on Physical L-Servers](#)".

- To install software used for infrastructure (such as VM management software and the like) administration on L-Servers

To create an L-Server for the infrastructure administrator, resources must be registered to the global pool.

1.2.2.1 When Creating a Physical L-Server

The flow of configuration of resources when creating a physical L-Server is as follows.

For details, refer to "[Chapter 7 Configuration when Creating Physical L-Servers](#)".

1. Resource Registration
2. Register Resources to the Global Pool
3. Create L-Server Templates
4. Create an L-Server for the Infrastructure Administrator

5. Install software on physical L-Servers for infrastructure administrators, and register agents
 - a. Install OSs on physical L-Servers for infrastructure administrators
 - b. Install required software on physical L-Servers for infrastructure administrators
 - c. Install agents on physical L-Servers for infrastructure administrators
 - d. Install agents (Dashboard Function) on physical L-Servers for infrastructure administrators
 - e. Register agents
6. Create and Register Cloning Images

1.2.2.2 When Creating a Virtual L-Server

The flow of configuration of resources when creating a virtual L-Server is as follows. Procedures differ depending on the server virtualization software being used. For details, refer to "[Chapter 8 Configuration when Creating Virtual L-Servers](#)".

1. Resource Registration
2. Install Software and Register Agents on VM Hosts
 - a. Install OSs on VM Hosts
 - b. Install Required Software on VM Hosts
 - c. Install agents on VM hosts
 - d. Install agents (Dashboard Function) on VM hosts
 - e. Register agents
3. Registering Resources to the Global Pool
4. Create L-Server Templates
5. Create an L-Server for the Infrastructure Administrator
6. Install Software on Virtual L-Servers for Infrastructure Administrators
7. Create and Register Cloning Images

1.2.3 Registering Network Devices

Register network devices when necessary.

1. Create the network configuration information (XML definition) necessary for registering network device as resources.
For details, refer to "9.4.8 When Managing Network Devices as Resources" in the "Design Guide CE".
2. When automatically configuring or operating the network device, prepare a script.
For details, refer to "Appendix F Preparing for Automatic Configuration and Operation of Network Devices" in the "Design Guide CE".
3. Register network devices as network device resources.
For details, refer to "5.7 Registering Network Devices" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".
4. Register the network device resources in the network pool.
Among the network devices registered as resources, the network devices with "Firewall" or "SLB" set for their resource type must be registered in the network pool.
For details, refer to "14.4 Network Devices" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

5. Create and register an address set resource for the Global IP address.

When performing automatic configuration of a network device in simple configuration mode, if you want to manage virtual IP addresses (public addresses) using the address translation function of a firewall, create and register an address set resource for the Global IP address.

For details, refer to "14.6 Address Set Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

1.2.4 Creating and Releasing Global Templates and Registering Accounting Information

An L-Platform template defines systems of various levels and the logical OS structure in advance.

An L-Platform template can be specified to easily create L-Platforms.

Create L-Platform templates in the [Template] tab of the ROR console.

A global template is an L-Platform template that can be used for all tenants.

Create and release a global template and register the accounting information.

1. Create L-Platform templates using the [Template] tab of the ROR console.

For details, refer to "8.3.1 Creating New L-Platform Template" and "8.3.2 Copying L-Platform Template" in the "User's Guide for Infrastructure Administrators CE".

2. When using accounting, register the accounting information using the registration function of the product master maintenance command.

For details, refer to "Chapter 15 Accounting" in the "Operation Guide CE".

3. Release L-Platform templates using the [Template] tab of the ROR console.

For details, refer to "8.3.5 Publishing and Hiding L-Platform Template" in the "User's Guide for Infrastructure Administrators CE".

1.2.5 Configuring Tenants

Create tenants and tenant administrators, and register resources in a dedicated pool for the tenant.

1. Create Tenants

Create tenants.

For details, refer to "11.3 Creating a Tenant" in the "User's Guide for Infrastructure Administrators CE".

2. Create Tenant Administrators

Create tenant administrators.

For details, refer to "11.7 Registering a User" in the "User's Guide for Infrastructure Administrators CE".

3. Register resources in a dedicated pool for the tenant

Register resources in a dedicated pool for the tenant (local pool).

For details, refer to "Chapter 14 Registering Resources in Resource Pools" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

1.2.6 Notification of tenant information

The infrastructure administrator notifies the tenant administrator of the following tenant information.

- User IDs and Passwords for the tenant administrator
- Information of tenants that can be used by the tenant administrator and resources allocated to tenants
- Global template information

1.2.6.1 When Automatically Configuring and Operating Network Devices Using User Customization Mode

When using a firewall or a server load balancer, the infrastructure administrator notifies the tenant administrator of the following information.

- Automatic Configuration

The infrastructure administrator notifies the tenant administrator that it is necessary to configure a firewall or a server load balancer after deploying an L-Platform, along with the information necessary for the configuration.

- When Using a Firewall

- The virtual IP address used by the address translation function of the firewall
- Other parameters and the values to be set

- When Using a Server Load Balancer

- The virtual IP address used by the server load balancing function
- Other parameters and the values to be set

- Server Load Balancer Operations

The infrastructure administrator notifies the tenant administrator of information regarding the rulesets used for operation of the server load balancer.

- The usage purpose of the ruleset during operation
- The parameters and values that must be set in order to use each ruleset
- The content of the operation log for confirming the operation results

The rulesets must be prepared by the infrastructure manager in advance.

For details on how to prepare the ruleset, refer to "9.4.9.1 When Automatically Configuring and Operating Network Devices Using User Customization Mode" in the "Design Guide CE".

1.2.6.2 When Automatically Configuring and Operating Network Devices Using Simple Configuration Mode

When using a firewall or a server load balancer, the infrastructure administrator notifies the tenant administrator of the following information.

- Automatic Configuration

The infrastructure administrator notifies the tenant administrator that it is necessary to configure a firewall after deploying an L-Platform, along with the information necessary for the configuration.

- When Using a Firewall

- The parameters and the values to be set in the firewall
- The virtual IP address used by the address translation function
- When using the address set resource of the Global IP address and managing virtual IP addresses
The number of virtual IP addresses that can be used
- When not using the address set resource of the Global IP address
The virtual IP addresses that can be used

- When Using a Server Load Balancer

- The parameters and the values to be set for server load balancing

- Operation

There is nothing to explain to tenant administrators.

For details of the auto-configuration of network devices using simple configuration mode and the operation, refer to "Appendix I Auto-configuration and Operations of Network Devices Using Simple Configuration Mode" in the "Design Guide CE".

1.3 Flow of Setup for Tenant Administrators

Operation by the tenant administrator is shown as below.

1. Obtaining tenant information

The tenant administrator obtains the information necessary for installing Resource Orchestrator from the infrastructure administrator.

2. Edit a Template Specific to the Tenant

Edit a template specific to the tenant.

A template specific to the tenant is an L-Platform template used only for that specific tenant.

When a template specific to the tenant is required, edit the template specific to the tenant.

For details, refer to "7.3.2 Copying L-Platform Template" or "7.3.3 Editing L-Platform Template" in the "User's Guide for Tenant Administrators CE".

3. Release a Template Specific to the Tenant

Release a template specific to the tenant to the tenant user.

For details, refer to "7.3.5 Publishing and Hiding L-Platform Template" in the "User's Guide for Tenant Administrators CE".

4. Register the Tenant User

Register the tenant user.

For details, refer to "10.3 Registering a User" in the "User's Guide for Tenant Administrators CE".

5. Notify the Tenant User of Network Configuration Information

- Notify the tenant user of the segment information

The tenant administrator notifies the tenant user of the segment information specified in an L-Platform.

- Notify the tenant user of the information to configure in a firewall or a server load balancer

When using a firewall or a server load balancer, the tenant administrator notifies the tenant user of the information necessary to configure a firewall or a server load balancer.

Note the following, when a firewall or a server load balancer is included in the L-Platform template edited in step 2.

- It is necessary to configure a firewall or a server load balancer after deploying an L-Platform.

Inform the tenant user of this fact.

- Configure Firewalls

When using a firewall, explain the necessary parameters and values of the firewall settings to tenant users.

For details, refer to "[1.2.6 Notification of tenant information](#)".

- Configure Server Load Balancers

When using a server load balancer, explain the necessary parameters and values of the server load balancer settings to tenant users.

For details, refer to "[1.2.6 Notification of tenant information](#)".

- Use the ruleset for server load balancer operations

Inform the tenant user of the ruleset and the usage used during operations.

For details, refer to "[1.2.6 Notification of tenant information](#)".

1.4 Flow of Operations for Tenant Users

The details of operations by the tenant user until starting to provide services using business applications are as shown below.

1. Apply for L-Platform Usage

Apply for L-Platform usage.

For details, refer to "5.2 Subscribe to an L-Platform" in the "User's Guide for Tenant Users CE".

2. Check L-Platform Usage Application Status

Check L-Platform usage application status.

For details, refer to "5.3 L-Platform Management" in the "User's Guide for Tenant Users CE".

3. Obtain Network Configuration Information

The tenant user obtains the information necessary for configuring business applications from the tenant administrator.

4. Configure Business Applications

Configure business applications.

5. Configure Firewalls

Configure a firewall when necessary.

For details, refer to "5.3.8 Setup Firewall" in the "User's Guide for Tenant Users CE".

6. Configure Server Load Balancers

Configure a server load balancer when necessary.

For details, refer to "5.3.10 Server Load Balancer (SLB) Settings" in the "User's Guide for Tenant Users CE".

7. Service provision using business applications

Provide services using business applications.

Chapter 2 Installation

This chapter explains the installation of FUJITSU Software ServerView Resource Orchestrator.

2.1 Manager Installation

This section explains installation of managers.

2.1.1 Manager Installation [Windows Manager]

This section explains installation of Windows managers.

2.1.1.1 Preparations

This section explains the preparations and checks required before commencing installation.

- [Host Name Checks](#)
- [System Time Checks](#)
- [Exclusive Software Checks](#)
- [Required Software Preparation and Checks](#)
- [Required Patch Checks](#)
- [Collecting and Checking Required Information](#)
- [Checking Used Port Numbers](#)
- [Configuration Parameter Checks](#)
- [Post-uninstallation Procedure](#)

Before installing Resource Orchestrator in an environment from which Resource Orchestrator has been deleted, perform the post-uninstallation procedure.

Refer to "[11.1.4 Post-uninstallation Procedure](#)".

2.1.1.2 Software Preparation and Checks

Software preparation and checks are explained in the following sections.

This section explains the preparations and checks required before commencing the installation of Resource Orchestrator.

Host Name Checks

It is necessary to set the host name (FQDN) for the admin server to operate normally. Describe the host name in the hosts file, using 256 characters or less. In the hosts file, for the IP address of the admin server, configure the host name (FQDN) and then the computer name.

hosts File

```
System_drive\Windows\System32\drivers\etc\hosts
```



When configuring the hosts file, note the following.

- Do not set the host name (FQDN) and the computer name to "127.0.0.1".
- Confirm that "127.0.0.1" (IPv4 format) is set to "localhost".
Note that IPv6 format must not be set.

Example

When configuring the admin server with the IP address "10.10.10.10", the host name (FQDN) "remote1.example.com", and the computer name "remote1"

```
10.10.10.10 remote1.example.com remote1
127.0.0.1 localhost.localdomain localhost
```

For the admin client, either configure the hosts file so access to the admin server is possible using the host name (FQDN), or name resolution using a DNS server.

This configuration is necessary when Single Sign-On is configured.

System Time Checks

Set the same system time for the admin server and managed servers.

If the system time differs, correct values will not be displayed in the [System Condition] tab on the ROR console.

Exclusive Software Checks

Uninstall exclusive software before installing Resource Orchestrator.

For details of exclusive software, refer to "6.1.2.5 Exclusive Software" in "Overview".

Note

- When uninstalling exclusive software, there are cases where other system operation administrators might have installed the software, so check that deleting the software causes no problems before actually doing so.

Required Software Preparation and Checks

Before installing Resource Orchestrator, perform the following operations.

In addition, check that the required software, such as ServerView Operations Manager, given in "6.1.2.4 Required Software" in the "Overview" has been installed. If it has not been installed, install it before continuing.

When installing Resource Orchestrator to an environment that already has ServerView Deployment Manager installed, it is not necessary to obtain the Microsoft LAN Manager module.

- Microsoft LAN Manager Module

Before installing Resource Orchestrator, obtain the Microsoft LAN Manager module from the following FTP site. The Microsoft LAN Manager module can be used regardless of the CPU architecture type (x86, x64).

```
URL: ftp://ftp.microsoft.com/bussys/clients/msclient/dsk3-1.exe
```

Prepare for the following depending on the architecture of the installation target.

- When installing a manager on Windows 32-bit (x86)

The Microsoft LAN Manager module can be installed without extracting it in advance.

Deploy the obtained module to the folder that has been set for environment_variable%SystemRoot%.

- When installing a manager on Windows 64-bit (x64)

The obtained module must be extracted using the Expand command on a computer with x86 CPU architecture.

The obtained module is for x86 CPU architecture, and cannot be extracted on computers with x64 CPU architecture.

For details on how to extract the module, refer to the following examples:

Example

When dsk3-1.exe was deployed on c:\temp

```
>cd /d c:\temp <RETURN>
>dsk3-1.exe <RETURN>
>Expand c:\temp\protman.do_ /r <RETURN>
>Expand c:\temp\protman.ex_ /r <RETURN>
```

Use the Windows 8.3 format (*) for the folder name or the file name.

After manager installation is complete, the extracted Microsoft LAN Manager module is no longer necessary.

* Note: File names are limited to 8 characters and extensions are limited to 3 characters.

After extracting the following modules, deploy them to the folder that has been set for environment_variable%SystemRoot%.

- PROTMAN.DOS
- PROTMAN.EXE
- NETBIND.COM

- ServerView Operations Manager Settings

In order to open the console screen of the managed server, register the account of the Remote Management Controller with the ServerView Operations Manager.

For the setting method, refer to the ServerView Operations Manager manual.

- Required settings for versions earlier than ServerView Operations Manager 5.50

When installing a version earlier than ServerView Operations Manager 5.50 on the admin server, the ServerView Virtual-IO Manager service may not be able to be started. This can be handled by changing the settings of ServerView Operations Manager.

If ServerView Operations Manager 5.50 or later is used, this procedure is not necessary.

Before installing Resource Orchestrator, edit the following file of ServerView Operations Manager (hereinafter SVOM).

Files

```
SVOM installation folder\ServerView Suite\jboss\bin\run.conf.bat
```

Example

```
C:\Program Files (x86)\Fujitsu\ServerView Suite\jboss\bin\run.conf.bat
```

Change Location

```
rem set "JAVA_HOME=C:\opt\jdk1.6.0_13"
```

Uncomment this line, and set the proper path for the JRE 1.6.

Example

- Before changing

```
rem set "JAVA_HOME=C:\opt\jdk1.6.0_13"
```

- After changing

```
set "JAVA_HOME=C:\Program Files (x86)\Java\jre6"
```

If the editing procedure above is performed after installing the Resource Orchestrator manager, after that restart the SVOM services in the following order.

1. Stop the services:
 - a. ServerView Download Services
 - b. ServerView Services
 - c. ServerView JBoss Application Server 5.1
2. Start the services:
 - a. ServerView JBoss Application Server 5.1
 - b. ServerView Services
 - c. ServerView Download Services

- **SNMP Trap Service Settings**

In order for Resource Orchestrator to operate correctly, the following settings for the standard Windows SNMP trap service are required.

- Open [Services] from [Administrative Tools] on the Windows Control Panel, and then configure the startup type of SNMP Trap service as [Manual] or [Automatic] on the [Services] window.

Set the service status to "Started".

- **Settings for ServerView Virtual-IO Manager**

When using VIOM, in order for Resource Orchestrator to operate correctly, ensure that the following settings are made when installing ServerView Virtual-IO Manager for Windows.

- When using the I/O Virtualization Option

Clear the [Select address ranges for IO Virtualization] checkbox on the virtual I/O address range selection window.

- When not using the I/O Virtualization Option

Check the [Select address ranges for IO Virtualization] checkbox on the virtual I/O address range selection window, and then select address ranges for the MAC address and the WWN address.

When there is another manager, select address ranges which do not conflict those of the other manager.

For details, refer to the ServerView Virtual-IO Manager for Windows manual.

- **DHCP server installation**

Installation of the Windows standard DHCP Server is necessary when managed servers belonging to different subnets from the admin server are to be managed.

Depending on the functions used, it may be necessary to configure the router settings. For details, refer to "9.2.4.2 Admin LAN Settings" in the "Design Guide CE".

When registering managed servers that belong to a different subnet from the admin server, they must be registered on the admin LAN subnet in advance.

For details, refer to "5.11 Registering Admin LAN Subnets" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Install the DHCP Server following the procedure below:

1. Add DHCP Server to the server roles.

Perform binding of the network connections for the NIC to use as the admin LAN.
For the details on adding and binding, refer to the Windows documentation.
2. Open [Services] from [Administrative Tools] on the Windows Control Panel, and then configure the startup type of DHCP Server service as [Manual] on the [Services] window.
3. From the [Services] window, stop the DHCP Server service.

When an admin server is a member of a domain, perform step 4.

4. Authorize DHCP servers.

- a. Open [DHCP] from [Administrative Tools] on the Windows Control Panel, and select [Action]-[Managed authorized servers] on the [DHCP] window.

The [Manage Authorized Servers] window will be displayed.

- b. Click the [Authorize] button.

The [Authorize DHCP Server] window will be displayed.

- c. Enter the admin IP address of the admin server in [Name or IP address].

- d. Click the [OK] button.

The [Confirm Authorization] window will be displayed.

- e. Check the [Name] and [IP Address].

- f. Click the [OK] button.

The server will be displayed in the [Authorized DHCP servers] of the [Manage Authorized Servers] window.

- ETERNUS SF Storage Cruiser

When using ESC, configure the Fibre Channel switch settings in advance.

Required Patch Checks

Before installing Resource Orchestrator, check that the required patches for the manager listed in "6.1.2.2 Required Patches" in the "Overview" have been applied.

If they have not been applied, apply them before continuing.

User Account Checks

This product automatically creates the user accounts listed below - if an application is using these OS user accounts, ensure there is no impact on the application before deleting them:

- rcxdb (for connecting to the database)
- rcxctdbbpm (for starting up database services for process management)
- rcxctdbchg (for starting up database services for metering)
- rcxctdbdsb (for starting up database services for the dashboard (pool status))

Single Sign-On Preparation and Checks (when used)

Before installing Resource Orchestrator, install ServerView Operations Manager.

Configure the directory service at that time.

It is also necessary to prepare certificates and perform registration of an administrator (privileged user) with the directory service.

For details, refer to "Chapter 12 Configuring Single Sign-On" in the "Design Guide CE".

Language Settings

As Resource Orchestrator installs programs that correspond to the supported language, language settings (locale) cannot be changed after installation.

Therefore, set the language (locale) to Japanese or English according to your operational requirements.

The example of language settings (locale) confirmation methods is given below:



Example

From the Control Panel, open [Date, Time, Language, and Regional Options] and select [Regional and Language Options].

2.1.1.3 Collecting and Checking Required Information

Before installing Resource Orchestrator, collect required information and check the system status, then determine the information to be specified on the installation window. The information that needs to be prepared is given below.

- Installation Folder

Decide the installation folder for Resource Orchestrator.

Note that folders on removable disks cannot be specified.

Check that there are no files or folders in the installation folder.

Check that the necessary disk space can be secured on the drive for installation.

For the amount of disk space necessary for Resource Orchestrator, refer to "6.1.2.6 Static Disk Space" and "6.1.2.7 Dynamic Disk Space" in the "Overview".

- Image File Storage Folder

The image file storage folder is located in the installation folder.

Check that sufficient disk space can be secured on the drive where the storage folder will be created.

For the necessary disk space, refer to "6.1.2.7 Dynamic Disk Space" in the "Overview".

For details of how to change the image file storage folder, refer to "5.9 rcxadm imagemgr" in the "Reference Guide (Command/XML) CE".

- Port number

For details on port numbers, refer to "[2.1.1.4 Checking Used Port Numbers](#)".

- Directory Service Connection Information for Single Sign-On of ServerView Operations Manager

Confirm that the directory service used for Single Sign-On of ServerView Operations Manager is correctly configured.

This can be performed using either of the following procedures:

- Log in to ServerView Operations Manager.

Refer to the following manuals:

- Manual for ServerView Operations Manager:

"ServerView user management via an LDAP directory service" in "FUJITSU ServerView Suite User Management in ServerView"

- Manual for ServerView Operations Manager:

"Starting ServerView Operations Manager" in "FUJITSU Software ServerView Suite ServerView Operations Manager" (User's guide)

- Perform modification installation of ServerView Operations Manager.

When performing modification installation, the settings of directory service can be checked.

Refer to the following manuals:

- Manual for ServerView Operations Manager:

"ServerView user management via an LDAP directory service" in "FUJITSU ServerView Suite User Management in ServerView"

- Manual for ServerView Operations Manager:

"Modify installation of Operations Manager software" in "FUJITSU Software ServerView Suite ServerView Operations Manager Installing ServerView Operations Manager Software under Windows"

If the settings of the directory service for ServerView Operations Manager are correct, exit the modification installation without making any changes.

If there are errors in the settings of the directory service for ServerView Operations, perform modification installation of ServerView Operations Manager to correct the errors.

Parameters Used for Installation

The following table contains the parameters used for installation.

No.	Window	Entry	Description
1	Installation Folder Selection	Installation Folder	<p>This is the folder where Resource Orchestrator is installed.</p> <p>Default value: <i>System_drive</i>\Program Files (x86)\Resource Orchestrator</p> <p>The installation folder can contain 45 characters or less including the drive letter and "\".</p> <p>A path starting with "\\\" or a relative path cannot be specified.</p> <p>Alphanumeric characters, blank spaces (" "), and parentheses ("()") can be used.</p> <p>The following folder cannot be specified for the installation folder.</p> <ul style="list-style-type: none"> - <i>System_drive</i>\ - <i>System_drive</i>\Program Files(x86) <p>The following folder and its subfolders cannot be specified for the installation folder.</p> <ul style="list-style-type: none"> - <i>System_drive</i>\Windows - <i>System_drive</i>\Program Files <p>Specify an NTFS disk.</p>
2	Admin LAN Selection	Network to use for the admin LAN	<p>This is the network to be used as the admin LAN. Select it from the list.</p> <p>The maximum value for the subnet mask is 255.255.255.255 (32-bit mask).</p> <p>The minimum value is 255.255.0.0 (16-bit mask). However, 255.255.255.254 cannot be specified.</p>
3	Authentication Method Selection	Authentication Method	<p>Select one of the following options.</p> <ul style="list-style-type: none"> - Internal Authentication - ServerView Single sign-on (SSO)
4	Administrative User Creation (When [Internal Authentication] is selected)	User Account	<p>This is the user account name to be used for logging into Resource Orchestrator as an administrative user.</p> <p>The name must start with an alphanumeric character and can be up to 16 alphanumeric characters long, including underscores ("_"), hyphens ("-"), and periods ("."). Input is case-sensitive.</p>
		Password	The password of the administrative user.
		Retype password	<p>The string must be composed of alphanumeric characters and the following symbols (excluding blank spaces), and can be 8 - 16 characters long.</p> <p>"! ", """, "%", "&", ",", "<", ">", "^", " "</p> <p>If any of the above symbols are specified, change the password of the privileged user after setup is complete.</p>
Administrative User Settings (When [ServerView	User Account	This is the user account name to be used for logging into Resource Orchestrator as an administrative user.	

No.	Window	Entry	Description
	Single sign-on (SSO) is selected)		<p>Specify the user registered in the directory service in "Single Sign-On Preparation and Checks (when used)" in "2.1.1.2 Software Preparation and Checks".</p> <p>When using the directory service provided with ServerView Operations Manager, specifying "administrator", which is the administrator account of ServerView Operations Manager, enables Single Sign-On coordination with ServerView Operations Manager.</p> <p>The name must start with an alphanumeric character and can be up to 16 alphanumeric characters long, including underscores ("_"), hyphens ("-"), and periods, ("."). Input is case-sensitive.</p>
5	Language Settings	Language	<p>Select one of the following options.</p> <ul style="list-style-type: none"> - English - Chinese <p>For details, refer to "Appendix K Displaying the ROR Console in Chinese".</p>

2.1.1.4 Checking Used Port Numbers

Ports Automatically Set in the services File of the System

When Resource Orchestrator is installed, the following port numbers used by it will automatically be set in the services file of the system.

If the following port numbers used by Resource Orchestrator are being used for other applications, a message indicating that the numbers are in use is displayed when the installer is started, and installation will stop.

In that case, describe the entries for the following port numbers used by Resource Orchestrator in the services file using numbers not used by other software, and then start the installer.

Ports Automatically Set in the services File of the System

# service name	port number/protocol name
RCXCTDSB_sqcdcm_dbm	2511/tcp
RCXCTDSB_sqcdcm_fcmsys	2512/tcp
rcxctext	3500/tcp
rcxctext2	3501/tcp
rcxctdsb	3502/tcp
rcxctrestchg	3550/tcp
rcxctint	3551/tcp
rcxctdbchg	5441/tcp
rcxctdbdsb	5442/tcp
rcxcfvsys	8013/tcp
rcxcfapi	8014/tcp
rcxctacnt	8015/tcp
RCXCTDSB_CMDB_GUI	13200/tcp
RCXCTDSB_CMDB_MGR	13201/tcp
nfdomain	23457/tcp
nfagent	23458/tcp
rcxmgr	23460/tcp
rcxweb	23461/tcp
rcxtask	23462/tcp
rcxmongrel1	23463/tcp
rcxmongrel2	23464/tcp
rcxdb	23465/tcp
rcxmongrel3	23466/tcp
rcxmongrel4	23467/tcp
rcxmongrel5	23468/tcp
rcxjeedomainadmin	23851/tcp
rcxjeedomaininstance	23852/tcp

rcxjeedomainjmx	23853/tcp
rcxjeehttpssl	23854/tcp
rcxjeejms	23855/tcp
rcxjeeorblistener	23856/tcp
rcxjeeorbmutualauth	23857/tcp
rcxjeeorbssl	23858/tcp
rcxmessagebroker	23861/tcp
rcxbpmsvasadminlistener	23862/tcp
rcxbpmsvhttplistener	23863/tcp
rcxbpmsvhttpssllistener	23864/tcp
rcxbpmsviioplistener	23865/tcp
rcxbpmsviiopssllistener	23866/tcp
rcxbpmsviiopsslmutualauth	23867/tcp
rcxbpmsvjmxsystemconnector	23868/tcp
rcxbpmsvjavadebugger	23869/tcp
rcxbpmconasadminlistener	23870/tcp
rcxbpmconhttplistener	23871/tcp
rcxbpmconhttpssllistener	23872/tcp
rcxbpmconioplistener	23873/tcp
rcxbpmconiopssllistener	23874/tcp
rcxbpmconiopsslmutualauth	23875/tcp
rcxbpmconjmxsystemconnector	23876/tcp
rcxbpmconjavadebugger	23877/tcp
rcxbpmsvdb	23878/tcp
RCXCTDSB_EFServer	41320/tcp

Checking Port Usage Status

Execute the "Environment setup conditions check tool" in "[2.1.1.5 Configuration Parameter Checks](#)" to check the port usage status. For ports with "is in use" displayed for the result of "Port status", confirm that those ports are used with the purpose of usage for Resource Orchestrator defined in C:\Windows\System32\drivers\etc\services. When ports are being used for something other than Resource Orchestrator, change the ports to use. For the port information used by Resource Orchestrator, refer to "Appendix A Port List" in the "Design Guide CE".

Changing Port Numbers

To change port numbers after installing the manager, refer to the following:

- "6.2 Changing Port Numbers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE"
- "8.3 Settings for Port Number of Admin Servers" in the "Operation Guide CE"

ephemeral Port

When the range of ephemeral port numbers on Windows is changed, the ephemeral port and the port to use conflict. In that case, select a port number which is not included in the range of the ephemeral port numbers.

The range of ephemeral port numbers is as below.

- For Windows 2008 or later
49152 to 65535

2.1.1.5 Configuration Parameter Checks

Check configuration parameters following the procedure below:

1. Log in as the administrator.

2. Confirm that a single folder path is set for the TEMP environment variable.

Information

If the TEMP environment variable is not configured or if multiple folder paths are set for the TEMP environment variable, the Environment setup conditions check tool outputs the following message and cancels the process.

```
The check tool cannot be processed because the temporary folder %temp% cannot be accessed.
Please set the TEMP environment variable of current user correctly, then rerun the check tool.
press enter key to exit...
```

If the above message is output, set a single folder path for the TEMP environment variable, then execute the Environment setup conditions check tool again.

3. Start the installer.

The installer is automatically displayed when the first DVD-ROM is set in the DVD drive. If it is not displayed, execute "RcSetup.exe" to start the installer.

4. Select "Tool" on the window displayed, and then click [Environment setup conditions check tool]. Configuration parameter checking will start.

For the check items with the edition name displayed in the check results, check only the items corresponding to the edition to be installed.

5. When configuration parameter checking is completed, the check results will be saved in the following location.

%temp%\ror_precheckresult-YYYY-MM-DD-hhmmss.txt

The check results are output to Notepad at the same time.

The following items are displayed as the items to be checked:

- Required Software (LAN Manager module)
- Required Software (Windows PowerShell)
- Required Software (ETERNUS SF Storage Cruiser)
- Disk Space (Express/Virtual Edition)
- Disk Space (Cloud Edition)
- Memory Size (Express/Virtual Edition)
- Memory Size (Cloud Edition)
- cpu
- SNMP Service
- Port Status (Express/Virtual Edition)
- Port Status (Cloud Edition)

6. Confirm that "Warning" or "NG" is not included in the check results. If there are check items that were determined as "Warning" or "NG", resolve the cause of the problem based on the output message. For details of the corrective actions, refer to "[2.1.1.1 Preparations](#)" and "6.1 Software Environment" and "6.2 Hardware Environment" in the "Overview".

2.1.1.6 Installation

The procedure for manager installation is given below.

Before installation, check if "[2.1.1.1 Preparations](#)" have been performed.

Precautions for Installation

When a Remote Desktop Session Host server has been installed, execute the following command using the command prompt to place the Remote Desktop Session Host server into installation mode.

```
CHANGE USER /INSTALL
User session is ready to install applications.
```

Nullifying Firewall Settings for Ports to be used by Resource Orchestrator

When installing Resource Orchestrator on systems with active firewalls, in order to enable correct communication between the manager, agents, and clients, disable the firewall settings for the port numbers to be used for communication.

For the port numbers used by Resource Orchestrator and required software, refer to "Appendix A Port List" in the "Design Guide CE".

However, when port numbers have been changed by editing the services file during installation of Resource Orchestrator, replace the default port numbers listed in "Appendix A Port List" in the "Design Guide CE" with the port numbers changed to during installation.

Installation

The procedure for manager installation is given below.

1. Log on to the system as the administrator.

Log on to the system on which the manager is to be installed using the Administrator account of the local computer.

2. Set the first Resource Orchestrator DVD-ROM.

Then, the installer starts automatically.

Information

.....
If the installer does not start, execute "RcSetup.exe" from the DVD-ROM drive.
.....

3. Select [Cloud Edition].
4. Click [Manager installation].
5. Perform installation according to the installer's interactive instructions.

Enter the parameters designed and checked in "Parameters Used for Installation" in "2.1.1.3 Collecting and Checking Required Information".

6. When the wizard requests switching of the DVD-ROM, insert the second DVD-ROM to continue the installation.

Note

-
- In the event of installation failure, restart and then log in as the user that performed the installation, and perform uninstallation following the uninstallation procedure.
After that, remove the cause of the failure referring to the meaning of the output message and the suggested corrective actions, and then perform installation again.
 - If there are internal inconsistencies detected during installation, the messages "The problem occurred while installing it" or "Native Installer Failure" will be displayed and installation will fail. In this case, uninstall the manager and reinstall it. If the problem persists, please contact Fujitsu technical staff.
 - For uninstallation of managers, refer to "[11.1.2 Uninstallation \[Windows Manager\]](#)".
 - If rolling back to the previous status before an installation failure has not finished, the message "System has some on incomplete install information. Please delete before this installation" will be displayed and installation will fail. Uninstall the manager and reinstall it. For uninstallation of managers, refer to "[11.1.2 Uninstallation \[Windows Manager\]](#)". If the problem persists even if reinstallation is performed, please collect troubleshooting information and contact Fujitsu technical staff.
-

Post-installation Cautions

- When a Remote Desktop Session Host server has been installed, execute the following command using the command prompt to place the Remote Desktop Session Host server into execution mode.

```
CHANGE USER /EXECUTE
User session is ready to execute applications.
```

- The following users are added. When installing Resource Orchestrator, do not delete these accounts.

Account Name	Usage
rcxdb	rcxdb is used as the OS account for connecting to the database service of Resource Orchestrator.
rcxctdbbpm	rcxctdbbpm is used as the OS account for starting the database service for process management.
rcxctdbchg	rcxctdbchg is used as the OS account for starting the database service for metering.
rcxctdbdsb	rcxctdbdsb is used as an OS account to start the database service for dashboards.

2.1.2 Manager Installation [Linux Manager]

This section explains installation of Linux managers.

2.1.2.1 Preparations

This section explains the preparations and checks required before commencing installation.

- [Host Name Checks](#)
- [System Time Checks](#)
- [Exclusive Software Checks](#)
- [Required Software Preparation and Checks](#)
- [Required Patch Checks](#)
- [Required Package Checks](#)
- [Collecting and Checking Required Information](#)
- [Checking Used Port Numbers](#)
- [Configuration Parameter Checks](#)
- [Post-uninstallation Procedure](#)

Before installing Resource Orchestrator in an environment from which Resource Orchestrator has been deleted, perform the post-uninstallation procedure.

Refer to "[11.1.4 Post-uninstallation Procedure](#)".

2.1.2.2 Software Preparation and Checks

Software preparation and checks are explained in the following sections.

This section explains the preparations and checks required before commencing the installation of Resource Orchestrator.

Host Name Checks

It is necessary to set the host name (FQDN) for the admin server to operate normally. Describe the host name in the hosts file, using 256 characters or less. In the hosts file, for the IP address of the admin server, configure the host name (FQDN) and then the computer name.

hosts File

```
/etc/hosts
```

Note

When configuring the hosts file, note the following.

- Do not set the host name (FQDN) and the computer name to "127.0.0.1".
- Confirm that "127.0.0.1" (IPv4 format) is set to "localhost".
Note that IPv6 format must not be set.

Example

When configuring the admin server with the IP address "10.10.10.10", the host name (FQDN) "remote1.example.com", and the computer name "remote1"

```
10.10.10.10 remote1.example.com remote1
127.0.0.1 localhost.localdomain localhost
```

For the admin client, either configure the hosts file so access to the admin server is possible using the host name (FQDN), or name resolution using a DNS server.

This configuration is necessary when Single Sign-On is configured.

System Time Checks

Set the same system time for the admin server and managed servers.

If the system time differs, correct values will not be displayed in the [System Condition] tab on the ROR console.

Exclusive Software Checks

Uninstall exclusive software before installing Resource Orchestrator.

For details of exclusive software, refer to "6.1.2.5 Exclusive Software" in "Overview".

Note

- When uninstalling exclusive software, there are cases where other system operation administrators might have installed the software, so check that deleting the software causes no problems before actually doing so.

Required Software Preparation and Checks

Before installing Resource Orchestrator, perform the following operations.

In addition, check that the required software, such as ServerView Operations Manager, given in "6.1.2.4 Required Software" in the "Overview" has been installed. If it has not been installed, install it before continuing.

When installing Resource Orchestrator to an environment that already has ServerView Deployment Manager installed, it is not necessary to obtain the Microsoft LAN Manager module.

- Microsoft LAN Manager Module

Before installing Resource Orchestrator, obtain the Microsoft LAN Manager module from the following FTP site.

The Microsoft LAN Manager module can be used regardless of the CPU architecture type (x86, x64).

```
URL: ftp://ftp.microsoft.com/bussys/clients/msclient/dsk3-1.exe
```

The obtained module must be extracted using the Expand command on a computer with x86 CPU Windows architecture. For details on how to extract the module, refer to the following examples:

Example

When dsk3-1.exe was deployed on c:\temp

```
>cd /d c:\temp <RETURN>
>dsk3-1.exe <RETURN>
>Expand c:\temp\protman.do_ /r <RETURN>
>Expand c:\temp\protman.ex_ /r <RETURN>
```

Use the Windows 8.3 format (*) for the folder name or the file name.

After manager installation is complete, the extracted Microsoft LAN Manager module is no longer necessary.

* Note: File names are limited to 8 characters and extensions are limited to 3 characters.

After extracting the following modules, deploy them to /tmp on the system for installation.

- PROTMAN.DOS
- PROTMAN.EXE
- NETBIND.COM

- **ServerView Operations Manager Settings**

In order to open the console screen of the managed server, register the account of the Remote Management Controller with the ServerView Operations Manager.

For the setting method, refer to the ServerView Operations Manager manual.

- **Settings for SNMP Trap Daemon**

In order for Resource Orchestrator to operate correctly, ensure that the following settings are made for the "/etc/snmp/snmptrapd.conf" file, when installing the net-snmp package. When there is no file, add the following setting after creating the file.

```
disableAuthorization yes
```

It is also necessary to enable the automatic startup setting for the snmptrapd daemon.

- **DHCP server installation**

Installation of the Linux standard DHCP server is necessary when managed servers belonging to different subnets from the admin server are to be managed.

Depending on the functions used, it may be necessary to configure the router settings. For details, refer to "9.2.4.2 Admin LAN Settings" in the "Design Guide CE".

When registering managed servers that belong to a different subnet from the admin server, they must be registered on the admin LAN subnet in advance.

For details, refer to "5.11 Registering Admin LAN Subnets" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Install the DHCP server following the procedure below:

1. Install the dhcp package.
2. Execute the following command to modify the setting so the DHCP server service (dhcpd) is not automatically started.

```
# chkconfig dhcpd off <RETURN>
```

3. Execute the following command to stop the DHCP server service (dhcpd):

```
# /etc/init.d/dhcpd stop <RETURN>
```

- **ETERNUS SF Storage Cruiser**

When using ESC, configure the Fibre Channel switch settings in advance.

Required Patch Checks

Before installing Resource Orchestrator, check that the required patches for the manager listed in "6.1.2.2 Required Patches" in the "Overview" have been applied.

If they have not been applied, apply them before continuing.

Required Package Checks

Before installing Resource Orchestrator, check that the required packages for the manager [Linux manager] listed in "6.1.2.3 Required Packages" in the "Overview" have been applied.

If they have not been installed, install them before continuing.

User Account Checks

This product automatically creates the user accounts listed below - if an application is using these OS user accounts, ensure there is no impact on the application before deleting them:

- rcxdb (for connecting to the database)
- rcxctdbbpm (for starting up database services for process management)
- rcxctdbchg (for starting up database services for metering)
- rcxctdbdsb (for starting up database services for the dashboard (pool status))

Single Sign-On Preparation and Checks (when used)

Before installing Resource Orchestrator, install ServerView Operations Manager.

Configure the directory service at that time.

It is also necessary to prepare certificates and perform registration of an administrator (privileged user) with the directory service.

For details, refer to "Chapter 12 Configuring Single Sign-On" in the "Design Guide CE".

Language Settings

As Resource Orchestrator installs programs that correspond to the supported language, language settings (locale) cannot be changed after installation.

Therefore, set the language (locale) to Japanese or English according to your operational requirements.

The example of language settings (locale) confirmation methods is given below:



Example

.....
From the desktop screen, select [System]-[Administration]-[Language].
.....

Tuning System Parameters (Admin Server) [Linux Manager]

Before installation, it is necessary to tune up system parameters for the admin server. See the table below for the system parameters that need to be tuned and their values.



Set the values according to the "type" of each parameter as follows:

- **When the type is "setup value"**

Modification is not necessary if already set value (default or previous value) is equal to or larger than the value in the table. If it is smaller than the value in the table, change the value to the one in the table.

- **When the type is "additional value"**

Add the value in the table to already set value. Before adding the value, check the upper limit for the system, and set either the resulting value or the upper limit for the system, whichever is smaller.

For details, refer to the Linux manual.

- Shared Memory

Parameter	Description	Value	Type
shmmax	Maximum Segment Size of Shared Memory	2684354560	Setup value
shmall	Total amount of shared memory available for use	655360	Setup value
shmmni	Maximum number of shared memory segments	113	Additional value

- Semaphores

To configure semaphores, specify the value for each parameter in the following format:

```
kernel.sem = para1 para2 para3 para4
```

Parameter	Description	Value	Type
para1	Maximum number of semaphores for each semaphore identifier	512	Setup value
para2	Total number of semaphores in the system	14862	Additional value
para3	Maximum number of operators for each semaphore call	50	Setup value
para4	Total number of semaphore operators in the system	2208	Additional value

- Message Queue

Parameter	Description	Value	Type
msgmax	Maximum size of a message	16384	Setup value
msgmnb	Maximum size of the messages that can be retained in a single message queue	114432	Setup value
msgmni	Maximum number of message queue IDs	1578	Additional value

[Tuning Procedure]

Use the following procedure to perform tuning:

1. Use the following command to check the values of the corresponding parameters currently configured for the system.

```
# /sbin/sysctl -a
```



Example

```
# /sbin/sysctl -a
...
(omitted)
...

kernel.sem = 250 32000 32 128
kernel.msgmnb = 65536
kernel.msgmni = 16
kernel.msgmax = 65536
kernel.shmmni = 4096
kernel.shmall = 4294967296
kernel.shmmax = 68719476736

...
(omitted)
...
```

2. For each parameter, compare the current value to that in the above table, and then calculate the appropriate value, based on its value type (setup or additional value).
3. Edit /etc/sysctl.conf. Edit the content as in the following example:



Example

```
kernel.sem = 512 13325 50 1358
kernel.msgmnb = 114432
kernel.msgmni = 1041
kernel.shmmni = 4154
```

4. Confirm that edited content is reflected in /etc/sysctl.conf, using the following command:

```
# /bin/cat /etc/sysctl.conf
```

5. Enable the configuration on 4. using one of the following methods:

- Reboot the system to reflect the settings

```
# /sbin/shutdown -r now
```

- Use /sbin/sysctl -p to reflect the settings

```
# /sbin/sysctl -p /etc/sysctl.conf (*)
```

* Note: When using this command, reboot is not necessary.

6. Confirm that configured parameters are reflected, using the following command:

```
# /sbin/sysctl -a
```

Example

```
# /sbin/sysctl -a
...
(omitted)
...

kernel.sem = 512 13325 50 1358
kernel.msgmnb = 114432
kernel.msgmni = 1041
kernel.msgmax = 65536
kernel.shmni = 4154
kernel.shmall = 4294967296
kernel.shmmax = 68719476736

...
(omitted)
...
```

2.1.2.3 Collecting and Checking Required Information

Before installing Resource Orchestrator, collect required information and check the system status, then determine the information to be specified on the installation window. The information that needs to be prepared is given below.

- Installation Folder

The installation directory of Resource Orchestrator is as below. It cannot be changed.

- /opt
- /etc/opt
- /var/opt

Check that the necessary disk space can be secured on the drive for installation.

For the amount of disk space necessary for Resource Orchestrator, refer to "6.1.2.6 Static Disk Space" and "6.1.2.7 Dynamic Disk Space" in the "Overview".

- Image File Storage Folder

The image file storage folder is located in the installation folder.

Check that sufficient disk space can be secured on the drive where the storage folder will be created.

For the necessary disk space, refer to "6.1.2.7 Dynamic Disk Space" in the "Overview".

For details of how to change the image file storage folder, refer to "5.9 rcxadm imagemgr" in the "Reference Guide (Command/XML) CE".

- Port number

For details on port numbers, refer to "[2.1.2.4 Checking Used Port Numbers](#)".

- Directory Service Connection Information for Single Sign-On of ServerView Operations Manager

Confirm that the directory service used for Single Sign-On of ServerView Operations Manager is correctly configured.

This can be performed using either of the following procedures:

- Log in to ServerView Operations Manager.

Refer to the following manuals:

- Manual for ServerView Operations Manager:

"ServerView user management via an LDAP directory service" in "FUJITSU ServerView Suite User Management in ServerView"

- Manual for ServerView Operations Manager:

"Starting ServerView Operations Manager" in "FUJITSU Software ServerView Suite ServerView Operations Manager" (User's guide)

- Perform modification installation of ServerView Operations Manager.

When performing modification installation, the settings of directory service can be checked.

Refer to the following manuals:

- Manual for ServerView Operations Manager:

"ServerView user management via an LDAP directory service" in "FUJITSU ServerView Suite User Management in ServerView"

- Manual for ServerView Operations Manager:

"Installing the Operations Manager software" in "FUJITSU Software ServerView Suite ServerView Operations Manager Installation ServerView Operations Manager Software under Linux"

If the settings of the directory service for ServerView Operations Manager are correct, exit the modification installation without making any changes.

If there are errors in the settings of the directory service for ServerView Operations, perform modification installation of ServerView Operations Manager to correct the errors.

Parameters Used for Installation

The following table contains the parameters used for installation.

No.	Window	Entry	Description
1	Admin LAN Selection	Network to use for the admin LAN	This is the network to be used as the admin LAN. Select it from the list. The maximum value for the subnet mask is 255.255.255.255 (32-bit mask). The minimum value is 255.255.0.0 (16-bit mask). However, 255.255.255.254 cannot be specified.
2	Authentication Method Selection	Authentication Method	Select one of the following options. - Internal Authentication - ServerView Single sign-on (SSO)
3	Administrative User Creation (When [Internal Authentication] is selected)	User Account	This is the user account name to be used for logging into Resource Orchestrator as an administrative user. The name must start with an alphanumeric character and can be up to 16 alphanumeric characters long, including underscores (" _"), hyphens ("-"), and periods, ("."). Input is case-sensitive.
		Password	The password of the administrative user.
	Retype password	The string must be composed of alphanumeric characters and the following symbols (excluding blank spaces), and can be 8 - 16 characters long. "!", "\$", "%", "&", "(", ")", "~" If any of the above symbols are specified, change the password of the privileged user after setup is complete.	
Administrative User Settings (When [ServerView Single sign-on (SSO)] is selected)	User Account	This is the user account name to be used for logging into Resource Orchestrator as an administrative user. Specify the user registered in the directory service in " Single Sign-On Preparation and Checks (when used) " in " 2.1.2.2 Software Preparation and Checks ".	

No.	Window	Entry	Description
			<p>When using the directory service provided with ServerView Operations Manager, specifying "administrator", which is the administrator account of ServerView Operations Manager, enables Single Sign-On coordination with ServerView Operations Manager.</p> <p>The name must start with an alphanumeric character and can be up to 16 alphanumeric characters long, including underscores ("_"), hyphens ("-"), and periods ("."). Input is case-sensitive.</p>
4	Language Settings	Language	<p>Select one of the following options.</p> <ul style="list-style-type: none"> - English - Chinese <p>For details, refer to "Appendix K Displaying the ROR Console in Chinese".</p>

2.1.2.4 Checking Used Port Numbers

Ports Automatically Set in the services File of the System

When Resource Orchestrator is installed, the port numbers used by it will automatically be set in the services file of the system.

If the port numbers used by Resource Orchestrator are being used for other applications, a message indicating that the numbers are in use is displayed when the installer is started, and installation will stop.

In that case, describe the entries for the following port numbers used by Resource Orchestrator in the services file using numbers not used by other software, and then start the installer.

Ports Automatically Set in the services File of the System

# service name	port number/protocol name
FJSVctdsb-sqcdcm-dbm	2511/tcp
FJSVctdsb-sqcdcm-fcmsys	2512/tcp
rcxctext	3500/tcp
rcxctext2	3501/tcp
rcxctdsb	3502/tcp
rcxctrestchg	3550/tcp
rcxctint	3551/tcp
rcxctdbchg	5441/tcp
rcxctdbdsb	5442/tcp
rcxcfvsys	8013/tcp
rcxcfapi	8014/tcp
rcxctacnt	8015/tcp
FJSVctdsbCMDBgui	13200/tcp
FJSVctdsbCMDBmgr	13201/tcp
nfdomain	23455/tcp
nfagent	23458/tcp
rcxmgr	23460/tcp
rcxweb	23461/tcp
rcxtask	23462/tcp
rcxmongrel1	23463/tcp
rcxmongrel2	23464/tcp
rcxdb	23465/tcp
rcxmongrel3	23466/tcp
rcxmongrel4	23467/tcp
rcxmongrel5	23468/tcp
rcxjeedomainadmin	23851/tcp
rcxjeedomaininstance	23852/tcp
rcxjeedomainjmx	23853/tcp
rcxjeehttpssl	23854/tcp
rcxjeejms	23855/tcp
rcxjeeorblistener	23856/tcp

rcxjeeorbmutualauth	23857/tcp
rcxjeeorbssl	23858/tcp
rcxmessagebroker	23861/tcp
rcxbpmsvasadminlistener	23862/tcp
rcxbpmsvhttplistener	23863/tcp
rcxbpmsvhttpssllistener	23864/tcp
rcxbpmsviioplistener	23865/tcp
rcxbpmsviiopssllistener	23866/tcp
rcxbpmsviiopsslmutualauth	23867/tcp
rcxbpmsvjmxsystemconnector	23868/tcp
rcxbpmsvjavadebugger	23869/tcp
rcxbpmconasadminlistener	23870/tcp
rcxbpmconhttplistener	23871/tcp
rcxbpmconhttpssllistener	23872/tcp
rcxbpmconioplistener	23873/tcp
rcxbpmconiopssllistener	23874/tcp
rcxbpmconiopsslmutualauth	23875/tcp
rcxbpmconjmxsystemconnector	23876/tcp
rcxbpmconjavadebugger	23877/tcp
rcxbpmsvdb	23878/tcp
FJSVctdsbEFServer	61320/tcp

Checking Port Usage Status

Execute the "Environment setup conditions check tool" in ["2.1.2.5 Configuration Parameter Checks"](#) to check the port usage status. For ports with "is in use" displayed for the result of "Port status", confirm that those ports are used with the purpose of usage for Resource Orchestrator defined in /etc/services.

When ports are being used for something other than Resource Orchestrator, change the ports to use.

For the port information used by Resource Orchestrator, refer to "Appendix A Port List" in the "Design Guide CE".

Changing Port Numbers

To change port numbers after installing the manager, refer to the following:

- "6.2 Changing Port Numbers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE"
- "8.3 Settings for Port Number of Admin Servers" in the "Operation Guide CE"

2.1.2.5 Configuration Parameter Checks

Check configuration parameters following the procedure below:

1. Log in to the system as the OS administrator (root).

Boot the admin server in multi-user mode to check that the server meets requirements for installation, and then log in to the system using root.

2. Set the first Resource Orchestrator DVD-ROM.

3. Execute the following command to mount the DVD-ROM. If the auto-mounting daemon (autofs) is used for starting the mounted DVD-ROM, the installer will fail to start due to its "noexec" mount option.

```
# mount -t iso9660 -r /dev/hdc DVD-ROM_mount_point <RETURN>
```

4. Execute the following installation command:

```
# DVD-ROM_mount_point/RcSetup.sh <RETURN>
```

5. Select "Environment setup conditions check tool" from the menu to execute the tool.

For the check items with the edition name displayed in the check results, check only the items corresponding to the edition to be installed.

6. When the check is completed, the result will be sent to standard output.

The following items are displayed as the items to be checked:

- Required Software (LAN Manager module)
- Required Software (ETERNUS SF Storage Cruiser)
- Disk Space (Express/Virtual Edition)
- Disk Space (Cloud Edition)
- Memory Size (Express/Virtual Edition)
- Memory Size (Cloud Edition)
- cpu
- SNMP Service
- Port Status (Express/Virtual Edition)
- Port Status (Cloud Edition)

7. Confirm that "Warning" or "NG" is not included in the check results. If there are check items that were determined as "Warning" or "NG", resolve the cause of the problem based on the output message. For details of the corrective actions, refer to ["2.1.2.1 Preparations"](#) and "6.1 Software Environment" and "6.2 Hardware Environment" in the "Overview".

2.1.2.6 Installation

The procedure for manager installation is given below.

Before installation, check if ["2.1.2.1 Preparations"](#) have been performed.

Settings in Single User Mode

In single user mode, X Window System does not start, and one of the following operations is required.

- Switching virtual consoles (using the [Ctrl] + [Alt] + [Fn] keys)
- Making commands run in the background

Nullifying Firewall Settings for Ports to be used by Resource Orchestrator

When installing Resource Orchestrator on systems with active firewalls, in order to enable correct communication between the manager, agents, and clients, disable the firewall settings for the port numbers to be used for communication.

For the port numbers used by Resource Orchestrator and required software, refer to "Appendix A Port List" in the "Design Guide CE".

However, when port numbers have been changed by editing the services file during installation of Resource Orchestrator, replace the default port numbers listed in "Appendix A Port List" in the "Design Guide CE" with the port numbers changed to during installation.

Installation

The procedure for manager installation is given below.

1. Log in to the system as the OS administrator (root).

Boot the admin server that the manager is to be installed on in multi-user mode, and then log in to the system using root.

2. Set the first Resource Orchestrator DVD-ROM.

3. Execute the following command to mount the DVD-ROM.

```
# mount -t iso9660 -r /dev/hdc DVD-ROM_mount_point <RETURN>
```

Note

- If the auto-mounting daemon (autofs) is used for DVD-ROM auto-mounting, the installer fails to start due to its "noexec" mount option.
- Set the same value for the first and second DVD-ROMs in the DVD mount point.

4. Execute the following installation command:

Do not set the current directory to the DVD-ROM to allow disk switching.

```
# DVD-ROM_mount_point/RcSetup.sh <RETURN>
```

5. Select "Cloud Edition".
6. Select "Manager installation".
7. Perform installation according to the installer's interactive instructions.
Enter the parameters designed and checked in "Parameters Used for Installation" in "2.1.2.3 Collecting and Checking Required Information".
8. A message for disk switching will be output.
9. Start a different terminal (such as a GNOME terminal), and then eject the DVD-ROM using the following command.

```
# eject DVD-ROM_mount_point <RETURN>
```

10. Set the second DVD-ROM and wait for the completion of auto-mounting.
11. Mount the DVD-ROM again.

```
# umount DVD-ROM_mount_point <RETURN>
# mount -t iso9660 -r /dev/hdc DVD-ROM_mount_point <RETURN>
```

12. Press the [Enter] key to continue the installation.
13. Settings when SELinux is Used

When enabling SELinux, it is necessary to perform configuration of SELinux after installing Resource Orchestrator.
For details on configuration, refer to "J.1.1 Manager".

Note

- Corrective Action for Installation Failure
In the event of installation failure, restart the OS and then log in as the user that performed the installation, and perform uninstallation following the uninstallation procedure.
After that, remove the cause of the failure referring to the meaning of the output message and the suggested corrective actions, and then perform installation again.
- If there are internal inconsistencies detected during installation, the messages "The problem occurred while installing it" or "It failed in the installation" will be displayed and installation will fail. In this case, uninstall the manager and reinstall it. If the problem persists, please contact Fujitsu technical staff.
- If installation stopped before the process was complete, perform the following corrective actions.
 1. Forcibly stop the installation.

2. Perform uninstallation.

Refer to "[11.1 Manager Uninstallation](#)".

Execute the post-uninstallation procedure.

3. Perform installation again.

Post-installation Cautions

- The following users are added. When installing Resource Orchestrator, do not delete these accounts.

Account Name	Usage
rcxdb	rcxdb is used as the OS account for connecting to the database service of Resource Orchestrator.
rcxctdbbpm	rcxctdbbpm is used as the OS account for starting the database service for process management.
rcxctdbchg	rcxctdbchg is used as the OS account for starting the database service for metering.
rcxctdbdsb	rcxctdbdsb is used as an OS account to start the database service for dashboards.

2.2 Agent Installation

This section explains the procedure for physical L-Server or VM host agent installation.

The relationships of installation directories and the agents that must be installed are as follows.

Table 2.1 Relationships of Installation Directories and the Agents that must be Installed

Installation Directories		Agent
VM Host	VMware	Yes (*1)
	Hyper-V	Yes
	RHEL5-Xen	Yes
	OVM for x86 2.2	-
	KVM	Yes
	Solaris Zones	Yes
	OVM for SPARC	Yes (*2)
	OVM for x86 3.x	-
	Citrix XenServer	-
Physical L-Server	Windows	Yes
	Linux	Yes
	Solaris	Yes

Yes: Installation is required.

- : Installation is not required.

*1: When using VMware ESXi, there is no need to install Resource Orchestrator agents on managed servers because VMs and guest OSs are managed directly from the admin server.

Install ServerView ESXi CIM Provider.

Like with other OSs, agents must be registered.

*2: When a guest domain on OVM for SPARC is registered as a VM host, it is necessary to install agent in that guest domain.

2.2.1 Preparations

This section explains the preparations and checks required before commencing installation.

- Exclusive Software Checks
Refer to "[Exclusive Software Checks](#)".
- Required Software Checks
Refer to "[Required Software Preparation and Checks](#)".
- Required Patch Checks
Refer to "[Required Patch Checks](#)".
- Required Package Checks
Refer to "[Required Package Checks \[Linux\]](#)".

2.2.1.1 Software Preparation and Checks

Software preparation and checks are explained in the following sections.

Exclusive Software Checks

Uninstall exclusive software before installing Resource Orchestrator.

For details of exclusive software, refer to "6.1.2.5 Exclusive Software" in "Overview".



- When uninstalling exclusive software, there are cases where other system operation administrators might have installed the software, so check that deleting the software causes no problems before actually doing so.

Required Software Preparation and Checks

Before installing Resource Orchestrator, check that the required software given in "6.1.2.4 Required Software" in the "Overview" has been installed. If it has not been installed, install it before continuing.



- ServerView Agents Settings
To operate Resource Orchestrator correctly on PRIMERGY or PRIMEQUEST series servers, perform the necessary settings for SNMP services during installation of ServerView Agents, and start ServerView Agents.
For how to perform SNMP service settings, refer to the ServerView Agents manual.
 - For the SNMP community name, specify the same value as the SNMP community name set for the management blade.
 - For the SNMP community name, set Read (reference) or Write (reference and updating) authority.
 - For the host that receives SNMP packets, select [Accept SNMP packets from any host] or [Accept SNMP packets from these hosts] and set the admin LAN IP address of the admin server.
 - For the SNMP trap target, set the IP address of the admin server.
When an admin server with multiple NICs is set as the SNMP trap target, specify the IP address of the admin LAN used for communication with the managed server.

- The "setupcl.exe" and "sysprep.exe" Modules

For Windows OSs other than Windows Server 2008 and Windows Server 2012, it is necessary to specify storage locations for the "setupcl.exe" and "sysprep.exe" modules during installation. Obtain the newest modules before starting installation of Resource Orchestrator.

For the method of obtaining the modules, refer to "6.1.2.4 Required Software" in the "Overview".

Extract the obtained module using the following method:

Example

When WindowsServer2003-KB926028-v2-x86-JPN.exe has been placed in c:\temp

```
>cd /d c:\temp <RETURN>
>WindowsServer2003-KB926028-v2-x86-JPN.exe /x <RETURN>
```

During installation, specify the cabinet file "deploy.cab" in the extracted folder, or the "setupcl.exe" and "sysprep.exe" modules contained in "deploy.cab".

After agent installation is complete, the extracted module is no longer necessary.

Required Patch Checks

Before installing Resource Orchestrator, check that the required patches for the agent listed in "6.1.2.2 Required Patches" in the "Overview" have been applied.

If they have not been applied, apply them before continuing.

Required Package Checks [Linux]

Before installing Resource Orchestrator, check that the required packages for the agent [Linux] listed in "6.1.2.3 Required Packages" in the "Overview" have been applied.

If they have not been installed, install them before continuing.

Check the Network Interface Definition File

This configuration is necessary in the following case.

- Red Hat Enterprise Linux 6
- SUSE Linux Enterprise Server

When using the following functions, check the definition files of network interfaces and perform configuration before installing Resource Orchestrator.

- Server Switchover
- Cloning

When using Red Hat Enterprise Linux 6

Use the following procedure to modify the configuration file:

1. Execute the following command.

```
# systool -c net <RETURN>
```

Example

```
# systool -c net <RETURN>
Class = "net"
Class Device = "eth0"
Device =
"0000:01:00.0"
Class Device = "eth1"
Device =
"0000:01:00.1"
Class Device = "eth2"
Device =
"0000:02:00.0"
Class Device = "eth3"
Device =
"0000:02:00.1"
Class Device = "lo"
Class Device = "sit0"
```

2. Confirm the device name which is displayed after "Class Device =" and the PCI bus number which is displayed after "Device =" in the command output results.
3. Correct the configuration file.

After confirming support for device name and MAC address in the following configuration file, change ATTR{address}=="MAC_address" to KERNELS=="PCI_bus_number".

All corresponding lines should be corrected.

Configuration File Storage Location

/etc/udev/rules.d/70-persistent-net.rules

Example

- Before changing

```
SUBSYSTEM=="net", ACTION=="add", DRIVERS=="?*",
ATTR{address}=="MAC_address", ATTR{type}=="1", KERNEL=="eth*",
NAME="Device_name"
```

- After changing

```
SUBSYSTEM=="net", ACTION=="add", DRIVERS=="?*",
KERNELS=="PCI_bus_number", ATTR{type}=="1", KERNEL=="eth*",
NAME="Device_name"
```

4. After restarting the managed servers, check if communication with the entire network is possible.

When Using SUSE Linux Enterprise Server

Use the following procedure to modify the configuration file:

1. Execute the following command.

```
# systool -c net <RETURN>
```

Example

```
# systool -c net <RETURN>
Class = "net"

Class Device = "eth0"
  Device = "0000:01:00.0"

Class Device = "eth1"
  Device = "0000:01:00.1"

Class Device = "eth2"
  Device = "0000:02:00.0"

Class Device = "eth3"
  Device = "0000:2:00.1"

Class Device = "lo"

Class Device = "sit0"
```

2. Confirm the device name which is given after "Class Device =" and PCI bus number which is given after "Device =" in the command output results.
3. Modify the configuration file.

When using SUSE Linux Enterprise Server 10

- a. a. After confirming support for device name and MAC address in the following configuration file, change `SYSFS{address}=="MAC_address"` to `ID=="PCI_bus_number"`. All corresponding lines should be corrected. Support of the device name and MAC address will be used after step b.

`/etc/udev/rules.d/30-net_persistent_names.rules`

Before changing

```
SUBSYSTEM=="net", ACTION=="add", SYSFS{address}=="MAC_address",
IMPORT="/lib/udev/rename_netiface %k device_name"
```

After changing

```
SUBSYSTEM=="net", ACTION=="add", ID=="PCI_bus_number", IMPORT="/lib/
udev/rename_netiface %k device_name"
```

- b. Based on the results of step 1 and a in step 3, change the name of the following file will be to a name that includes the PCI bus number.

Before changing

`/etc/sysconfig/network/ifcfg-eth-id-MAC address`

After changing

`/etc/sysconfig/network/ifcfg-eth-bus-pci-PCI bus number`

When using SUSE Linux Enterprise Server 11

- a. Change `ATTR{address}=="MAC address"` to `KERNELS=="PCI_bus_number"` in the following configuration file. All corresponding lines should be corrected.

`/etc/udev/rules.d/70-persistent-net.rules`

Before changing

```
SUBSYSTEM=="net", ACTION=="add", DRIVERS=="?*",
ATTR{address}=="MAC_address", ATTR{type}=="1", KERNEL=="eth*",
NAME="device_name"
```

After changing

```
SUBSYSTEM=="net", ACTION=="add", DRIVERS=="?*",
KERNELS=="PCI_bus_number", ATTR{type}=="1", KERNEL=="eth*",
NAME="device_name"
```

4. After restarting the managed servers, check if communication with the entire network is possible.

Information

When using cloning or the backup and restore method for server switchover, during installation perform partition settings so that names of device paths are defined using the "Device Name" format (for example: /dev/sda1) in the /etc/fstab file.

When installation is already complete, change the names of device paths defined in the boot configuration files /boot/efi/SuSE/elilo.conf and /boot/grub/menu.lst, and the /etc/fstab file so they use the "Device Name" format (for example: /dev/sda1). For specific details about the mount definition, please refer to the following URL and search for the Document ID:3580082.

<http://www.suse.com/documentation/>

Disabling the NetworkManager Service

1. Execute the following command to disable the NetworkManager service.
 - When using Red Hat Enterprise Linux 5 and Red Hat Enterprise Linux 6

```
# service NetworkManager stop <RETURN>
# chkconfig NetworkManager off <RETURN>
```

- When using Red Hat Enterprise Linux 7

```
# systemctl stop NetworkManager <RETURN>
# systemctl disable NetworkManager <RETURN>
```

2. After modifying the "/etc/sysconfig/network-scripts/ifcfg-*exxx*" file, configure "no" for "NM_CONTROLLED".

exxx is the configuration file for the Ethernet interface.

When using Red Hat Enterprise Linux 5 and Red Hat Enterprise Linux 6, "eth0", "eth1", or "eth2" will be used as the file name.

When using Red Hat Enterprise Linux 7, "enp1s0f1" or "enp5s0f1" will be used as the file name.

Example

- Before modifying

```
DEVICE="eth0"
HWADDR="xx:xx:xx:xx:xx:xx"
NM_CONTROLLED="yes"
ONBOOT="yes"
TYPE=Ethernet
```

- After modifying

```
DEVICE="eth0"
HWADDR="xx:xx:xx:xx:xx:xx"
```

```
NM_CONTROLLED="no"
ONBOOT="yes"
TYPE=Ethernet
```

3. Execute the following command to restart the Network service.

- When using Red Hat Enterprise Linux 5 and Red Hat Enterprise Linux 6

```
# service network restart <RETURN>
```

- When using Red Hat Enterprise Linux 7

```
# systemctl restart network <RETURN>
```

Language Settings

As Resource Orchestrator installs programs that correspond to the supported language, language settings (locale) cannot be changed after installation.

Therefore, set the language (locale) to Japanese or English according to your operational requirements.

The example of language settings (locale) confirmation methods is given below:



Example

- For Windows

From the Control Panel, open [Date, Time, Language, and Regional Options] and select [Regional and Language Options].

- For Red Hat Enterprise Linux 5

From the desktop screen, select [System]-[Administration]-[Language].

2.2.1.2 Collecting and Checking Required Information

Before installing Resource Orchestrator, collect required information and check the system status, then determine the information to be specified on the installation window. The information that needs to be prepared is given below.

- Installation folder and available disk space

Decide the installation folder for Resource Orchestrator. Check that the necessary disk space can be secured on the drive for installation. For the amount of disk space necessary for Resource Orchestrator, refer to "6.1.2.6 Static Disk Space" and "6.1.2.7 Dynamic Disk Space" in the "Overview".

- Port number

When Resource Orchestrator is installed, the port numbers used by it will automatically be set in the services file of the system. So usually, there is no need to pay attention to port numbers.

If the port numbers used by Resource Orchestrator are being used for other applications, a message indicating that the numbers are in use is displayed when the installer is started, and installation will stop.

In that case, describe the entries for the port numbers used by Resource Orchestrator in the services file using numbers not used by other software, and then start the installer.

For details, refer to "7.1.6 Changing Port Numbers" in the "User's Guide for Infrastructure Administrators (Resource Management CE)".

- Check the status of the admin LAN and NIC

Decide the network (IP addresses) to be used for the admin LAN.

Check that the NIC used for communication with the admin LAN is enabled.

For details on admin LANs, refer to "9.1.1 Admin LAN Network Design" in the "Design Guide CE".

[Linux] [Xen] [KVM]

Make the numeral of the managed server's network interface name (ethX) one of a consecutive sequence starting from 0. For the settings, refer to the manual for the OS.

- Check the target disk of image operations

For backup and restoration of system images to disks, refer to "16.1 Overview" in the "User's Guide VE".

For details on disks for cloning, refer to "12.1 Overview" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- Windows Volume License Information [Windows]

When using the following functions, you must have a volume license for the version of Windows to be installed on managed servers by Resource Orchestrator.

Check whether the Windows license you have purchased is a volume license.

- Server switchover (HBA address rename method/VIOM server profile switchover method)
- Cloning
- Restoration after server replacement
- Server replacement using HBA address rename

When using cloning, you must enter volume license information when installing Resource Orchestrator.

Depending on the version of Windows being used, check the following information prior to installation.

- For Windows Server 2003

Check the product key.

Generally, the product key is provided with the DVD-ROM of the Windows OS purchased.

- For Windows Server 2008 or Later

Check the information necessary for license authentication (activation).

The two activation methods are Key Management Service (KMS) and Multiple Activation Key (MAK). Check which method you will use.

Check the following information required for activation depending on the method you will use.

- Activation Information

Table 2.2 Activation Information Methods and Information to Check

Method	Information to Check
KMS (*1)	<ul style="list-style-type: none">- The KMS host name (FQDN) or the computer name or IP address- Port number (Default 1688) (*2)
MAK	The MAK key

*1: When using Domain Name Service (DNS) to automatically find the KMS host, checking is not necessary.

*2: When changing the port number from the default (1688), correct the definition file after installing agents. Refer to "12.2 Collecting" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- Proxy Server Information

When using a proxy server to connect to the KMS host (KMS method) or the Volume Activation Management Tool (VAMT) to authenticate a proxy license (MAK method), check the host name or IP address, and the port number of the proxy server.

- Administrator's Password

Check the password as it is necessary for performing activation.

- Windows Administrator accounts

When using Windows Server 2008 or later, check whether Administrator accounts have been changed (renamed).

Environments which have been changed (renamed) are not supported.

8. The [License Authentication] window will be displayed.

Enter the license authentication information for the Windows volume license.

As license authentication information is not necessary if cloning will not be used, click [Next>] without selecting [Using the cloning feature of this product].

If cloning will be used, depending on the version of Windows being used, specify the following information collected in "Windows Volume License Information [Windows]" of "[2.2.1.2 Collecting and Checking Required Information](#)", and click [Next>].

For Windows Server 2003

Product Key

Enter the Windows product key for the computer the agent is to be installed on.

Confirm Product Key

Enter the Windows product key again to confirm it.

For Windows Server 2008 or Later

License Authentication Method

Select the license authentication method from Key Management Service (KMS) and Multiple Activation Key (MAK).

- When Key Management Service (KMS) is selected

KMS host

Enter the host name of the KMS host name, and the computer name or IP address.

When using Domain Name Service (DNS) to automatically find the KMS host, this is not necessary.

- When Multiple Activation Key (MAK) is selected

The MAK key

Enter the MAK key for the computer the agent is to be installed on.

Confirm Multiple Activation Key

Enter the MAK key again to confirm it.

Proxy server used for activation

Enter the host name or IP address of the proxy server.

When the proxy server has a port number, enter the port number.

Administrator's Password

Enter the administrator password for the computer the agent is to be installed on.



Note

.....
If an incorrect value is entered for [Product Key], [Key Management Service host], [The MAK Key], or [Proxy server used for activation] on the [License Authentication Information Entry] window, cloning will be unable to be used.
Check that the correct values have been entered.
.....

9. The [Start Copying Files] window will be displayed.

Check that there are no mistakes in the contents displayed on the window, and then click [Install>].

Copying of files will start.

To change the contents, click [<Back].

10. The Resource Orchestrator setup completion window will be displayed.

When setup is completed, the [Installshield Wizard Complete] window will be displayed.

Click [Finish] and close the window.

Note

- Corrective Action for Installation Failure

When installation is stopped due to errors (system errors, processing errors such as system failure, or errors due to execution conditions) or cancellation by users, remove the causes of any problems, and then take corrective action as follows.

- Open [Programs and Functions] from the Windows Control Panel, and when "ServerView Resource Orchestrator Agent" is displayed, uninstall it and then install the agent again.
For uninstallation, refer to "[11.2 Agent Uninstallation](#)".
- If [ServerView Resource Orchestrator Agent] is not displayed, install it again.

- Nullifying Firewall Settings for Ports to be used by Resource Orchestrator

When installing Resource Orchestrator on systems with active firewalls, in order to enable the manager to communicate with agents correctly, disable the firewall settings for the port numbers to be used for communication.

For the port numbers used by Resource Orchestrator and required software, refer to "Appendix A Port List" in the "Design Guide CE". However, when port numbers have been changed by editing the services file during installation of Resource Orchestrator, replace the default port numbers listed in "Appendix A Port List" in the "Design Guide CE" with the port numbers changed to during installation.

- Uninstall the Related Services

When installing ServerView Deployment Manager after Resource Orchestrator has been installed, or using ServerView Deployment Manager in the same subnet, it is necessary to uninstall the related services.

For the method for uninstalling the related services, please refer to "5.1 deployment_service_uninstall" in the "Reference Guide (Command/XML) CE".

2.2.3 Installation [Linux] [VMware] [Xen] [KVM]

This section explains the procedure for agent installation.

Before installation, check if "[2.2.1 Preparations](#)" have been performed.

1. Log in to the system as the OS administrator (root).

Boot the managed server that the agent is to be installed on in multi-user mode, and then log in to the system using root.

[Xen] [KVM]

Log in from the console.

2. Set the first Resource Orchestrator DVD-ROM.
3. Execute the following command to mount the DVD-ROM.

```
# mount -t iso9660 -r /dev/hdc DVD-ROM_mount_point <RETURN>
```

Note

If the auto-mounting daemon (autofs) is used for starting the mounted DVD-ROM, the installer will fail to start due to its "noexec" mount option.

4. Execute the following installation command:

```
# cd DVD-ROM_mount_point <RETURN>
# ./RcSetup.sh <RETURN>
```

5. Select "Cloud Edition".
6. Select "Agent installation".
7. Perform installation according to the installer's interactive instructions.
8. Enter the host name or IP address of a connected admin server.

9. Settings when SELinux is Used

When enabling SELinux, it is necessary to perform configuration of SELinux after installing Resource Orchestrator. For details on configuration, refer to "[J.1.2 Agent](#)".

Note

- Corrective Action for Installation Failure

In the event of installation failure, restart and then log in as the user that performed the installation, and perform uninstallation following the uninstallation procedure.

After that, remove the cause of the failure referring to the meaning of the output message and the suggested corrective actions, and then perform installation again.

- Nullifying Firewall Settings for Ports to be used by Resource Orchestrator

When installing Resource Orchestrator on systems with active firewalls, in order to enable the manager to communicate with agents correctly, disable the firewall settings for the port numbers to be used for communication.



Example

[VMware]

```
# /usr/sbin/esxcfg-firewall -openPort 23458,tcp,in,"nfagent" <RETURN>
```

For the port numbers used by Resource Orchestrator and required software, refer to "Appendix A Port List" in the "Design Guide CE". However, when port numbers have been changed by editing the services file during installation of Resource Orchestrator, replace the default port numbers listed in "Appendix A Port List" in the "Design Guide CE" with the port numbers changed to during installation.

- When Installation was Performed without using the Console [Xen] [KVM]

When installation is performed by logging in from somewhere other than the console, the network connection will be severed before installation is complete, and it is not possible to confirm if the installation was successful. Log in from the console and restart the managed server. After restarting the server, follow the procedure in "Corrective Action for Installation Failure" and perform installation again.

- Uninstall the Related Services

When installing ServerView Deployment Manager after Resource Orchestrator has been installed, or using ServerView Deployment Manager in the same subnet, it is necessary to uninstall the related services.

For the method for uninstalling the related services, please refer to "5.1 deployment_service_uninstall" in the "Reference Guide (Command/XML) CE".

2.2.4 Installation [Solaris] [Solaris Zones] [OVM for SPARC]

This section explains the procedure for agent installation.

Before installation, check if "[2.2.1 Preparations](#)" have been performed.

1. Log in to the system as the OS administrator (root).

Boot the managed server that the agent is to be installed on in multi-user mode, and then log in to the system using root.

2. Set the first Resource Orchestrator DVD-ROM.

3. Execute the following installation command:

```
# cd DVD-ROM_mount_point <RETURN>
# ./RcSetup.sh <RETURN>
```

4. Select "Cloud Edition".

5. Select "Agent installation".
6. Perform installation according to the installer's interactive instructions.

Information

When a guest domain on OVM for SPARC is registered as a VM host, it is necessary to install agent in that guest domain.

Note

- Corrective Action for Installation Failure

Execute the following command, delete the packages from the environment in which installation failed, and then perform installation again.

```
# cd DVD-ROM_mount_point/DISK1/Agent/Solaris/agent <RETURN>
# ./rcxagtuninstall <RETURN>
```

- Nullifying Firewall Settings for Ports to be used by Resource Orchestrator

When installing Resource Orchestrator on systems with active firewalls, in order to enable the manager to communicate with agents correctly, disable the firewall settings for the port numbers to be used for communication.

For the port numbers used by Resource Orchestrator and required software, refer to "Appendix A Port List" in the "Design Guide CE". However, when port numbers have been changed by editing the services file during installation of Resource Orchestrator, replace the default port numbers listed in "Appendix A Port List" in the "Design Guide CE" with the port numbers changed to during installation.

2.3 Agent (Dashboard Function) Installation

This section explains the procedure for installation of agents (Cloud Edition Dashboard Function).

The relationships of installation directories and the agents ((Cloud Edition Dashboard Function) that must be installed are as follows.

Table 2.3 Relationships of Installation Directories and the Agents (Cloud Edition Dashboard Function) that must be Installed

Installation Directories		Agent (Cloud Edition Dashboard Function)
VM Host	VMware	-
	Hyper-V	Yes
	RHEL5-Xen	-
	OVM for x86 2.2	-
	KVM	-
	Solaris Zones	Yes (*1)
	OVM for SPARC	-
	OVM for x86 3.x	-
	Citrix XenServer	-
Physical L-Server	Windows	Yes
	Linux	Yes (*2)
	Solaris	Yes

Yes: Installation is required.

- : Installation is not required.

- *1: Install the agent (Cloud Edition Dashboard Function) on the Oracle Solaris Zones (global zone). It does not need to be installed in the Oracle Solaris Zones (non global zone).
- *2: Installation is not required on SUSE Enterprise Linux Server.

2.3.1 Preparations

This section explains the preparations and checks required before commencing installation.

- Check that the agents have been installed.

[Linux]

- Check that the host name specified as "HOSTNAME" of the /etc/sysconfig/network exists in /etc/hosts. If it does not, the message below is displayed:

```
hostname: Unknown host
```

2.3.2 Exclusive Software Checks

Uninstall exclusive software before installing Resource Orchestrator.

For details of exclusive software, refer to "6.1.2.5 Exclusive Software" in "Overview".

2.3.3 Installation [Windows] [Hyper-V]

Install agents (Cloud Edition Dashboard Function) using the following procedure.

Before installation, check if "2.3.1 Preparations" have been performed.

1. Log on to the system as the administrator.
 - Log on to the system on which the agent (Cloud Edition Dashboard Function) is to be installed using the Administrator account.
2. Set the first Resource Orchestrator DVD-ROM.
 - Then, the installer starts automatically.



Information

.....
 If the installer does not start, execute "RcSetup.exe" from the DVD-ROM drive.

3. Select [Cloud Edition].
4. Click [Agent(Dashboard Function) Installation].
5. Perform installation according to the installer's interactive instructions.
6. After installing Resource Orchestrator, execute the following command:

```
>Installation_folder\RCXCTDSBA\setup\dsbsetup.bat /P_address <RETURN>
```

Specify the admin LAN IP address of the managed server for *IP address*. It takes a few minutes to complete the command.

2.3.4 Installation [Linux]

Install agents (Cloud Edition Dashboard Function) using the following procedure.

Before installation, check if "2.3.1 Preparations" have been performed.

1. Log in to the system as the OS administrator (root).
 - Boot the managed server that the agent (Cloud Edition Dashboard Function) is to be installed on in multi-user mode, and then log in to the system using root.

2. Set the first Resource Orchestrator DVD-ROM.
3. Execute the following command to mount the DVD-ROM.

```
# mount -t iso9660 -r /dev/hdc DVD-ROM_mount_point <RETURN>
```

Note

If the auto-mounting daemon (autofs) is used for DVD-ROM auto-mounting, the installer fails to start due to its "noexec" mount option.

4. Execute the following installation command:

```
# cd DVD-ROM_mount_point <RETURN>
# ./RcSetup.sh <RETURN>
```

5. Select "Cloud Edition".
6. Select "Agent(Dashboard Function) installation".
7. Perform installation according to the installer's interactive instructions.
8. After installing Resource Orchestrator, execute the following command:

```
# /opt/FJSVctdsb-sqc/setup/dsbsetup.sh IP_address <RETURN>
```

Specify the admin LAN IP address of the managed server for *IP address*. It takes a few minutes to complete the command.

2.3.5 Installation [Solaris] [Solaris Zones]

Install agents (Cloud Edition Dashboard Function) using the following procedure.

Before installation, check if "2.3.1 Preparations" have been performed.

1. Log in to the system as the OS administrator (root).

Boot the managed server that the agent (Cloud Edition Dashboard Function) is to be installed on in multi-user mode, and then log in to the system using root.

2. Set the first Resource Orchestrator DVD-ROM.
3. Execute the following installation command:

```
# cd DVD-ROM_mount_point <RETURN>
# ./RcSetup.sh <RETURN>
```

4. Select "Cloud Edition".
5. Select "Agent(Dashboard Function) installation".
6. Perform installation according to the installer's interactive instructions.
7. Specify the IP address of a connected admin server for Admin Server IP Address.
8. Specify the admin LAN IP address of the managed server for Managed Server IP Address.

2.4 HBA address rename Setup Service Installation

This section explains installation of the HBA address rename setup service.

The HBA address rename setup service is only necessary when using HBA address rename.

For details, refer to "Chapter 4 System Configuration Design" in the "Design Guide CE".

2.4.1 Preparations

This section explains the preparations and checks required before commencing installation.

- Exclusive Software Checks
Refer to "[Exclusive Software Checks](#)".
- Required Software Checks
Refer to "[Required Software Checks](#)".
- Required Patch Checks
Refer to "[Required Patch Checks](#)".
- Required Package Checks
Refer to "[Required Package Checks \[Linux\]](#)".

2.4.1.1 Software Preparation and Checks

Software preparation and checks are explained in the following sections.

Exclusive Software Checks

Uninstall exclusive software before installing Resource Orchestrator.

For details of exclusive software, refer to "6.1.2.5 Exclusive Software" in "Overview".

Required Software Checks

Before installing Resource Orchestrator, check that the required software given in "6.1.2.4 Required Software" in the "Overview" has been installed. If it has not been installed, install it before continuing.

Required Patch Checks

Before installing Resource Orchestrator, check that the required patches for the HBA address rename setup service listed in "6.1.2.2 Required Patches" in the "Overview" have been applied.

If they have not been applied, apply them before continuing.

Required Package Checks [Linux]

Before installing Resource Orchestrator, check that the required packages for the HBA address rename setup service [Linux] listed in "6.1.2.3 Required Packages" in the "Overview" have been applied.

If they have not been installed, install them before continuing.

2.4.1.2 Collecting and Checking Required Information

Before installing Resource Orchestrator, collect required information and check the system status, then determine the information to be specified on the installation window. The information that needs to be prepared is given below.

- Installation folder and available disk space
Decide the installation folder for Resource Orchestrator. Check that the necessary disk space can be secured on the drive for installation. For the amount of disk space necessary for Resource Orchestrator, refer to "6.1.2.6 Static Disk Space" and "6.1.2.7 Dynamic Disk Space" in the "Overview".

2.4.2 Installation [Windows]

Install the HBA address rename setup service using the following procedure.

Before installation, check if "2.4.1 Preparations" have been performed.

1. Log on to the system as the administrator.

Log on to the system on which the HBA address rename setup service is to be installed using the Administrator account.

2. Set the first Resource Orchestrator DVD-ROM.

Then, the installer starts automatically.



If the installer does not start, execute "RcSetup.exe" from the DVD-ROM drive.

3. Select [Cloud Edition].

4. Click [HBA address rename setup service installation].

5. The Resource Orchestrator setup window will be displayed.

Check the contents of the license agreement window etc. and then click [Yes].

6. The [Choose Install Location] window is displayed.

Click [Next>] to use the default Installation Folder. To change folders, click [Browse], change folders, and then click [Next>].



When changing the folders, be careful about the following points.

- Do not specify the installation folder of the system (such as C:\).
- Enter the location using 100 characters or less. Do not use double-byte characters or the following symbols in the folder name.
" ", "|", ":", ":", ":", ":", ":", ":", ":", ":", "<", ">", ",", "%", "&", "^", "=", "!", ";", "#", "", "+", "[", "]", "{", "}"
- When using a 64-bit Windows Server OS, the following folder name cannot be specified for the installation folder.
 - "%SystemRoot%\System32\"
 - Folder names including "Program Files" (except the default "C:\Program Files (x86)")

7. The [Start Copying Files] window will be displayed.

Check that there are no mistakes in the contents displayed on the window, and then click [Install>].

Copying of files will start.

To change the contents, click [<Back].

8. The Resource Orchestrator setup completion window will be displayed.

When using the HBA address rename setup service immediately after configuration, check the [Yes, launch it now.] checkbox.

Click [Finish] and close the window.

- If the check box is checked

The HBA address rename setup service will start after the window is closed.

- If the check box is not checked

Refer to "Chapter 6 Settings for the HBA address rename Setup Service", and start the HBA address rename setup service.

Note

- Corrective Action for Installation Failure

When installation is stopped due to errors (system errors, processing errors such as system failure, or errors due to execution conditions) or cancellation by users, remove the causes of any problems, and then take corrective action as follows.

- Open [Programs and Features] from the Windows Control Panel, and when "ServerView Resource Orchestrator HBA address rename setup service" is displayed, uninstall it and then install the agent again.
For uninstallation, refer to "[11.3 HBA address rename Setup Service Uninstallation](#)".
- If [ServerView Resource Orchestrator HBA address rename setup service] is not displayed, install it again.

- Nullifying Firewall Settings for Ports to be used by Resource Orchestrator

When installing Resource Orchestrator on systems with active firewalls, in order to enable correct communication between the manager, agents, and clients, disable the firewall settings for the port numbers to be used for communication.

For the port numbers used by Resource Orchestrator and required software, refer to "Appendix A Port List" in the "Design Guide CE".

However, when port numbers have been changed by editing the services file during installation of Resource Orchestrator, replace the default port numbers listed in "Appendix A Port List" in the "Design Guide CE" with the port numbers changed to during installation.

2.4.3 Installation [Linux]

Install the HBA address rename setup service using the following procedure.

Before installation, check if "[2.4.1 Preparations](#)" have been performed.

1. Log in to the system as the OS administrator (root).

Boot the managed server that the HBA address rename setup service is to be installed on in multi-user mode, and then log in to the system using root.

2. Set the first Resource Orchestrator DVD-ROM.
3. Execute the following command to mount the DVD-ROM.

```
# mount -t iso9660 -r /dev/hdc DVD-ROM_mount_point <RETURN>
```

Note

If the auto-mounting daemon (autofs) is used for starting the mounted DVD-ROM, the installer will fail to start due to its "noexec" mount option.

4. Execute the following installation command:

```
# cd DVD-ROM_mount_point <RETURN>
# ./RcSetup.sh <RETURN>
```

5. Select "Cloud Edition".
6. Select "HBA address rename setup service installation".
7. Perform installation according to the installer's interactive instructions.
8. Settings when SELinux is Used

When enabling SELinux, it is necessary to perform configuration of SELinux after installing Resource Orchestrator. For details on configuration, refer to "[J.1.3 HBA address rename Setup Service](#)".

 Note

- Corrective Action for Installation Failure

Execute the following command, delete the packages from the environment in which installation failed, and then perform installation again.

```
# cd DVD-ROM_mount_point/DISK1/HBA/Linux/hbaar <RETURN>  
# ./rcxhbauninstall <RETURN>
```

- Nullifying Firewall Settings for Ports to be used by Resource Orchestrator

When installing Resource Orchestrator on systems with active firewalls, in order to enable correct communication between the manager, agents, and clients, disable the firewall settings for the port numbers to be used for communication.

For the port numbers used by Resource Orchestrator and required software, refer to "Appendix A Port List" in the "Design Guide CE".

However, when port numbers have been changed by editing the services file during installation of Resource Orchestrator, replace the default port numbers listed in "Appendix A Port List" in the "Design Guide CE" with the port numbers changed to during installation.

Chapter 3 SSL Communication Environment Settings for the ROR Console

SSL communication is used to access the ROR console from a browser.

During installation, a self-signed certificate (referred to as "test certificate") will be automatically created by default. This chapter describes the procedure to replace this test certificate with another certificate.

The procedures described in this chapter are not necessary if the test certificate is used.



[VMware] [Hyper-V]

When using Java(TM) Platform, Standard Edition Runtime Environment Version 7 (hereinafter JRE7) on a client, as JRE7 has improved security functions, the console connection function of L-Servers and the VM management console starting function cannot be used.

To use these functions in a JRE7 environment, as well as the procedures in this chapter, follow the procedure for "Adding the Admin Server's Certificate to Client Browsers" in "Appendix B HTTPS Communications" in the "Design Guide CE". Create a certificate corresponding to the host name (FQDN) of the admin server and install it in the web browser.

After that, export the certificate installed in the web browser and import it to JRE7.

3.1 Obtaining Certificates and Registering them with Certificate Authorities

The following procedures are required for getting a certificate from the Certificate Authority:

- [3.1.1 Creating the Interstage Certificate Environment and the Application to Obtain the Certificate that is used for SSL Communication](#)
- [3.1.2 Registering Certificates used in SSL Communication](#)



For details on the Interstage certificate environment, refer to the "Security System Guide" of Interstage Application Server V11.

3.1.1 Creating the Interstage Certificate Environment and the Application to Obtain the Certificate that is used for SSL Communication

Create the Certificate Signing Request (CSR) for applying for the certificate to be used for creating the certificate environment and SSL communication.

Perform this operation when the manager is stopped.

The creation procedure and execution example are shown below:

Creation procedure

1. Rename or move the following directory and then backup the current certificate environment.

[Windows Manager]

```
Installation_folder\IAPS\smee
```

[Linux Manager]

```
/etc/opt/FJSVctmg-ias/smee
```

2. Execute the following command to create a certificate environment.



In "[Enter when prompted] password" in the following commands, enter the same password every time.

[Windows Manager]

```
set ISCERT_PATH="Installation_folder\IAPS\smee"
set ISCERT_FQDN=Manager_FQDN

set ISCERT_TOKEN=SSLTOKEN
set ISCERT_NICKNAME=SSLCERT

set IS_SSLBIN="%ProgramFiles(x86)%\SecurecryptoLibraryR\PROGRAM\bin"
set IS_SMEEBIN="%ProgramFiles(x86)%\Common Files\Fujitsu Shared\F3FSSMEE"
set IS_AHSBIN="Installation_folder\IAPS\ahs\bin"

mkdir %ISCERT_PATH%
mkdir %ISCERT_PATH%\Slot
mkdir %ISCERT_PATH%\cert
mkdir %ISCERT_PATH%\crl

%IS_SSLBIN%\makeslot.exe -d %ISCERT_PATH%\Slot
[Enter when prompted] password
[Enter when prompted] password

%IS_SSLBIN%\maketoken.exe -d %ISCERT_PATH%\Slot -s 1 -t %ISCERT_TOKEN%
[Enter when prompted] password
[Enter when prompted] password
[Enter when prompted] password
[Enter when prompted] password
[Enter when prompted] password

%IS_SMEEBIN%\cmmkenv.exe %ISCERT_PATH% -todir %ISCERT_PATH%\cert,%ISCERT_PATH%\crl
%IS_SMEEBIN%\cmsetenv.exe %ISCERT_PATH% -sd %ISCERT_PATH%\Slot -jc 0
```

[Linux Manager]

```
ISCERT_FQDN=Manager_FQDN;export ISCERT_FQDN
ISCERT_PATH=/etc/opt/FJSVctmg-isas/smee;export ISCERT_PATH

ISCERT_TOKEN=SSLTOKEN;export ISCERT_TOKEN
ISCERT_NICKNAME=SSLCERT;export ISCERT_NICKNAME

mkdir -p ${ISCERT_PATH}
mkdir ${ISCERT_PATH}/Slot
mkdir ${ISCERT_PATH}/cert
mkdir ${ISCERT_PATH}/crl

/opt/FJSVsclr/bin/makeslot -d ${ISCERT_PATH}/Slot
[Enter when prompted] password
[Enter when prompted] password

/opt/FJSVsclr/bin/maketoken -d ${ISCERT_PATH}/Slot -s 1 -t ${ISCERT_TOKEN}
[Enter when prompted] password
[Enter when prompted] password
[Enter when prompted] password
[Enter when prompted] password
[Enter when prompted] password

/opt/FJSVsmee/bin/cmmkenv ${ISCERT_PATH} -todir ${ISCERT_PATH}/cert,${ISCERT_PATH}/crl
/opt/FJSVsmee/bin/cmsetenv ${ISCERT_PATH} -sd ${ISCERT_PATH}/Slot -jc 0
```

3. Execute the following command to create a Certificate Signing Request (CSR).

[Windows Manager]

```
%IS_SMEEBIN%\cmmakecsr.exe
```

[Linux Manager]

```
/opt/FJSVsmee/bin/cmmakecsr
```

Example

[Windows Manager]

```
%IS_SMEEBIN%\cmmakecsr.exe -ed %ISCERT_PATH% -sd %ISCERT_PATH%\Slot -tl %ISCERT_TOKEN% -f TEXT -  
c jp -cn %ISCERT_FQDN% -o fujitsu -ou 4-1f -l "Shizuoka-shi" -s "Shizuoka-ken" -kt RSA -kb 2048  
-of d:\sslenv\myCertRequest  
[Enter when prompted] password
```

[Linux Manager]

```
/opt/FJSVsmee/bin/cmmakecsr -ed ${ISCERT_PATH} -sd ${ISCERT_PATH}/Slot -tl ${ISCERT_TOKEN} -f  
TEXT -c jp -cn ${ISCERT_FQDN} -o fujitsu -ou 4-1f -l "Shizuoka-shi" -s "Shizuoka-ken" -kt RSA -  
kb 2048 -of /export/home/myCertRequest  
[Enter when prompted] password
```

Point

The options to specify for the cmmakecsr command differ according to the type of certificate or the CA.

For details on the cmmakecsr command, refer to the "Reference Manual (Command Edition)" of Interstage Application Server V11.

4. Send the CSR to the CA to request that a certificate be issued.

3.1.2 Registering Certificates used in SSL Communication

Register the site certificate issued by the CA and the CA certificate of the issuer of that certificate.
Perform this operation when the manager is stopped.

Information

Depending on the CA, it might be necessary to register an intermediate CA certificate.

Registration Procedure

1. Execute the following command to register the CA certificate.

[Windows Manager]

```
%IS_SMEEBIN%\cmentcert.exe C:\work\ca-cert.der -ed %ISCERT_PATH% -ca -nn CACert  
[Enter when prompted] password
```

[Linux Manager]

```
/opt/FJSVsmee/bin/cmentcert /tmp/ca-cert.der -ed ${ISCERT_PATH} -ca -nn CACert  
[Enter when prompted] password
```

2. Execute the following command to register the server certificate.

[Windows Manager]

```
%IS_SMEEBIN%\cmentcert.exe C:\work\my_site_cert.der -ed %ISCERT_PATH% -own -nn SSLCERT
[Enter when prompted] password
```

[Linux Manager]

```
/opt/FJSVsmee/bin/cmentcert /tmp/my_site_cert.der -ed ${ISCERT_PATH} -own -nn SSLCERT
[Enter when prompted] password
```

- Execute the following command to register a certificate password.

[Windows Manager]

```
%IS_AHSBIN%\ihsregistupin.exe -f %ISCERT_PATH%\sslssl -d %ISCERT_PATH%\Slot
[Enter when prompted] password
[Enter when prompted] password
```

[Linux Manager]

```
/opt/FJSVctmg-isas/ahs/bin/ihsregistupin -f ${ISCERT_PATH}/sslssl -d ${ISCERT_PATH}/Slot
[Enter when prompted] password
[Enter when prompted] password
```

3.2 Importing a Certificate to ServerView SSO Authentication Server

When using ServerViewSSO for authentication, perform the operation described in this section. This section explains how to import a certificate to the ServerView SSO authentication server.

- Export the registered certificate information.

Use the following command to export the registered certificate information:

```
cmmlkpfx Export_file_name -ed Certificate_environment -tl SSLTOKEN -nn Certificate_nickname
```

The parameters to specify in the command are shown below.

Setting item	Setting value
Export file name	Specify the temporary file name used for import in Step 2.
Certificate Environment	Specify the following directory. [Windows Manager] <input type="text" value="Installation_folder\IAPS\smee"/> [Linux Manager] <input type="text" value="/etc/opt/FJSVctmg-isas/smee"/>
Certificate nickname	Specify "SSLCERT" or "testCert".

- Import the certificate information to the authentication server.

Use the commands shown below to import the certificate information to the authentication server.

[Windows Manager]

- ServerView Operations Manager V6.1 or later

```
JDK6_installation_folder\bin\keytool.exe -importkeystore -srckeystore Export_file_name -
destkeystore "ServerView Suite_Installation_folder\jboss\standalone\svconf\pki\cacerts" -
srcstoretype PKCS12
```

- Earlier than ServerView Operations Manager V6.1

```
JDK6_installation_folder\bin\keytool.exe -importkeystore -srckeystore Export_file_name -
destkeystore "ServerView Suite_installation_folder\jboss\server\serverview\conf\pki\cacerts"
-srcstoretype PKCS12
```

[Linux Manager]

- ServerView Operations Manager V6.1 or later

```
JDK6_Installation_directory/bin/keytool -importkeystore -srckeystore Export_file_name -
destkeystore /opt/fujitsu/ServerViewSuite/jboss/Standalone/svconf/pki/cacerts -srcstoretype
PKCS12
```

- Earlier than ServerView Operations Manager V6.1

```
JDK6_Installation_folder/bin/keytool -importkeystore -srckeystore Export_file_name -
destkeystore /opt/fujitsu/ServerViewSuite/jboss/server/serverview/conf/pki/cacerts -
srcstoretype PKCS12
```

3. Delete the export file.

Delete the export file specified in Step 2.



Example

[Windows Manager]

Use screen input for the following commands:

```
- Certificate nickname: SSLCERT
- Export file name: c:\work\isas.p12
```

```
C:\>set ISCERT_PATH="C:\Program Files (x86)\Resource Orchestrator\IAPS\smee"
C:\>set IS_SMEEBIN="%ProgramFiles(x86)%\Common Files\Fujitsu Shared\F3FSSMEE"
C:\>%IS_SMEEBIN%\cmmkpfx c:\work\isas.p12 -ed %ISCERT_PATH% -tl SSLTOKEN -nn SSLCERT
User-PIN: the password created according to "3.1.1 Creating the Interstage Certificate Environment
and the Application to Obtain the Certificate that is used for SSL Communication". The default value
is "changeit"
Password: Password of the certificate being exported <- Used by the command parameters shown below.
Retype: Password of the certificate being exported

C:\>cd C:\Program Files (x86)\Java\jre6\bin
C:\Program Files (x86)\Java\jre6\bin>keytool.exe -importkeystore -srckeystore c:\work\isas.p12 -
destkeystore "C:\Program Files (x86)\Fujitsu\ServerView Suite\jboss\standalone\svconf\pki\cacerts" -
srcstoretype PKCS12

Enter destination keystore password: Password for the environment for creating SVOM web server
certificates <- The default is "changeit"
Enter source keystore password:Password at time of export <- Specify the password that was specified
for the above command.

del c:\work\isas.p12
```

[Linux Manager]

Use screen input for the following commands:

```
- Certificate nickname: SSLCERT
- Export file name: /tmp/isas.p12
```

```
# /opt/FJSVsmee/bin/cmmkpfx /tmp/isas.p12 -ed /etc/opt/FJSVctmg-isas/smee -tl SSLTOKEN -nn SSLCERT
User-PIN: the password created according to "3.1.1 Creating the Interstage Certificate Environment
and the Application to Obtain the Certificate that is used for SSL Communication". The default value
```

is "changeit"

Password: *Password of the certificate being exported* <- Used by the command parameters shown below.

Retype: *Password of the certificate being exported*

```
# cd /usr/java/jre1.6.0_02/bin
```

```
# ./keytool -importkeystore -srckeystore /tmp/isas.p12 -destkeystore /opt/fujitsu/ServerViewSuite/  
jboss/standalone/svconf/pki/cacerts -srcstoretype PKCS12
```

Enter destination keystore password: *jboss certificate creation environment password* <- The default is "changeit"

Enter source keystore password: *Password at time of export* <- Specify the password that was specified for the above command.

```
# rm /tmp/isas.p12
```

.....

Chapter 4 License Setup and Confirmation

This chapter explains how to configure and confirm licenses.

License Setup

When using Resource Orchestrator, it is necessary to configure the license first.

Use the following procedure to configure the license:

1. After logging in to Resource Orchestrator, select [Tools]-[Licenses] from the menu, and click the [Add] button in the displayed dialog.

The [Register License] dialog is displayed.

2. In the [Register License] dialog, enter the license key to register.

3. Click the [OK] button.

The license will be registered.

4. After registering the Cloud Edition license, restart the manager.

When using a command, execute the rxcadm license command.

For details on the rxcadm license command, refer to "5.12 rxcadm license" in the "Reference Guide (Command/XML) CE".



Point

.....
If a Cloud Edition license has been already registered and activated (Active), it is not necessary to restart the manager.
.....

Confirming the License

Use the following procedure to confirm the registered license:

1. After logging in to Resource Orchestrator, select [Tools]-[Licenses] from the menu, and click the license name in the displayed dialog.

The [Licenses] dialog is displayed.

When using a command, execute the rxcadm license command.

For details on the rxcadm license command, refer to "5.12 rxcadm license" in the "Reference Guide (Command/XML) CE".



Point

.....
When "-" is displayed for "NUMBER_OF_LICENSES", the same number of agents as purchased licenses can be used.
.....

Chapter 5 Importing a Certificate to a Browser

In order to use a test site certificate, the certificate must be installed to the Web browser.

Log in to the ROR console, and perform the operations below while the [Account] dialog is open.

If these operations are not performed, the [Forward screen] dialog used by the ROR console L-Platform application process cannot be displayed.

"Certificates" stated in this section refer to "server certificates".



Note

- The license settings must be completed, before starting operations in Resource Orchestrator. Refer to "[Chapter 4 License Setup and Confirmation](#)" in "License Setup and Custom" for information on how to configure licenses.
- If multiple admin clients are used, perform this operation on each admin client.

Internet Explorer

1. Open the [Certificate] dialog.

Open the "Certificate is invalid dialog" by clicking the "Certificate Error" displayed in the address bar. This will open an "Untrusted Certificate" or "Certificate Expired" message.

Click the "View certificates" link displayed at the bottom of this dialog.

2. Confirm that the "Issued to" and "Issued by" displayed in the [Certificate] dialog are both set to the IP address or host name (FQDN) used to generate the certificate.
3. In the [Certificate] dialog, click [Install Certificate].
4. The [Certificate Import Wizard] dialog is displayed.
Click [Next].
5. Select "Place all certificates in the following store" and click [Browse].
6. The [Select Certificate Store] dialog is displayed.
Select the "Trusted Root Certification Authorities" and click [OK].
7. Click [Next].
8. Check that "Trusted Root Certification Authorities" is selected and click [Finish].
9. Restart the Web browser.

Firefox

1. Select I [Understand the Risks] while the [This Connection is Untrusted] window is displayed and click the [Add Exception...] button. The [Add Security Exception] window is displayed.
2. In the [Add Security Exception] window, click the [View] button to display the Certificate Viewer.
3. In the [Certificate Viewer], ensure that the certificate and the issuer have the IP address or hostname (FQDN) specified when the certificate was created.
4. In the [Add Security Exception] window, click the [Confirm Security Exception] button.

 Note

- Enter the IP address or host name (FQDN) used to generate the certificate in the Web browser's URL bar. If the entered URL differs from that of the certificate, a certificate warning is displayed.
An example of how to display a warning is given below.
 - The entered URL uses an IP address while the certificate was created using a host name (FQDN)
 - The admin server is set with multiple IP addresses, and the entered URL uses an IP address different from that used to generate the certificate
- When using Firefox in a Windows environment, the certificate needs to be registered with the OS, so also register the certificate in Internet Explorer.

Chapter 6 Settings for the HBA address rename Setup Service

This chapter explains settings for the HBA address rename setup service.

Point

The following procedure is used only when creating a physical L-Server using a rack mount or tower server.

When using rack mount servers that are supported by VIOM, target servers can be managed using VIOM.

In Resource Orchestrator, configure the WWN on the servers according to the server operations, and adopt I/O virtualization (HBA address rename) that enables I/O control on the server side.

HBA address rename is enabled by setting the WWN of the managed server HBA from the admin server when a managed server is powered on. This WWN is kept by managed servers until powered off.

However, a managed server will not be able to receive its assigned WWN unless it can communicate with the admin server. If communication with the admin server fails, because of problems on the admin server or a failure of the managed server's NIC, the managed server will not start up properly as its HBA will not be set up with the correct WWN.

This can be avoided by using the HBA address rename setup service, which acts as a backup service in case of communication issues between the admin server and managed servers. This service, which must run on a server other than the admin server, can set up the WWNs of managed server HBAs in the same way as the admin server does.

For details on HBA address rename settings, refer to "5.5.2 HBA address rename Settings" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

This service must be running in order to use HBA address rename.

Use the following procedure to configure the HBA address rename setup service.

1. Open the [HBA address rename setup service] dialog.

[Windows]

Select [start]-[All Programs]-[Resource Orchestrator]-[HBA address rename setup service].

[Linux]

Execute the following command while in a desktop environment.

```
# nohup /opt/FJSVrcvhb/bin/rcxhbactl start& <RETURN>
```

The [HBA address rename setup service] dialog is displayed.

2. Set the following items:

Status

The status of the service is displayed. [Stopping] is displayed if the service is not running, and [Running] is displayed if the service is running.

IP address of admin server

Enter the IP address of the admin server.

Port number

Enter the port number that is used to communicate with the admin server. The port number at installation is 23461. If the "rcxweb" port number of the admin server is changed, specify the number that has been changed.

The latest synchronous time

Displays the latest synchronization time.

This is the last time this service synchronized its data (managed server settings) with that of the admin server.

3. Click one of the following buttons:

- To Start This Service:

Click [Run].

- To Stop This Service:

Click [Stop].

- To Cancel the Operation:

Click [Cancel].

To verify that this service is running properly, power off the admin server and confirm that managed servers can still start up normally.

Point

When the graphical mode cannot be used, use the service rcvhb {stop | start | status} command to stop, start, or check the status of services after starting the HBA address rename setup service once.

When operating correctly, the descriptions are displayed as below.

[Linux]

```
# service rcvhb status
rservice is running...
pxeservice is running...
SystemcastWizard TFTP service is running...
```

Information

The services related to ROR that operate on the HBA address rename setup service server are as follow:

[Windows]

- Resource Coordinator WWN Recovery Service
- Fujitsu PXE MTFTP Service
- Fujitsu PXE Services

[Linux]

- rservice
- pxeservice
- SystemcastWizard TFTP service

Note

The following remarks apply to this service.

- Keep it [Running] at all times.
- Start it on only one server for each admin server.
- OS administrator privileges are required to start and stop this service.
- Do not operate it on the server where the manager is installed.
- The admin server and the servers configured with the HBA address rename setup service must be placed in the same segment of an admin LAN.

Chapter 7 Configuration when Creating Physical L-Servers

This chapter explains configuration regarding the creation of physical L-Servers.

Prerequisites

To create a physical L-Server, Virtual I/O using VIOM or HBA address rename is required.

Usage methods of VIOM and HBA address rename differ depending on the hardware of the managed servers used for a physical L-Server.

- Blade Servers

Use VIOM.

- Rack Mount Servers

Use HBA address rename or VIOM.

When managing servers other than the above, associate the configured physical servers with L-Servers. For details on associating configured physical servers with L-Servers, refer to "Chapter 18 Linking L-Servers with Configured Physical Servers or Virtual Machines" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

It is also necessary to enter configuration information (CPU core count, CPU clock speed, memory capacity, etc.) of the physical servers in the definition file.

7.1 Creating Definition Files

This section explains how to create definition files.

When using a physical L-Server, the configuration of the definition file may be necessary.

7.1.1 Creating Definition Files Combining Ports of SAN Storage

Create the following definition file in advance, then define the combination of the ports of storage units used when accessing the L-Server disk.

In Resource Orchestrator, LUN masking on the ports of storage units is configured using the definition file combining ports for SAN storage. For ETERNUS storage units, zoning of fibre channel switches is also configured using the port combination definition file of the SAN storage.

When adding a storage unit and then adding it to a resource pool as a storage resource, define the following file:

When the storage unit is Storage Server that operates FalconStor NSS or NetApp FAS storage, this definition file need not be made.

When the definition file has been edited, it is not necessary to restart the manager.

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvmt/customize_data

Definition File Name

storage_portset.rcxprop

Definition File Format

Describe the storage information. Each storage information must be described using a single line, and be in the following format starting from the start of the line. Use of line breaks is not allowed.

```
storage_unit_ipaddr,"port X:port Y","port X:port Y",...
```

Definition File Items

- When using ETERNUS storage

storage_unit_ipaddr

Specify IP addresses of operation management LAN ports of ETERNUS storage that are managed by ESC.
When the same IP address is specified in multiple lines, the first defined line is valid.

Portset

A pair of FC-CA ports of ETERNUS storage used when accessing an L-Server disk, represented using the WWPN of the FC-CA ports.

Specify a pair of FC-CA ports using two WWPNs (16 digit hexadecimal numbers) separated with colons (":"). A maximum of 64 combinations can be specified.

If there is trouble with the ETERNUS storage controller, in order to avoid blocking both of the FC-CA ports used for L-Server, do not use combinations of ports on the same controller.

WWPNs of FC-CA ports that are not connected using Fibre Channel cable cannot be specified.

WWPNs that are already defined cannot be specified for different portsets.

LUN masking and zoning are configured by the following pairs of HBA and storage unit port. Check that Fibre Channel cables are connected between the ports of HBAs and storage units.

- HBA Port1 and the first defined storage unit port
- HBA Port2 and the second defined storage unit port

Point

In Resource Orchestrator, access paths are defined in the following order.

- Storage unit port defined in portX and HBA Port1
- Storage unit port defined in portX and HBA Port2

Note

The order of the HBA Ports to which HBA address rename allocates the WWN depends on the server hardware type.

Refer to "C.2 WWN Allocation Order during HBA address rename Configuration" in the "Design Guide CE".

- When using EMC CLARiiON storage or EMC VNX storage

storage_unit_ipaddr

Specify the IP address of SP of EMC CLARiiON storage or EMC VNX storage.

When the same IP address is specified in multiple lines, the first defined line is valid.

Portset

A pair of SP ports of EMC CLARiiON storage or EMC VNX storage used when accessing an L-Server disk, represented using an SP port name.

Specify a pair of SP ports using two SP port names separated with colons (":"). A maximum of 64 combinations can be specified.

If the number of FCs to be used on one L-Server is 1 or 4, use the definition file described in "[7.1.7 Setting the Number of FCs Fitted and their Position for Each Physical Server](#)" rather than the file described here.

The two ports specified here should be selected from the SP ports of different SPs. When using SP ports on the same SP of EMC CLARiiON storage or EMC VNX storage, if there is trouble with the SP, the SP ports used by L-Servers may not be available.

SP ports that are not connected using Fibre Channel cables cannot be specified.

SP ports that are already defined cannot be specified for different portsets.

- When using EMC Symmetrix DMX storage or EMC Symmetrix VMAX storage

storage_unit_ipaddr

Specify the Symmetrix ID of EMC Symmetrix DMX Storage or EMC Symmetrix VMAX Storage.

When the same Symmetrix ID is specified in multiple lines, the first defined line is valid.

Portset

A pair of ports of EMC Symmetrix DMX storage or EMC Symmetrix VMAX storage used when accessing an L-Server disk, represented using director numbers and port numbers.

Specify a pair of ports using two port names separated with colons (":"). A maximum of one combination can be specified.

The two ports specified here should be selected from the ports of different directors. When using ports on the same director of EMC Symmetrix DMX storage or EMC Symmetrix VMAX storage, if there is trouble with the director, the ports used by L-Servers may not be available.

The ports not connected using Fibre Channel cables cannot be specified.

Director numbers and port numbers that are already defined cannot be specified for different portsets.

In the following cases, use the definition file described in "7.1.7 Setting the Number of FCs Fitted and their Position for Each Physical Server" rather than the file described here.

- When using 2 or more groups of director ports from an L-Server
- If the number of FCs to be used on one L-Server is 1 or 4
- When there are a large number of L-Servers using the storage



Example

An example definition file is indicated below.

- When using ETERNUS storage

```
192.168.1.24,"500000E0D00C7006:500000E0D00C7086","500000E0D00C7086:500000E0D00C7087"
```

- When using EMC CLARiiON storage or EMC VNX storage

```
192.168.1.24,"SPAPort0:SPBPort0","SPAPort1:SPBPort1"
```

- When using EMC Symmetrix DMX storage or EMC Symmetrix VMAX storage

```
000192601264,"07GPort1:08GPort1"
```

7.1.2 Format Selection for the Names of Virtual Storage Resources and Disk Resources Managed by ESC

The format of the names of virtual storage resources and disk resources managed by ESC can be selected. When the definition file has been edited, restart the manager.

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvnr/customize_data

Definition File Name

storage.rcxprop

Definition File Format

In the definition file, the items to set are entered on individual lines. Each line is entered in the following format.

<i>Item_specified = Value_specified</i>

Definition File Items

ETERNUS_VOLUME_NAME_TO_DISK_NAME

Select the format of the name of disk resources managed by ESC.

- If "true" is specified

The alias name of the ETERNUS LUN will be the disk resource name. If the format of the alias name is not suitable for the format of the disk resource name, Resource Orchestrator automatically sets a disk resource name that conforms to the alias name. Even if "true" has been specified, when ETERNUS does not support the alias name, the disk resource name will be same as when "false" has been specified.

- If "false" is specified

The disk resource name will be as follows, based on the LUN type.

- **Open Volume**

A name combining the IP address of the ETERNUS, the RAID group number, and the volume number.

Example: P192-168-0-201_R0x0000_V0x0004

- **TPV(Thin Provisioning Volume)**

A name combining the IP address of the ETERNUS, the TPP number, and the volume number.

Example: P192-168-0-201_T0x0000_V0x0005

- **FTV(Flexible Tier Volume)**

A name combining the IP address of the ETERNUS, the FTRP number, and the volume number.

Example: P192-168-0-201_F0x0000_V0x0006

- If nothing is specified

"false" is set.



If the disk has been separated from the virtual storage and saved, then the ETERNUS LUN alias name is not reflected on the disk resource name even if the value is "true".

ETERNUS_RAIDGROUP_NAME_TO_VSTORAGE_NAME

Select the format of the name of virtual storage resources managed by ESC.

- If "true" is specified

The virtual storage resource name will be the RAID group name of the ETERNUS, the TPP name, or the FTRP name. If the format of the RAID group name, the TPP name, or the FTRP name is not suitable for the format of the virtual storage resource name, Resource Orchestrator automatically sets a virtual storage resource name that conforms to the RAID group name, the TPP name, or the FTRP name. Even if "true" has been specified, when ETERNUS does not support the RAID group name, the TPP name, or the FTRP name, the virtual storage resource name will be the same as when "false" has been specified.

- If "false" is specified

The following names will be used according to the type of the RAID group, TPP, and FTRP.

- **RAID group**

A name combining the IP address of the ETERNUS and the RAID group number.

Example: P192-168-0-201_R0x0000

- **TPP(Thin Provisioning Pool)**

A name combining the IP address of the ETERNUS and the TPP number.

Example: P192-168-0-201_T0x0000

- **FTRP(Flexible Tier Pool)**

A name combining the IP address of the ETERNUS and the FTRP number.

Example: P192-168-0-201_F0x0000

- If nothing is specified

"false" is set.



Example

An example definition file is indicated below.

```
ETERNUS_VOLUME_NAME_TO_DISK_NAME = true
ETERNUS_RAIDGROUP_NAME_TO_VSTORAGE_NAME = true
```

7.1.3 Configuration of Priority for Resource Selection on Thin Provisioning on Thin Provisioning and Automatic Storage Layering

The following resources can be registered in a storage pool with thin provisioning attributes set:

- FTRP and FTV for Automatic Storage Layering
- TPP and TPV for Thin Provisioning

When setting to automatic selection for resource selection while creating L-Server or attaching a disk under the condition that both storage pools with and without the configuration of thin provisioning attributes remain the same priority, either of their resources can be given higher priority.

When the definition file has been edited, restart the manager.

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvnr/customize_data

Definition File Name

storage.rcxprop

Definition File Format

In the definition file, the items to set are entered on individual lines. Each line is entered in the following format.

```
Item_specified=
Value_specified
```

Definition File Items

SELECT_THIN_PROVISIONING_POOL_FIRST

When both storage pools with and without the configuration of thin provisioning attributes remain the same priority, either of their resources can be given higher priority for automatic selection of storage resource.

- If "true" is specified

A storage pool with thin provisioning attributes will be given priority.

- If "false" is specified

A storage pool without thin provisioning attributes will be given priority.

- If nothing is specified
"false" is set.



Example

An example definition file is indicated below.

```
SELECT_THIN_PROVISIONING_POOL_FIRST = true
```

7.1.4 Creating Mirroring Definition Files for Dynamic LUN Mirroring

When using dynamic LUN mirroring, create a mirroring definition file and configure the ETERNUS storage to create a copied volume.

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvmr/customize_data

Definition File Name

storage_mirroring.rcxprop

Definition File Format

Describe the virtual storage information. Each virtual storage information must be described using a single line, and be in the following format starting from the start of the line. Use of line breaks is not allowed.

```
local_storage_ipaddr,virtual_storage_type,local_storage_number,remote_storage_boxid,remote_storage_number,copy_group
```

Definition File Items

local_storage_ipaddr

Enter the IP address of the local site ETERNUS storage device that will automatically create the disk resource.

virtual_storage_type

Specify the virtual server type.

Specify "RAID" for RAID group.

Specify "TPP" for TPP.

local_storage_number

Specify the RAID group or TPP number from which the disk resource will be extracted in the ETERNUS storage on the local site.
Specify 4-digit hexadecimal numbers starting with 0x.

remote_storage_boxid

Specify the BOX-ID of ETERNUS storage in the remote side to create the copied volume.

Check the BOX-ID in "Advanced Copy Path Status" which is the Web GUI for ETERNUS.

remote_storage_number

Specify the RAID group or TPP number that will be used to create the copied volume in the ETERNUS storage on the remote site.
Specify 4-digit hexadecimal numbers starting with 0x.

copy_group

Specify the name for the copy group created when setting inter-chassis copying.

Example

An example definition file is indicated below.

```
192.168.1.24,RAID,0x0011,00ETERNUSDXLS2ET092DD#####LN4521132A09##,0x0022,group1
192.168.1.24,TPP,0x0033,00ETERNUSDXLS2ET092DD#####LN4521132A09##,0x0044,group2
```

7.1.5 Definition File for EMC Storage

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.

Storage Location of the Definition File for EMC Storage

[Windows Manager]

Installation_folder\SVROR\Manager\sys\usm\etc

[Linux Manager]

/opt/FJSVrcvnr/sys/usm/etc

Definition File Name for EMC Storage

emcpath.conf

Definition File Format for EMC Storage

The format of the definition file for EMC storage is as follows:

When registering EMC Navisphere Manager as storage management software, modify the line beginning with "naviseccli".

```
naviseccli=Navisphere CLI_installation_folder
```

When registering EMC Solutions Enabler for storage management software, modify the line beginning with "symcli".

```
symcli=SYMCLI_installation_folder
```

[Windows]

Use "\\" for the file separator. Do not modify the line beginning with "secfilepath".

Example

[Windows]

```
naviseccli=C:\Program Files (x86)\EMC\Navisphere CLI
secfilepath=..\..\etc\storage\emc
symcli=C:\Program Files (x86)\EMC\SYMCLI\bin
```

[Linux]

```
naviseccli=/opt/Navisphere/bin
secfilepath=/etc/opt/FJSVrcvnr/storage/emc
symcli=/opt/symcli/bin
```

7.1.6 Configuration when Creating a Physical L-Server without Specifying a Model Name in the L-Server Template

To create a physical L-Server without specifying a model name in the L-Server template, create the definition file, define the configuration information (CPU core count, CPU clock speed, memory capacity, etc.), and then register the server as a managed server.

When creating a physical L-Server using a rack mount or tower server managed by VIOM, it is also necessary to define the information of the card mounted on the server.

In the following cases, create the definition file first, and then register the hardware information with Resource Orchestrator again.

- If the target server was registered with Resource Orchestrator before creation of the definition file
- When modifying the configuration information (CPU core count, CPU clock speed, memory capacity, etc.) in the definition file of a server that has been registered with Resource Orchestrator

For details, refer to "Chapter 9 Hardware Maintenance" in the "Operation Guide CE".



If the value entered in the definition file differs from the actual configuration information of the server, creation or starting of physical L-Servers may fail, or physical servers may be deployed with incorrect information about CPU and memory.

Be sure to confirm that the values entered in the definition file and the actual configuration information of the server are the same.

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvnr/customize_data

Definition File Name

server_spec.rcxprop

Character Code

[Windows Manager] [Linux Manager]

UTF-8

Line Break Code

[Windows Manager]

CR/LF

[Linux Manager]

LF

Definition File Format

- The following line must be entered in the first line of definition files.

```
ServerSpec,V1.1
```

- In the definition file, enter the configuration information (CPU core count, CPU clock speed, memory capacity, card information, etc.), separated by commas (",").

When defining two or more servers, use line breaks.

Each line is entered in the following format.

```
model_name, cpu_core_count, cpu_clock, memory_size, cpu_type[, cardinfo]
```

Or

```
physical_server, cpu_core_count, cpu_clock, memory_size, cpu_type[, cardinfo]
```

- Blank spaces between data and commas (",") are ignored.

If there is duplicated configuration information (CPU core count, CPU clock speed, memory capacity, etc.) for the same physical server, the values that appear first will be used.

- When adding comments, start the line with a number sign ("#").

Definition File Items

model_name

Enter the model name of the managed server.

Enter "[" for the first character, and "]" for the last character.

The model name displayed in the General information of the Resource Details window.

physical_server

Enter the same physical server name as the one entered when registering a managed server.

Enter a character string beginning with an alphabetical character and containing up to 15 alphanumeric characters and hyphens ("-").

cpu_core_count

Enter the total number of physical CPU cores.

Enter an integer between 0 and 999.

When entering "0", hyphens ("-") are displayed in the basic information on the resource details screen, and physical L-Servers cannot be created.

cpu_clock

Enter the CPU clock speed.

Enter an integer between 0 and 999,999.

Use megahertz for the unit. Enter 1,000 MHz for 1 GHz, for example.

When entering "0", hyphens ("-") are displayed in the basic information on the resource details screen, and physical L-Servers cannot be created.

memory_size

Enter the total memory size.

Enter an integer between 0 and 999999999.

Use megabytes for the unit. Enter 1,024 MB for 1 GB, for example.

When entering "0", hyphens ("-") are displayed in the basic information on the resource details screen, and physical L-Servers cannot be created.

cpu_type

Enter the CPU type.

The string must be composed of alphanumeric characters and symbols (ASCII characters 0x20 to 0x7e), except for commas (","), and can be up to 64 characters long.

When omitted, a hyphen ("-") is displayed.

cardinfo

Enter the information for cards mounted on servers.

When creating a physical L-Server using a rack mount or tower server managed by VIOM, describe the information of the card mounted on the server.

Card information can be omitted. If omitted, the following is described for the hardware configuration (The admin LAN uses OnboardLAN).

```
RX200S7 or later: Onboard LAN1, OnboardLAN2, PCISlot1 (LAN) 2Port, PCISlot2 (FC) 2Port,
PCISlot3 (FC) 2Port
RX300S7 or later: Onboard LAN1, OnboardLAN2, PCISlot1 (LAN) 2Port, PCISlot2 (LAN) 2Port,
PCISlot3 (FC) 2Port, PCISlot4 (FC) 2Port
Other than the above: Onboard LAN1, OnboardLAN2
```

Enter the information in the following format for each card. Use colons (":") to separate each piece of card information.

- Card type

Enter one of the following card types:

- "LAN"
- "FC"
- "CNA"

When entering characters other than the above, the card information will be invalid.

- Slot type

Enter the slot type.

Enter an integer between 0 and 9 for the slot type as below.

- "0": Onboard
- "1" to "9": PCI slot numbers

- Port number

Enter the port numbers. Enter an integer between 1 and 9 for the port number, preceded by a hyphen ("-").

- Flags to confirm if the LAN card is used for an admin LAN

When using a LAN card for an admin LAN, enter "***" or "*" to indicate that the LAN card is used for an admin LAN.

When using the card for a LAN other than an admin LAN, do not enter anything.

Enabled when the card type is set to "LAN" or "CNA".

- The card for the primary admin LAN: Enter "*".
- The card for the secondary admin LAN: Enter "***".
- A card not for an admin LAN: Leave blank.

Enter the order of the definition of the LAN or CNA as follow:

Primary_admin_LAN-> Secondary_admin_LAN-> Public_LAN

Example

An example definition file is indicated below.

```
ServerSpec,V1.1
#####
# server_spec.rcxprop
#
#All Rights Reserved, Copyright(C) FUJITSU LIMITED 2012
#####
#
# [model_name], cpu_core_count, cpu_clock, memory_size, cpu_type, cardinfo
# physical_server, cpu_core_count, cpu_clock, memory_size, cpu_type, cardinfo
#
server001, 8, 3160, 4096, Intel(R) Xeon(R)
server002, 8, 2660, 12288, Intel(R) Xeon(R),LAN1-1*:LAN1-2**:*:LAN0-1:LAN0-2:FC2-1:FC2-2
[PRIMERGY RX300 S7], 2, 2000, 65536, Intel(R) Xeon(R),LAN1-1*:LAN1-2**:*:LAN0-1:LAN0-2:FC2-1:FC2-2
server004, 4, 4000, 4096, Intel(R) Xeon(R) Processor E5501
```

7.1.7 Setting the Number of FCs Fitted and their Position for Each Physical Server

If the number of FCs fitted or their location differs from physical server to physical server, prepare an "FC connection pattern" and define the number of FCs and their location for each physical server.

This setting can be made when the storage units are the following:

- SP ports that are already defined cannot be specified for different portsets.
- EMC Symmetrix DMX Storage
- EMC Symmetrix VMAX Storage

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data\fc_connection_pattern

[Linux Manager]

/etc/opt/FJSVrcvmr/customize_data/fc_connection_pattern

Definition File Name

Make the file extension .rcxprop and then allocate a file with an arbitrary file name. Specify the file name using the following string:

The file name must start with an alphanumeric character, and can contain up to 64 alphanumeric characters, underscores ("_"), and hyphens ("-").

Definition File Format

Create a different "FC pattern" file for each system that has a different pattern.

```
NUM_OF_FC=Number_of_FCs_used
BOOT_FC_PORT =["HBA_number", "HBA_number"]
STORAGE_X="Storage_chassis_identifier", "HBA_number", "target_port_number"
```

Definition File Items

NUM_OF_FC (mandatory)

Specify the number of FCs to be used. 1, 2, and 4 can be specified for the number.

BOOT_FC_PORT

Specify the number of HBAs that are actually mounted on the server.

Allocate a sequential number to all of the ports, sorted in the expansion slot order.

By specifying the HBA numbers, up to two FC ports can be set as Boot paths.

The priority of HBA numbers is set based on the order in which they are listed.

Only numbers under the value specified in NUM_OF_FC can be specified.

NUM_OF_FC value	Valid Range of HBA Numbers
4	0 - 3
2	0 - 1
1	0

STORAGE_X (mandatory)

Specify as many as there are connected storage chassis. However, the number in X must be a decimal between 0 and 99, starting from 0 and counting up.

"Storage chassis identification number"

Specify the storage chassis identification number.

"HBA number"

Define the FCPort pairing on the server side, separating with a colon (:).

"target port number"

Define the FCPort pairing on the storage side, separating with a colon (:).

By specifying separate HBA numbers for each STORAGE_X, logical paths to two storage chassis can be set from each single physical server.

However, if the same storage chassis identification number is defined multiple times, only the one defined first will be valid.

Note

- The file names of FC connection patterns cannot be changed after performing the following operations:
 - Import of the L-Server template specifying an FC connection pattern
 - Turning on of the physical L-Server with a definition specifying an FC connection pattern
 - Creation of a physical L-Server specifying an FC connection pattern
- The details of FC connection pattern files can only be changed in the following cases:

When a physical L-Server with an FC connection pattern specified is in the defined state

Example

An example definition file is indicated below.

- If 2 paths (1 boot path)

```
NUM_OF_FC = "2"
BOOT_FC_PORT=["1"]
STORAGE_1="000192601264","0:1","07GPort1:08GPort1"
```

- If 2 paths (2 boot path)

```
NUM_OF_FC = "2"
BOOT_FC_PORT=["0", "1"]
STORAGE_1="000192601264","0:1","07GPort1:08GPort1"
```

- If 4 paths (1 chassis)

```
NUM_OF_FC = "4"
BOOT_FC_PORT=["1", "2"]
STORAGE_1="000192601264","0:1:2:3","07GPort1:08GPort1:09GPort1:10GPort1"
```

- If 4 paths (2 chassis)

```
NUM_OF_FC = "4"
BOOT_FC_PORT=["1", "2"]
STORAGE_1="000192601264","0:1","07GPort1:08GPort1"
STORAGE_2="000192601265","2:3","09GPort1:10GPort1"
```

7.1.8 Definition File for Alive Monitoring

When using alive monitoring, create the definition file and specify the parameters for alive monitoring. The configuration of this parameter must be unique in the system.

When using alive monitoring on a physical L-Server, monitor hang-up of the operating system corresponding to a physical L-Server using the OS Ping response.

For details on Ping monitoring, refer to "Chapter 8 Configuring Monitoring Information" in the "Setup Guide VE".

Location of the Definition File

The file in which the default values are described is located during installation.

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data\alive_monitoring

[Linux Manager]

/etc/opt/FJSVrcvnr/customize_data/alive_monitoring

Definition File Name

Physical.rcxprop

The file name is not case sensitive.

Definition File Format

In the definition file, the items to set are entered on individual lines. Each line is entered in the following format.

<i>Item_specified</i> = <i>Value_specified</i>
--

When adding comments, start the line with a number sign ("#").

Definition File Items

timeout

Specify the number of seconds of time-out for ping monitoring.

Enter an integer between 5 and 3,600. The unit is seconds.

"600" is specified as the default.

recovery

Specify recovery operations for when an error is detected.

Specify one of the following:

- reboot (reboot)
- force_reboot (forced reboot)
- switchover (server switchover)
- reboot_and_switchover (reboot and switchover)
- force_reboot_and_switchover (forced reboot and switchover)

"reboot_and_switchover" is specified as the default.

If specifying "switchover" or "force_reboot_and_switchover", enable the server redundancy settings, when creating an L-Server.

reboot

Specify the number of reboots for recovery operations.

Enter an integer between 1 and 3. The unit is seconds.

"1" is specified as the default.



Example

An example definition file is indicated below.

```
timeout = "600"
recovery = "reboot_and_switchover"
reboot = "1"
```

Note

When applying the modified details to an already created L-Server, execute the `rcxadm lserver modify` command after changing the definition files.

7.1.9 Definition File for Admin LAN Uplink Set

When using IBP, it is necessary to create an IBP uplink set for the public LAN and admin LAN in advance.

When using physical L-Servers, it is necessary to create an IBP uplink set for the public LAN and admin LAN, using VIOM.

Storage Location of the Definition File for Admin LAN Uplink Set

```
[Windows Manager]
Installation_folder\SVROR\Manager\etc\customize_data\vnetwork_ibp.rcxprop
```

Definition File Format for Admin LAN Uplink Set

Describe each line in the definition file as below:

```
Key = Value
```

Table 7.1 Definition File Items

Item	Key	Value	Remarks
Regarding IBP environments	support_ibp_mode	- true - false	Specify one of the following: - When operating LAN switch blades on IBP firmware Specify "true". - If other than the above Specify "false". If left blank, "false" is set.
Admin LAN specification	external_admin_net_name	Uplink set names for admin LANs	Enabled when <code>ibp_mode</code> is "true".

7.1.10 Definition File for iSCSI Network

When using iSCSI, create iSCSI network definition files.

Create the following definition file in advance, and define the network information using iSCSI boot.

The definition files relate to the iSCSI boot information registered by performing iSCSI boot operations (`rcxadm iscsictl`).

Refer to "15.4.2 iSCSI Boot Information" in the "Reference Guide (Command/XML) CE".

Location of the Definition File

```
[Windows Manager]
Installation_folder\SVROR\Manager\etc\customize_data
```

```
[Linux Manager]
/etc/opt/FJSVrcvmt/customize_data
```

Definition File Name

- User Groups

iscsi_user_group_name.rcxprop

- Common on System

iscsi.rcxprop

Definition File Format

In the definition file, an item to define is entered on each line. Enter items in the following format:

<pre>Variable = Value</pre>

When adding comments, start the line with a number sign ("#").

Definition File Items

Table 7.2 Items for the iSCSI Network Definition File

Variable	Description	Value
server_model.model_name.boot_nic	<p>Specify the server model names and NICs to boot using iSCSI. Multiple NICs can be specified.</p> <ul style="list-style-type: none"> - BX620 - BX920 - BX922 - BX924 - BX960 <p>An asterisk ("*") is specified by default.</p>	<p>Specify in the following format.</p> <p>NIC[<i>index</i>]</p> <p><i>index</i> is an integer starting from "1".</p>



Example

```
#Server Section
server_model.BX922.boot_nic = NIC1
server_model.BX924.boot_nic = NIC1,NIC2
server_model.*.boot_nic = NIC1,NIC2
server_model.RX300.boot_nic = NIC1,NIC2
```

7.1.11 Definition File for FalconStor NSS

When registering SAN Client CLI as storage management software, it is necessary to specify the installation folder of SAN Client CLI in the definition file for FalconStor NSS.

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\sys\usm\etc

[Linux Manager]

/opt/FJSVrcvnr/sys/usm/etc

Definition File Name

fspath.conf

Definition File Format

The format of the definition file for FalconStor NSS is as follows:

```
iscli = SAN Client CLI_installation_folder
```

[Windows]
Use "\\" for the file separator.

 **Example**

[Windows Manager]
iscli= C:\\Program Files (x86)\\FalconStor\\IPStor\\client

[Linux Manager]
iscli=/usr/ipstor/bin

7.2 Registering Resources with Resource Orchestrator

This section explains how to register resources with Resource Orchestrator.

- [When Using Blade Servers](#)
- [When Using Something Other than a Blade Server](#)

Table 7.3 Resource Registration when Creating Physical L-Servers

Details	When Using Blade Servers (*1)	When Using Rack Mount or Tower Servers (*2)	When Using PRIMEQUEST (*3)	When Using Fujitsu M10/SPARC Enterprise (*3)
Register VIOM	Yes	Yes (*4)	No	No
Register VM management software	No	No	No	No
Register server management software	No	No	No	No
Register storage management software	Yes	Yes	Yes	Yes
Register chassis	Yes	No	Yes	Yes (*5)
Register admin LAN subnets (when there are multiple admin LAN subnets)	Yes	Yes	Yes	Yes
Register managed servers (within chassis)	Yes	No	Yes	Yes (*5)
Register managed servers	No	Yes	No	No
Register LAN switch blades	Yes	No	No	No
Configure VLANs for LAN switch blades manually	Yes (*6)	No	No	No
Settings for the HBA address rename Setup Service	No	Yes (*7)	No	No
Register virtual storage resources	Yes (*8)		No	No
Register disk resources	Yes (*9)		No	No
Register network resources	Yes		No	No
Register network device resources	Yes (*10)		No	No
Register Address Set Resources	Yes		No	No
Register physical image resources	Yes (*11)		No	No
Register virtual image resources	No		No	No
Configure power monitoring devices	Yes (*12)		No	Yes (*12)

Yes: Required
No: Not required

- *1: PRIMERGY BX620 series servers can be used linked with physical L-Servers.
- *2: PRIMERGY TX series and PRIMERGY RX100 series servers can be used linked with physical L-Servers.
- *3: Configured physical servers can be used linked with physical L-Servers.
- *4: Necessary when using rack mount servers which are supported by VIOM.
- *5: Necessary when using SPARC Enterprise M4000/M5000/M8000/M9000 or FUJITSU M10-4S.
- *6: Necessary when not using automatic configuration of LAN switch blade VLANs.
- *7: Necessary when using rack mount servers which are not supported by VIOM.
- *8: Necessary when using virtual storage resources such as RAID groups or aggregates.
- *9: Necessary when using disk resources created in advance such as LUNs.
- *10: Necessary when using firewalls, server load balancers, and L2 switches.
- *11: Necessary when using images created in advance.
- *12: Necessary when monitoring power consumption.

When Using Blade Servers

Registration of resources when creating a physical L-Server using a blade server is explained.

Register using the following procedure:

1. Register VIOM Coordination

Refer to "5.1 Registering VIOM Coordination" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Note

It is not necessary to register a VIOM server profile.

When creating a physical L-Server, VIOM server profiles are automatically created.

2. Register storage management software

When storage management software is registered, RAID groups or aggregates that were created during pre-setup preparations are automatically registered in Resource Orchestrator as virtual storage resources.

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

For details on the `rcxadm storagemgr register` command, refer to "5.17 rcxadm storagemgr" in the "Reference Guide (Command/XML) CE".

Note

If ETERNUS SF Storage Cruiser is specified as the storage management software, virtual storage resources and disk resources registered with ETERNUS SF Storage Cruiser will be recognized. Recognition targets are as follow.

- Virtual storage resources
 - RAID groups
 - TPP
 - FTRP
- Disk resources
 - Open volumes
 - TPV
 - FTV

LUN concatenated volumes and encrypted volumes will not be recognized.

3. Register chassis

Refer to "5.4.1 Registering Chassis" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

4. Register Managed Servers (within Chassis)

Refer to "5.4.2 Registering Blade Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

When performing admin LAN NIC redundancy, check the [Use Admin LAN redundancy] checkbox in the [Register Server] dialog when registering the server.

When directly specifying an IP address during physical L-Server creation, do not configure the same IP address on a managed server. An error will occur during the following operations, if there are managed servers configured with the same IP addresses as those allocated to physical L-Servers, in other than physical servers.

- Create physical L-Servers
- Starting of a physical L-Server for which only the configuration definition has been created

Note

When not using the default NIC, specify the NIC for admin LAN during the physical server registration.

For details, refer to the "[Apply Admin LAN NIC settings] checkbox" in "5.4.2 Registering Blade Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

5. Register LAN switch blades

Refer to "5.4.3 Registering LAN Switch Blades" and "5.13 Registering LAN Switches (L2 Switches)" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

6. Register network device resources

For details on how to register network device resources, refer to "5.7.2 Registering Network Devices" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

7. Register power monitoring devices (when using devices)

Refer to "5.10 Registering Power Monitoring Devices" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

To register a network resource or an address set resource, specify a resource pool when creating the resource.

Refer to "[7.3 Registering Resources in Resource Pools](#)".

When Using Something Other than a Blade Server

Registration of resources when creating a physical L-Server using a server other than a blade server is explained.

Register using the following procedure:

1. Register VIOM coordination or configure HBA address rename

When using rack mount servers which are supported by VIOM, manage them with VIOM.

Refer to "5.1 Registering VIOM Coordination" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

When using servers other than rack mount or tower servers, configure HBA address rename.

Refer to "5.5.2 HBA address rename Settings" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Register storage management software

Execute the `rcxadm storagemgr register` command.

For details on the `rcxadm storagemgr register` command, refer to "5.17 rcxadm storagemgr" in the "Reference Guide (Command/XML) CE".

When storage management software is registered, virtual storage resources and disk resources created in advance are automatically recognized.

Note

If ETERNUS SF Storage Cruiser is specified as the storage management software, virtual storage resources and disk resources registered with ETERNUS SF Storage Cruiser will be recognized. Recognition targets are as follow.

- Virtual storage resources
 - RAID groups
 - TPP
 - FTRP
- Disk resources
 - Open volumes
 - TPV
 - FTV

LUN concatenated volumes and encrypted volumes will not be recognized.

3. Register managed servers

Refer to "5.5.1 Registering Rack Mount or Tower Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

When performing admin LAN NIC redundancy, check the [Use Admin LAN redundancy] checkbox in the [Register Server] dialog when registering the server.

When directly specifying an IP address during physical L-Server creation, do not configure the same IP address on a managed server. An error will occur during the following operations, if there are managed servers configured with the same IP addresses as those allocated to physical L-Servers, in other than physical servers.

- Create physical L-Servers
- Starting of a physical L-Server for which only the configuration definition has been created

4. Register network device resources

For details on how to register network device resources, refer to "5.7.2 Registering Network Devices" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

5. Register power monitoring devices (when using devices)

Refer to "5.10 Registering Power Monitoring Devices" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

To register a network resource or an address set resource, specify a resource pool when creating the resource.

Refer to "[7.3 Registering Resources in Resource Pools](#)".

7.3 Registering Resources in Resource Pools

This section explains the registration of resources to resource pools.

Use the following procedure to register a resource to a resource pool:

1. Register Physical Server Resources

Register physical servers to the server pool.

For details, refer to "14.2 Physical Server Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Register network resources

If network resources are connected when creating an L-Server, LAN switch blades will be registered automatically as the physical server that the L-Server will operate on. If an image is specified, the IP address is configured.

For details, refer to "[7.3.1 Automatic Network Configuration](#)".

- a. In the ROR console orchestration tree, right-click the target network pool, and select [Create Network Resource].

When creating a new network resource, select [New].

When creating a resource using an already registered admin LAN subnet, select [Using existing admin subnet].

The [Create a network resource] dialog is displayed.

- b. Enter the items necessary for network resources.

For details, refer to "14.3 Network Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Note

When the destination of a physical L-Server is a PRIMERGY BX920 series or BX922 series server and LAN switch blades PY-SWB104 (PG-SW109) or PY-SWB101 (PG-SW201) are mounted in CB1 and CB2, only NIC1 and NIC2 can be used.

3. Register network device resources

For details on how to register network device resources, refer to "14.4 Network Devices" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

4. Register storage resources

The procedure differs depending on the storage resources to use.

- When using virtual storage resources or disk resources created in advance

For details, refer to "14.5 Storage Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- When using iSCSI boot

Execute the operation command for iSCSI boot (`rcxadm iscsictl register`) to register the resources.

For details on the `rcxadm iscsictl register` command, refer to "5.10 `rcxadm iscsictl`" in the "Reference Guide (Command/XML) CE".

5. Register Address Set Resources

For WWNs and MAC addresses, address set resources must be created and registered to the address pool.

Execute the `rcxadm addrset create` command to register WWNs and MAC addresses to the address pool.

For details on the `rcxadm addrset create` command, refer to "3.1 `rcxadm addrset`" in the "Reference Guide (Command/XML) CE".

7.3.1 Automatic Network Configuration

If network resources are connected when creating an L-Server, LAN switch blades will be registered automatically as the blade server that the L-Server will operate on.

If an image is specified, the IP address is configured.

Specify an IP address in a different subnet from the admin LAN.

For rack mount and tower servers, only connect network resources.

When creating a physical L-Server, the IP address cannot be automatically configured if specifying a Red Hat Enterprise Linux image.

Manually configure the IP address after the image has been deployed to the L-Server.

Physical Server (Blade Server) Configuration to Support Automation of Network Configuration in Resource Orchestrator

The physical server (blade server) configuration to support automation of network configuration (server blades, specification of uplink port for network resources, correspondence relations of numbers of LAN switch blades and physical network adapters, etc.) in Resource Orchestrator are shown in the following list. In this list, show the specifiable scope of physical network adapter numbers according to the server blade models, uplink port specifications and combination of LAN switch blades to use.

Table 7.4 Physical Server (Blade Servers) Configuration (for PRIMERGY BX900 S1/S2 Chassis)

Server Blade	Specification of Uplink Port (Location of LAN Switch Blade)	LAN Switch Blade to Use	Physical Network Adapter Number
BX920 S1 BX920 S2 BX920 S3 BX920 S4 BX922 S2 BX924 S3 BX924 S4 BX2560 M1 BX2560 M2 BX2580 M1 BX2580 M2	CB1 and CB2, or no specification for uplink port	PY-SWB102(PG-SW111) PY-SWB103(PG-SW112)	1 - 4
		PY-SWB101(PG-SW201) PY-SWB104(PG-SW109) (*1) PY-SWB105 (*2) PY-CFB101 (*2) PY-CNB101 (*2)	1,2
	CB3 and CB4	PY-SWB102(PG-SW111) PY-SWB103(PG-SW112)	5 - 8
		PY-SWB101(PG-SW201) PY-SWB104(PG-SW109) PY-SWB105 PY-CFB101 PY-CNB101	5,6
BX924 S2	CB1 and CB2, or no specification for uplink port	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109)	1,2
	CB3 and CB4	PY-SWB102(PG-SW111) PY-SWB103(PG-SW112)	3 - 6
		PY-SWB101(PG-SW201) PY-SWB104(PG-SW109) PY-SWB105 PY-CFB101 PY-CNB101	3,4
BX960 S1	CB1 and CB2, or no specification for uplink port	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109)	1, 2, 11, 12
	CB3 and CB4 (*3)	PY-SWB102(PG-SW111) PY-SWB103(PG-SW112)	3 - 6
		PY-SWB101(PG-SW201) PY-SWB104(PG-SW109) PY-SWB105 PY-CFB101 PY-CNB101	3,4

*1: When using a server blade which has 1Gpbs onboard NICs and installing a PY-SWB104 (PG-SW109) on CB1 or CB2, set the transmission speed at the down link port of PY-SWB104 (PG-SW109) to 1 Gbps. For details on how to configure the settings, refer to the corresponding hardware manual.

*2: When mounting PY-SWB105, PY-CFB101, or PY-CNB101 on CB1 and CB2, only BX920 S2 or later models, BX924 S3 or later models, BX2560 M1, BX2560 M2, BX2580 M1, and BX2580 M2 models are supported as server blades.

*3: Only configurations where LAN expansion cards are mounted in expansion slot 1 are supported.

Table 7.5 Physical Server (Blade Servers) Configuration (for PRIMERGY BX400 S1 Chassis)

Server Blade	Specification of Uplink Port (Location of LAN Switch Blade)	LAN Switch Blade to Use	Physical Network Adapter Number
BX920 S2 BX920 S3	CB1 and CB2 (*1), or no specification for uplink port	PY-SWB102(PG-SW111) PY-SWB103(PG-SW112)	1 - 8

Server Blade	Specification of Uplink Port (Location of LAN Switch Blade)	LAN Switch Blade to Use	Physical Network Adapter Number
BX920 S4 BX922 S2 BX924 S3 BX924 S4 BX2560 M1 BX2560 M2 BX2580 M1 BX2580 M2		PY-SWB101(PG-SW201) PY-SWB104(PG-SW109) (*2) PY-SWB105 (*3) PY-CFB101 (*3) PY-CNB101 (*3)	1, 2, 5, 6
BX924 S2	CB1 and CB2 (*1), or no specification for uplink port	PY-SWB102(PG-SW111) PY-SWB103(PG-SW112)	1 - 6
		PY-SWB101(PG-SW201) PY-SWB104(PG-SW109)	1 - 4

*1: The same LAN switch blade model should be mounted in CB1 and CB2.

*2: When installing a PY-SWB104 (PG-SW109) on CB1 or CB2, set the transmission speed at the down link port of PY-SWB104 (PG-SW109) to 1 Gbps. For details on how to configure the settings, refer to the corresponding hardware manual.

*3: When mounting PY-SWB105, PY-CFB101, or PY-CNB101 on CB1 and CB2, only BX920 S2 or later models, BX924 S3 or later models, BX2560 M1, BX2560 M2, BX2580 M1, and BX2580 M2 models are supported as server blades.

Table 7.6 Physical Server (Blade Servers) Configuration (for PRIMERGY BX600 S3 Chassis)

Server Blade	Specification of Uplink Port (Location of LAN Switch Blade)	LAN Switch Blade to Use	Physical Network Adapter Number
BX600 series servers	NET1 and NET2, or no specification for uplink port	PG-SW107	1 - 6
	NET3 and NET4	PG-SW104	7,8

The NIC number of the L-Server the network resource above is allocated to is the number of the physical network adapter of the physical server.

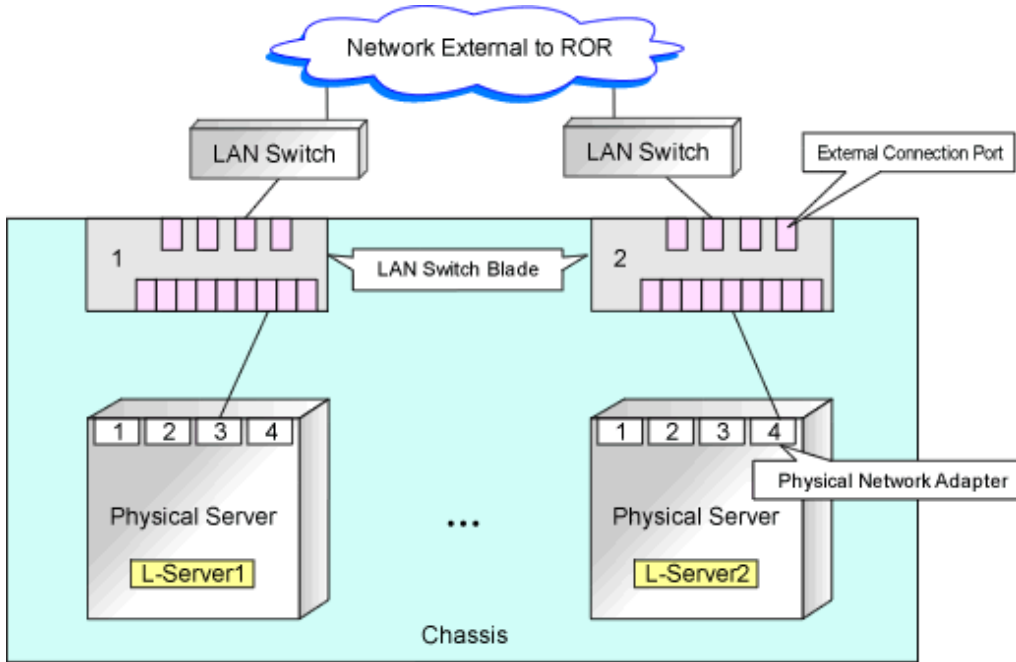
When the LAN switch blade is in IBP mode, specify the NIC of the L-Server that network resources are allocated to as in the case when uplink ports have not been specified (internal network).

The physical server (blade server) configuration as described in the following configuration example when using a PRIMERGY BX900 S1 chassis is as shown below.

Table 7.7 Configuration Example

Server blades	BX920 S2
Specification of uplink port	CB1 and CB2
LAN switch blade to use	PY-SWB103(PG-SW112)

Figure 7.1 Physical Server (Blade Servers) Configuration (for PRIMERGY BX900 S1 Chassis)



7.3.2 Manual Network Configuration

When using a physical network adapter number that is different from the one used in the physical server configuration patterns, create network resources using the following procedure.

- From the GUI:

1. In the ROR console orchestration tree, right-click the target network pool, and select [Create Network Resource].

When creating a new network resource, select [New].

When creating a resource using an already registered admin LAN subnet, select [Using existing admin subnet].

The [Create a network resource] dialog is displayed.

2. Enter the items necessary for network resources.

For details, refer to "14.3 Network Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Create a network resource by checking the [Use configured virtual switches/port profile.] checkbox.

This disables the network resource auto-configuration function.

When using physical L-Servers, virtual switches are not used.

- From the Command-line:

1. Create the XML file that defines network resources.

In this case, specify auto="false" in the Network element.

For details on the Network element and creation of XML files that define network resources, refer to "15.6 Network Resources" in the "Reference Guide (Command/XML) CE".

2. Execute the rxcadm network create command specifying the XML file created in step 1.



See

- For details on the Network element and creation of XML files that define network resources, refer to "15.6 Network Resources" in the "Reference Guide (Command/XML) CE".

- For details on the rxcadm network command, refer to "3.9 rxcadm network" in the "Reference Guide (Command/XML) CE".

7.4 Creating L-Server Templates

This chapter explains how to create an L-Server template.

L-Server templates can be created using the following methods.

- Using the Wizard GUI

L-Server templates can be created using the wizard GUI in the wizard format.

For details on the GUI in the wizard format, refer to "15.1 Operations Using the Wizard GUI" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- Manually

Use the following procedure to create an L-Server template:

1. Export an L-Server template

The sample L-Server templates provided with Resource Orchestrator can be exported.

For details on how to export L-Server templates, refer to "15.2.1 Export" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Edit an L-Server Template

The L-Server template output in step 1 can be edited with an editor, etc.

For details on the L-Server templates for physical L-Servers, refer to "15.2.1 Physical L-Server Templates" in the "Reference Guide (Command/XML) CE".

3. Import an L-Server Template

The L-Server template edited in step 2 can be imported.

For details on how to import L-Server templates, refer to "15.2.3 Import" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

7.5 Creating L-Servers

This section explains the creation of physical L-Servers.

Physical L-Servers can be created using the following methods:

- [Create an L-Server Using an L-Server Template](#)
- [Create an L-Server Specifying Individual Specifications](#)
- [Installation of an Operating System Using PXE Boot](#)

Configuration parameters for an OS can be specified by entering the parameters in the [OS] tab when creating an L-Server specifying an image using the [General] tab. For details, refer to "7.7 [OS] Tab Configuration".

For details, refer to the following:

7.5.1 Creating an L-Server Using an L-Server Template

- When there are no cloning images, or when not using already registered cloning images

1. Create an L-Server using an L-Server template

Create an L-Server, referring to "16.1 Creation Using an L-Server Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

In this case, perform the following configuration:

- Select [None] for images.
- Check if the [Single path mode] checkbox for FC path is checked.
- When specifying "None" for images, the [Single path mode] checkbox for FC path is automatically checked.

2. Manually Install an OS

Refer to "[7.5.3 Manual OS Installation](#)".

3. Multipath Driver Installation (When Using Multipaths for SAN Paths)

When using multipaths between L-Server and SAN, install the multipath driver for the L-Server.

For details on how to install the multipath driver, refer to the multipath driver manual.

4. Stop the L-Server

For details on stopping L-Servers, refer to "17.1.2 Stopping an L-Server" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

5. Change the SAN Path Status of the L-Server

Follow the procedure below to change the SAN path status of the L-Server.

- a. Right-click the target L-Server in the orchestration tree, and select [Change Settings]-[Modify Specification] from the popup menu.

The [Modify an L-Server] dialog is displayed.

- b. Uncheck the [Single path mode] checkbox for FC path.
- c. Click the [OK] button.

6. Start the L-Server

For details on starting L-Servers, refer to "17.1.1 Starting an L-Server" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

7. Install the agent

It is necessary to install an agent after installing the OS, and then register it.

For details on installing agents, refer to "[2.2 Agent Installation](#)".

8. Register the Agent

Use the following procedure to register an agent on the server used as an L-Server.

- a. Right-click the target L-Server in the orchestration tree, and select [Register]-[Agent] from the popup menu.

- b. Click the [OK] button.

The [Register Agent] dialog is displayed.

- c. Click the [OK] button.

- When using an existing cloning image

Create an L-Server, referring to "16.1 Creation Using an L-Server Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE". In this case, specify the cloning image that you want to use as an image.

7.5.2 Creating an L-Server Specifying Individual Specifications

- When there are no cloning images, or when not using already registered cloning images

Refer to "16.2 Creation of Physical L-Servers Using Parameters" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

In this case, perform the following configuration:

- Select [None] for images.
- Check if the [Single path mode] checkbox for FC path is checked.

When specifying "None" for images, the [Single path mode] checkbox for FC path is automatically checked.

Perform steps 2 to 8 in "[7.5.1 Creating an L-Server Using an L-Server Template](#)".

- When using an existing cloning image

Refer to "16.2 Creation of Physical L-Servers Using Parameters" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

In this case, perform the following configuration:

- Specify a cloning image to deploy.
- Check if the [Single path mode] checkbox for FC path is unchecked.

When specifying an image, the [Single path mode] checkbox for FC path is automatically unchecked.

For details on how to configure the [OS] tab, refer to "16.2.5 [OS] Tab" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

7.5.3 Manual OS Installation

Install the OS and applications required for deployment.

For manual OS installation, installation by remote console is recommended after starting the MB (Management Blade) or iRMC (Remote Management Controller) screen.

Additionally, apply any required patches and other necessary settings.

Make sure that the source server operates properly after those steps.

- Check whether the DHCP client is enabled on the managed server to collect the cloning image from.
- Cloning images with the same name can be saved up until the maximum number of image versions.

When collecting a new cloning image when the maximum number of image versions has already been reached, select the cloning image to delete.

The maximum number of image versions is three by default.

For details of how to change the maximum number of image versions, refer to "6.4 Changing the Maximum Number of Cloning Image Versions (Physical Servers)" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- When the target of operation is a PRIMEQUEST server, confirm that the boot option settings on the target server and the boot option set in BIOS are configured for Legacy boot.

When the settings of one of the servers are UEFI, configure the settings after changing to Legacy boot.

For details on changing the boot options, refer to "7.1.10 Changing Boot Options" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

[Windows]

- Enable NetBIOS over TCP/IP
- A volume license is required. In addition, the volume license information must be entered during the installation of Resource Orchestrator agent.

For details, refer to "2.2.1.2 Collecting and Checking Required Information" and "2.2.2 Installation [Windows] [Hyper-V]".

If no volume license is entered during the agent installation, or if this information is changed after installation, edit the following license configuration file on the source server. Note that the structure and location of this file depend on the version of Windows that is being used.

- For Windows Server 2003

Installation_folder\Agent\scw\SeparateSetting\sysprep\sysprep.inf

Edit the following line to enter a valid product ID.

ProductID= <i>Windows product key</i> (*1)
--

*1: 5-digit values separated by hyphens

Example

ProductID=11111-22222-33333-44444-55555

Note

If there is a mistake in the product ID value or format, an error occurs when the collected cloning image is deployed. Make sure to enter a valid product ID when editing the definition file.

- For Windows Server 2008 or Later

Installation_folder\Agent\scw\SeparateSetting\ipadj\activation.dat

Specify the parameters in the format "parameter=value" in each line of the [ActivationInfo] section of the definition file.

Refer to the following table for details on each parameter.

Table 7.8 Structure of the Definition File

Method	Parameter	Value
KMS	.cmd.remotescript. 1.params.kmscheck (Mandatory)	KMS host search type. Select one of the following: - AUTO Automatically searches KMS hosts. - MANUAL Specify the KMS host. When "MANUAL" is selected, make sure to set .cmd.remotescript.1.params.kmsname.
	.cmd.remotescript. 1.params.kmsname	Host name (FQDN), computer name or IP address of the KMS host.
	.cmd.remotescript. 1.params.kmsport	KMS host port number. If omitted, "1688" will be set.
MAK	.cmd.remotescript. 1.params.makkey (Mandatory)	MAK key.
Common	.cmd.remotescript. 1.params.ieproxy	Host name (FQDN) and the port number of the proxy server. The host name and port number are separated by a colon (":").
	.cmd.remotescript. 1.params.password	Administrator password. An existing password setting will be displayed as an encrypted character string. To edit the password, overwrite it with plain text, delete the "encrypted=yes" line, and perform the encryption procedure indicated in the example. If this parameter is not set, the password will be re-initialized.
	encrypted	The encryption status of the Administrator password. Encryption is performed when "yes" is specified. If this line exists, the rcxadm deployctl command does not operate.

Example

- With KMS (Automatic Search)

```
[ActivationInfo]
.cmd.remotescript.1.params.kmscheck=AUTO
.cmd.remotescript.1.params.ieproxy=proxy.activation.com:8080
.cmd.remotescript.1.params.password=PASSWORD
```

- With KMS (Manual Settings)

```
[ActivationInfo]
.cmd.remotescript.1.params.kmscheck=MANUAL
.cmd.remotescript.1.params.kmsname=fujitsu.activation.com
.cmd.remotescript.1.params.kmsport=4971
.cmd.remotescript.1.params.ieproxy=proxy.activation.com:8080
.cmd.remotescript.1.params.password=PASSWORD
```

- With MAK

```
[ActivationInfo]
.cmd.remotescript.1.params.makkey=11111-22222-33333-44444-55555
.cmd.remotescript.1.params.ieproxy=proxy.activation.com:8080
.cmd.remotescript.1.params.password=PASSWORD
```

If the Administrator password has been changed, execute the following command. The password specified in the `.cmd.remotescript.1.params.password` parameter of the definition file is changed to the encrypted string, and the line `encrypted=yes` is added to indicate that the password is encrypted.

For details, refer to "5.8 rcxadm deployctl" in the "Reference Guide (Command/XML) CE".

```
>"Installation_folder\Agent\bin\rcxadm" deployctl passwd -encrypt <RETURN>
```

- With MAK (Already Encrypted Password)

```
[ActivationInfo]
.cmd.remotescript.1.params.makkey=11111-22222-33333-44444-55555
.cmd.remotescript.1.params.ieproxy=proxy.activation.com:8080
.cmd.remotescript.1.params.password=xyz123456
encrypted=yes
```

[Windows]

- For physical L-Servers, specify the NIC number defined for the rack mount or tower servers decided in "9.1.1 Admin LAN Network Design" and "9.1.3 Physical Network Design for the Public LAN and iSCSI LAN" in the "Design Guide CE" as the subscript.

Example

If the NIC number of the leftmost NIC on the back of a rack mount server is defined as "1", specify "Local area connection 1" here.

[Linux]

- For physical L-Servers, specify the number with 1 subtracted from the NIC number defined for the rack mount or tower servers decided in "9.1.1 Admin LAN Network Design" and "9.1.3 Physical Network Design for the Public LAN and iSCSI LAN" in the "Design Guide CE" as the subscript.

Example

If the NIC number of the leftmost NIC on the back of a rack mount server is defined as "1", specify "eth0" here.

Information

The following are examples of the methods for aligning the subscript of a network interface name and NIC number of the NIC at back of the rack mount server.

For details, refer to the OS manual.

- Red Hat Enterprise Linux

Configure the MAC address of the NIC at the back of the rack mount server for HWADDR in the following file: `/etc/sysconfig/network-scripts/ifcfg-ethX`

- SLES

Use `udev`.

7.5.4 Installation of an Operating System Using PXE Boot

This section explains how to install an operating system using PXE boot.

To manually install an operating system using PXE boot, use the following procedure.

Note

When using PXE boot, VIOM is required.

1. Create a physical L-Server, selecting [NIC for PXE boot] and [Network for PXE boot] of "Boot device priority" on the [Server] tab.

For details on how to configure the [Server] tab, refer to "16.2 Creation of Physical L-Servers Using Parameters" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

In this case, perform the following configuration:

- Specify the network boot (PXE) for the boot mode.
 - Select the network resource for PXE boot.
 - Select [None] for images.
 - Check if the [Single path mode] checkbox for FC path is checked.
 - When specifying [None] for images, the [Single path mode] checkbox for FC path is automatically checked.
2. Using the DHCP service settings of the PXE boot server, set the relevant physical L-Server to perform PXE boot.
 3. Using PXE boot, install an OS on the physical L-Server.
 4. Stop the physical L-Server after installing the OS.
 5. In the [Modify an L-Server] dialog, change [Network for PXE boot] to [Default] under [Boot mode].
 6. Using the DHCP service settings of the PXE boot server, set the relevant physical L-Server so as not to perform PXE boot.
 7. Start the L-Server.

For details on starting L-Servers, refer to "17.1.1 Starting an L-Server" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8. Install a multipath driver.

When using multipaths between L-Server and SAN, install the multipath driver for the L-Server.

Refer to the manual of the multipath driver for details on installing multipath drivers.

9. Stop the L-Server.

For details on stopping L-Servers, refer to "17.1.2 Stopping an L-Server" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

10. Change the status of SAN paths for the L-Server.

Follow the procedure below to change the SAN path status of the L-Server.

- a. Right-click the target L-Server in the orchestration tree, and select [Change Settings]-[Modify Specification] from the popup menu.

The [Modify an L-Server] dialog is displayed.

- b. Uncheck the [Single path mode] checkbox for FC path, and click the [OK] button.

11. Start the L-Server.

For details on starting L-Servers, refer to "17.1.1 Starting an L-Server" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

12. Install the agent.

It is necessary to install an agent after installing the OS, and then register it.

For details on installing agents, refer to "2.2 Agent Installation".

13. Register the agent.

Use the following procedure to register an agent on the server used as an L-Server.

- a. Right-click the target L-Server in the orchestration tree, select [Register]-[Agent] from the popup menu, and click the [OK] button.

The [Register Agent] dialog is displayed.

- b. Click the [OK] button.

7.6 Collecting and Registering Cloning Images

Cloning images can be collected using the following two methods:

- When Collecting a Cloning Image from an L-Server after OS Installation

Refer to "7.6.1 When Collecting a Cloning Image from an L-Server after OS Installation".

- When Registering a Cloning Image Created from a Physical Server in Advance to the Image Pool

Refer to "14.7.2 Physical Image Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

When the target server of cloning image collection has a redundant NIC configured, release redundancy and then perform collection of cloning images.

When using multipaths between an L-Server and a SAN, perform collection of cloning images with the multipath driver installed.

7.6.1 When Collecting a Cloning Image from an L-Server after OS Installation

Cloning images can be collected from the L-Server after an OS is installed.

1. Collection of a cloning image

In the orchestration tree on the [Resource] tab of the ROR console, right-click the L-Server created in "[L-Servers for Infrastructure Administrators](#)", and select [Cloning] - [Collect] from the popup menu.

The [Collect a Cloning Image] dialog is displayed.

Configure the necessary items.

The cloning image is stored in the specified image pool.

For details on collecting cloning images, refer to "17.5.1 Collecting and Registering" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

 **Note**

- This function is not available if ServerView Deployment Manager is used on the admin LAN. Use the cloning function of ServerView Deployment Manager. For details, refer to "1.2 Co-Existence with ServerView Deployment Manager".
 - When cloning, only the content of the first disk recognized in the BIOS (the boot disk) of the managed server is collected. Data disk content (second disk onwards) cannot be cloned. Use other backup software and the copy functions of storage units to collect and deploy the data.
- If multiple storage areas (Windows drives or Linux partitions) are set in the first disk, all the partitions are cloned.

Table 7.9 Cloning Target Examples

Disk	Windows Drive	Cloning Target
First disk	C:	Yes
	E:	Yes
Second disk	D:	No
	F:	No

- When collecting a cloning image, work must be stopped because the managed server is restarted.
- The first partition must be a primary partition.
- Cloning images can be collected with the following file systems. Note that LVM (Logical Volume Manager) partitions are not supported.
 - NTFS
 - EXT3
 - EXT4
 - LinuxSwap

 **Point**

When using Red Hat Enterprise Linux 7, the XFS file system is installed by default.

- When the managed server is Windows Server 2012, collection of cloning images from system disks that include ReFS data areas is not possible.
 - All of the following conditions must be met for the managed server to collect the cloning image from and the managed server to deploy the cloning image to.
 - The model names are the same
 - The hardware configurations are the same, such as the optional cards and expansion cards, and their locations
 - The BIOS settings are the same for all servers according to the procedure in "8.2.7 Configuring BIOS Settings of Managed Servers" in the "Design Guide CE".
 - The LAN and SAN connections have the same redundancy methods and the same number of redundancy paths, and can access the same network devices and storage units

Note that LAN or fibre channel switches connected in a cascade configuration are viewed as a single device.
 - Some applications may require manual adjustments to function properly after cloning.
- If necessary, manually perform such adjustments before or after the cloning process.

- Up to four system image backup, restoration, and cloning image collection processes can be executed at the same time. If five or more processes are requested, the extra processes wait until the processes being executed are complete.

Restore operations executed by the backup/restore method during server switchover and failback also wait. When using auto-recovery and manual switchover operations with the backup/restore method, execute a maximum of three system image backup/restore or cloning image collection/deployment operations at the same time.

- After collecting or deploying a cloning image, software required for connecting to external servers, etc. when the OS is started may not start correctly.

In this case, restart the OS after it is collected.

- If the Watchdog (function that automatically resets or turns off the OS when a hang is detected because the OS does not respond for a certain period) function of the managed server is enabled, the OS may be automatically reset or turned off during cloning.

It is therefore highly recommended to disable the Watchdog function before a cloning operation.

For details, refer to the manual of the managed server.

- When using MAK license authentication for activation for the following OSs, Sysprep can be executed a maximum of three times.
 - Microsoft(R) Windows Server(R) 2008 R2
 - Microsoft(R) Windows Server(R) 2008

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 four times. Therefore, it is recommended not to collect cloning images from L-Servers that have had cloning images deployed, but to collect them from a dedicated master server.

- As there is a chance that data will be damaged, do not perform collection or deployment of a cloning image while performing an iSCSI connection using a software initiator.

When using data disks, use the hardware initiator.

7.7 [OS] Tab Configuration

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, entry is not necessary.

Table 7.10 List of Settings

Item	Description
Host name/Computer name	Enter the host name or computer name. [Windows] Specify up to 63 characters, including alphanumeric characters, underscores ("_"), and hyphens ("-"). The string cannot be composed solely of numbers. [Linux] Specify up to 64 characters, including alphanumeric characters, hyphens ("-"), periods ("."), and underscores ("_"). Underscores ("_") in the L-Server name will be converted to hyphens ("-"). If the basic information is not specified, the L-Server name is converted and set as indicated above.

7.8 Network Redundancy and VLAN Settings of L-Servers

In Resource Orchestrator, when images of Red Hat Enterprise Linux are specified, IP address settings of public LANs are not configured. Server NIC redundancy and the OS settings of tagged VLANs are also not configured.

When starting an OS after L-Server creation, set the image to be configured automatically after creating an L-Server. For this setting, use the image collected in the state where the scripts to configure the network settings have been prepared beforehand.

In this case, prepare a script like the following, and perform collection of a cloning image with the script executed once on starting of the OS.

According to the description in the network information file, perform the following settings for using NIC redundancy software (such as Windows Intel PROSet/Linux bonding).

- NIC Redundancy
- Tagged VLAN Configuration
- IP Address Configuration

For details on the specifications of the network information file, refer to "[Network Information File](#)".

Network Information File

The settings for NIC redundancy and tagged VLANs for a physical L-Server are described in the file. It is automatically transferred to a physical L-Server during creation. When the rcxadm lserver command is executed after creation of the physical L-Server, the network information file will be transferred to the L-Server.

Network Information File Storage Destination

```
[Windows]
Installation_folder\Agent\etc\net

[Linux]
/etc/opt/FJSVrcxat/net/
```

File Name of the Network Information File

```
net_info.conf

Character Code

    UTF-8

Line Break Code

    [Windows]
    CR/LF

    [Linux]
    LF
```

Format for the Network Information File

The formats are shown below.

Table 7.11 List of Items Specified in the Network Information File

Variable	Description	Value
NIC[index]_MacAddress	NIC MAC address (*)	MAC addresses, noted in hexadecimal form, separated by colons (":")
Groups	List of groups of redundant NICs	Group numbers, separated by spaces
Group[index]_NetworkLinks	NetworkLink list allocated to groups	NetworkLinkIndex separated by spaces
Group[index]_[NetworkLinkIndex]_Nics	List of NICs comprising groups	NIC numbers separated by spaces
Group[index]_[NetworkLinkIndex]_IpAddress	Group IP address	IPv4 addresses separated by periods (".")
Group[index]_[NetworkLinkIndex]_Netmask	Net masks of groups	

Variable	Description	Value
Group [index]_[NetworkLinkIndex]_DefaultGateway	Default gateway	
Group [index]_[NetworkLinkIndex]_Vlanid	VLANID of NetLink allocated to the group	2 - 4094
Group [index]_[NetworkLinkIndex]_VlanMode	Specification of tagged VLANs or untagged VLANs	tagged or untagged
Group[index]_[NetworkLinkIndex]_ExtParams_[ParamName]	Additional group parameters For [ParamName], the parameter name specified during L-Server creation is used.	Parameter value specified by the user
SingleNics	List of non-redundant NICs in single configurations	NIC numbers separated by spaces
NIC [index]_NetworkLinks	NetworkLink list allocated to groups	NetworkLinkIndex separated by spaces
NIC [index]_[NetworkLinkIndex]_IpAddress	NIC IP addresses	IPv4 addresses separated by periods (".")
NIC [index]_[NetworkLinkIndex]_Netmask	NIC Net masks	
NIC [index]_[NetworkLinkIndex]_DefaultGateway	Default gateway	
NIC [index]_[NetworkLinkIndex]_Vlanid	VLANID of NetLink allocated to NICs	2-4094
NIC [index]_[NetworkLinkIndex]_VlanMode	Specification of tagged VLANs or untagged VLANs	tagged or untagged
NIC [index]_[NetworkLinkIndex]_ExtParams_[ParamName]	Additional NIC parameters For [ParamName], the parameter name specified during L-Server creation is used.	Parameter value specified by the user

* Note: This message is not output, when using a physical L-Server in a server environment managed using something other than VIOM.



Information

Network Information Extension Files

When using a driver specific parameter such as GLS or Bonding for the script configuring the network, describe the information in the following files:

- Network unit parameter (describes IP addresses and static routing of monitoring targets for GLS or Bonding)

[Windows]

Installation_folder\SVROR\Manager\etc\customize_data\net\net_info.network_resource_name.conf

[Linux]

/etc/opt/FJSVrcvmr/customize_data/net\net_info.network_resource_name.conf

- L-Server unit parameter (configures QoS or others to set for NICs)

[Windows]

Installation_folder\SVROR\Manager\etc\customize_data\net\net_info.l_server name.conf

[Linux]

/etc/opt/FJSVrcvnr/customize_data/net/net_info.l_server name.conf

Character Code

UTF-8

Line Break Code

[Windows]

CR/LF

[Linux]

LF

When deploying L-Servers, send a network information file with content matching the L-Server name or the name of a network resource connected to the L-Server, to the destination server.

The sample script for configuring a network is stored on the Resource Orchestrator DVD-ROM (disk 1).

Storage Location for Tool

[Windows]

\DISK1\Common\network_script

[Linux]

/DISK1/Common/network_script

For details on how to use the sample, refer to the readme included in the sample.



Example

```
#MAC information list of NIC equipped on Physical Server
NIC0_MacAddress="XX:XX:XX:XX:XX:X1"
NIC1_MacAddress="YY:YY:YY:YY:YY:Y2"
NIC2_MacAddress="XX:XX:XX:XX:XX:X3"
NIC3_MacAddress="YY:YY:YY:YY:YY:Y4"
NIC4_MacAddress="XX:XX:XX:XX:XX:X5"
NIC5_MacAddress="YY:YY:YY:YY:YY:Y6"
#####
#NIC redundancy information
#####
Groups="0 1"#Redundant group list(#0,#1 Group exist in this example)
Group0_NetworkLinks="0" #One NetworkLink exists in group 0 (index 0 only)
Group1_NetworkLinks="0 1" #Multiple NetworkLinks exist in group 1 (index 0 to 1)

#Group is written in Group_[NICGroupIndex]_[NetworkLinkIndex]
Group0_0_Nics="0 1" #Bonding NIC 0 and 1
Group0_0_IpAddress="192.168.0.1"
Group0_0_Netmask="255.255.255.0"
Group0_0_DefaultGateway="192.168.0.253"
Group0_0_Vlanid=2
Group0_0_VlanMode="tagged"

Group1_0_Nics="2 3" #Bonding NIC 2 and 3
Group1_0_IpAddress="192.168.1.1"
Group1_0_Netmask="255.255.255.0"
Group1_0_Vlanid=3
Group1_0_VlanMode="tagged"
```



```

Group1_1_Nics="2 3" #Bonding NIC 2 and 3
Group1_1_IpAddress="192.168.2.1"
Group1_1_Netmask="255.255.255.0"
Group1_1_VlanMode="untagged"#Example that VLANID is not specified, since this group is
untagged VLAN
#####
#Non redundant NIC information
#####
SingleNics="4 5"#List of non-redundant NIC
NIC4_NetworkLinks ="0" #One NetworkLink exists in NIC4(index 0 only)
NIC5_NetworkLinks ="0 1" #Multiple NetworkLinks exist in NIC5(index 0 to 1)

NIC4_0_IpAddress="192.168.20.1"
NIC4_0_Netmask="255.255.255.0"
NIC4_0_VlanMode="untagged"#Example where VLANID is not specified, since this group is
untagged VLAN

NIC5_0_IpAddress="192.168.30.1"
NIC5_0_Netmask="255.255.255.0"
NIC5_0_VlanMode="untagged"#Example where VLANID is not specified, since this group is
untagged VLAN

NIC5_1_IpAddress="192.168.40.1"
NIC5_1_Netmask="255.255.255.0"
NIC5_1_Vlanid=40
NIC5_1_VlanMode="tagged"#Tagged VLAN

```

7.9 Methods for Selecting Physical Servers Automatically

When performing the following operations, choose a physical server that satisfies the conditions:

- Create physical L-Servers
- Start a physical L-Server
- Switch over spare servers of physical L-Servers

Explains the prerequisites when using physical servers, and method for selecting a physical server while searching physical servers that satisfy the conditions.

Prerequisites when Using Physical Servers

The physical server that satisfies all of the following conditions will be the target of selection.

- When "status" of physical server is "normal", "warning", or "stop"
- Server switchover is not configured in the server resource tree
- The information of the admin LAN specified in the physical L-Server and the information of the admin LAN for a physical server are the same
- The server types (blade server or rack mount server) of the physical L-Server and the physical server are the same
- The physical server is not used for another physical L-Server (*1)
- All information for a physical server such as "CPU core count", "CPU clock speed", and "memory capacity" can be collected

Selection Method for Physical Servers

Select a physical server from a group of physical servers satisfying prerequisites using the following order of priority:

Describe the items in order of their priority.

- Create physical L-Servers
 - The server in the server pool to which a high priority has been given (*2)
 - The server with the physical server configuration that is most similar to the L-Server definition
 - A server which is not allocated to another physical L-Server that was not running when starting up the previous time
 - A physical server that is in the same chassis as the server started at the last startup (when using a blade server)
 - A physical server which was started at the last startup
- Start a physical L-Server
 - The server in the server pool to which a high priority has been given (*2)
 - The server with the physical server configuration that is most similar to the L-Server definition
 - A server which is not allocated to another physical L-Server that was not running when starting up the previous time
 - A physical server that is in the same chassis as the server started at the last startup (when using a blade server)
 - A physical server which was started at the last startup
 - When there was no physical server, and "HA" is specified for "Server Recovery", physical servers in the spare server pool are searched.
- Switch over spare servers of physical L-Servers
 - The server in the server pool to which a high priority has been given (*2)
 - The server with the physical server configuration that is most similar to the L-Server definition
 - A server which is not allocated to another physical L-Server that was not running when starting up the previous time
 - A physical server that is in the same chassis as the server started at the last startup (when using a blade server)
 - A server that allows "Turn off forcibly" as spare server behavior (*3)

*1: Compare the physical L-Server definition and the physical server using the following conditions. A physical server with the same conditions or meeting all conditions is selected.

- If model names are specified when specifying a physical L-Server
 - The "model names" are the same, or compatible
 - Number of NICs
- If CPUs and memories are specified when specifying a physical L-Server
 - CPU core count
 - CPU clock speed
 - Memory size
 - Number of NICs

*2: When [Resource type] and [Spare server pool] are [Automatic], priority is given to a resource pool. If the priority of resource pools is the same, the resource pool is selected randomly.

*3: A physical L-Server for which "Turn off forcibly to use as a spare server" is set can use a server that allows "Turn off forcibly" as spare server behavior.

When the [Use a low spec server] checkbox for [Spare server specs] is checked, the servers will be selected as follows:

- If model names are specified when specifying a physical L-Server
 - A physical server with the same server model as that in the L-Server definition is selected.

- If CPUs and memories are specified when specifying a physical L-Server Configurations are not checked.

When there are multiple physical servers with the same conditions, the server is selected using the internal logic of Resource Orchestrator.

7.10 Advisory Notes for Physical L-Server Usage

This section explains advisory notes for usage of physical L-Servers.

Deleting an L-Server

- When deleting an L-Server, log out 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 or a LUN for iSCSI boot, it is recommended to delete the data on the disk, as the data is not deleted when deleting an L-Server to which the disk resource is allocated.

For details on how to delete data on disks, refer to "14.5 Storage Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

L-Server Snapshots

Snapshots of L-Servers cannot be used.

Moving an L-Server between servers (Migration)

Moving between servers (migration) cannot be used.

Network Settings for L-Servers OSs

In Resource Orchestrator, settings for an operating system, such as NIC redundancy on servers or tagged VLANs, are not performed. When specifying an image of Red Hat Enterprise Linux, the IP address cannot be automatically configured.

When starting an OS after L-Server creation, set the image to be configured automatically after creating an L-Server. For this setting, use the image collected in the state where the scripts to configure the network settings have been prepared beforehand.

For details, refer to "[7.8 Network Redundancy and VLAN Settings of L-Servers](#)".

Chapter 8 Configuration when Creating Virtual L-Servers

This section explains configuration regarding the creation of virtual L-Servers.

Resources registered in Resource Orchestrator are as follows:

Table 8.1 Resource Registration when Creating Virtual L-Servers

Details	When Using Blade Servers	When Using Rack Mount or Tower Servers	When Using PRIMEQUEST Servers	When Using Fujitsu M10/SPARC Enterprise (*1)
Register VIOM (*2)	Yes	Yes (*3)	No	
Register VM management software	Yes (*4)			No
Register server management software	No			Yes (*5)
Register storage management software	Yes (*6)			No (Solaris 10) / Yes (Solaris 11)
Register chassis	Yes	No	Yes	Yes (*7)
Register admin LAN subnets (when there are multiple admin LAN subnets)	Yes			
Register managed servers (within chassis)	Yes	No	Yes	Yes (*7)
Register managed servers	No	Yes	No	Yes (*8)
Register LAN switch blades	Yes	No		
Configure VLANs for LAN switch blades manually	Yes (*9)	No		
Configure the settings of the HBA address rename setup service (*10)	No	Yes (*11)	No	
Register virtual storage resources	Yes (*12)			
Register disk resources	Yes (*13)			Yes (*5)
Register network resources	Yes			
Register network device resources	Yes (*14)			
Register Address Set Resources	Yes (*6, *13, *15)			No
Register physical image resources	No			
Register virtual image resources	Yes (*16)			
Configure power monitoring devices	Yes (*17)			

Yes: Required

No: Not required

*1: Virtual L-Servers cannot be used on SPARC Enterprise T5120/T5140/T5220/T5240/T5440.

*2: Necessary when using the VIOM server profile switchover method for server switchover for the VM host.

*3: Necessary when using rack mount servers which are supported by VIOM.

*4: Register when using VMware, Hyper-V, OVM for x86 2.2, or OVM for x86 3.x.

*5: Necessary when using Solaris Zones (Solaris 10) or OVM for SPARC.

*6: It is necessary to register storage management software when using RHEL5-Xen.

*7: Register when using SPARC Enterprise M4000/M5000/M8000/M9000 or FUJITSU M10-4S.

*8: Register when using SPARC Enterprise M3000 or FUJITSU M10-1/M10-4.

*9: Necessary only when not using automatic configuration of LAN switch blade VLANs.

*10: Necessary when using the HBA address rename method for server switchover for the VM host.

*11: Necessary only when using rack mount servers which are not supported by VIOM.

- *12: Register when using virtual storage resources such as datastores.
- *13: Necessary when using RHEL-KVM.
- *14: Register when using firewalls, server load balancers, and L2 switches.
- *15: Register when using Citrix XenServer.
- *16: Register when using images created in advance.
- *17: Necessary for use.

Table 8.2 Resource Registration in Resource Pools when Creating Virtual L-Servers

Setting Items	VMware	Hyper-V	RHEL5-Xen	KVM	Citrix XenServer	OVM for x86 2.2	OVM for x86 3.x	Solaris Zones	OVM for SPARC
Register VM host resources to VM pools	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pre-configure network resources	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Register network resources to network pools	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Register virtual storage resources to storage pools	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes (Solaris 11)	No
Register disk resources to storage pools	No	No	No	Yes	No	No	No	Yes (Solaris 10)	Yes
Register MAC addresses to address pools	No	No	Yes	Yes	Yes	No	No	No	No

Yes: Required
 No: Not required

8.1 Definition Files Commonly Shared when Creating Virtual L-Servers

This section explains the definition files used when creating a virtual L-Server.

When using an L-Server, configuration of a definition file may be necessary.

Table 8.3 Definition Files Commonly Shared when Creating Virtual L-Servers

Definition Files	VMware	Hyper-V	RHEL-Xen	KVM	Citrix XenServer	OVM for x86 2.2	OVM for x86 3.x	Solaris Zones	OVM for SPARC
Overcommit Definition Files	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
VM Specific Information Definition File	Yes	Yes	No	Yes	Yes	No	No	No	No
Definition Files of Priority for Resource Selection on Thin Provisioning	Yes	Yes	No	No	No	No	No	No	No
Definition Files when Creating a Virtual L-Server Using a Server which cannot Use ServerView Agents	Yes	Yes	No	No	No	No	No	No	No
Definition Files when Creating a Virtual L-Server	Yes	No	No	No	No	No	No	No	No

Definition Files	VMware	Hyper-V	RHEL-Xen	KVM	Citrix XenServer	OVM for x86 2.2	OVM for x86 3.x	Solaris Zones	OVM for SPARC
Using VMware ESXi on Another Vendor's Servers									
Definition File for Alive Monitoring	Yes	Yes	No	No	No	No	No	No	No
OS Property Definition File	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes

Yes: Available

No: Not available

8.1.1 Overcommit Definition Files

This section explains overcommit definition files.

Only edit the overcommit definition files when changing the default value of the calculation method for available space for a VM pool used for overcommit.

For details on how to create a VM pool to use for overcommit, refer to "20.2 Creating" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvmr/customize_data



Information

In the storage location above, the sample definition file (pool.sample.rcxprop) is stored. When using the sample as the definition file, place the file after deleting the ".sample" included in the file name.

Name of the Overcommit Configuration File

pool.rcxprop

Format of the Overcommit Configuration File

```
over_commit_calculation=reserve|limit
```

over_commit_calculation

Specify the default value of the calculation method for available space for a VM pool used for overcommit.

The value specified using this parameter is used when the default value is not specified in the [Create a Pool] dialog, or in the calculation method for the available space when executing commands.

Specify one of the following:

- When using a reservation value
Specify "reserve".
- When using an upper limit value
Specify "limit".

"limit" is specified in the following cases:

- When specification of "over_commit_calculation" is omitted
- When an invalid value is specified

Example

over_commit_calculation=reserve

Point

It is necessary to edit the definition file, when migration is not executed using the configuration methods for overcommit functions after performing upgrade of the admin server from ROR V2.3.0 or V3.0.0.

For details, refer to "2.3.1.1 Overcommit Definition Files" in the "Release Notes".

8.1.2 VM Specific Information Definition File

This file contains the information to be specified for a virtual machine when creating an L-Server or when modifying a configured (defined) L-Server.

VM specific information definition files can be created for each user group.

Use the UTF-8 character code.

The order of the priority of the parameters is as follows:

L-Server XML file > L-Server template > Definition file (User group) > Definition file (Shared on the system)

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data\vm_prop

[Linux Manager]

/etc/opt/FJSVrcvml/customize_data/vm_prop

Point

In the storage location above, the sample definition file (vm_VMTYPE.rcxprop.sample) is stored. When using the sample as the definition file, place the file after changing "VMTYPE" to the VM type and deleting ".sample".

Definition File Name

Definition files can be divided into definitions that are available for each user group and definitions that are common on the system.

If the same key is configured in the definition file common on the system and the definition file for a specific user group, priority is given to the values indicated in the definition file for the user group.

- User Groups

vm_user_group_name_VM_type.rcxprop

- Common on System

vm_VM_type.rcxprop

Note

- For *VM_type*, enter the VM type to be specified when creating an L-Server, such as VMware, Hyper-V, Oracle VM, or RHEL-KVM. This value is not case-sensitive.
- When there are multiple files with the same *VM_type* specified in the filename, the *VM_type* of the filenames are sorted in ascending order of character code, and the one listed first will be selected.

Example

```

usergroup1_VMware
usergroup1_VMWARE -> This file will be selected.
usergroup1_vmware

```

- Remove any blank spaces in the VM_type.

Example

```
Oracle VM -> OracleVM
```

Definition File Format

In the definition file, an item to define is entered on each line. Each line is entered in the following format.

```
Key = Value
```

Definition File Items

Specify the following items.

Table 8.4 The List of Parameters

Key	Description
processor_reserve_spec	Specify the minimum amount of CPU resources to be allocated. Enter a value in the range from 0 to the limit of CPU performance, using a number with up to one decimal place, in units of gigahertz. In the XML files for L-Servers and L-Server templates, set the value for "CPUReserve".
processor_share	[VMware] Specify the relative proportion of CPU resources for allocation. Enter an integer equal to or greater than 1. In the XML files for L-Servers and L-Server templates, set the value for "CPUShare". Enabled when the VM type is set to "VMware".
memory_reserve_size	[VMware] [Citrix-Xen] Specify the minimum amount of memory resources to be allocated. Enter a value in the range from 0 to the limit of memory size, using a number with up to one decimal place, in units of gigabytes. In the XML files for L-Servers and L-Server templates, set the value for "MemoryReserve". Enabled when the VM type is set to "VMware" or "Citrix-Xen".
memory_share	[VMware] Specify the relative proportion of memory resources for allocation. Enter an integer equal to or greater than 0. In the XML files for L-Servers and L-Server templates, set the value for "MemoryShare". Enabled when the VM type is set to "VMware".
processor_weight	Specify the priority for CPU allocation. [Hyper-V] Enter an integer between 1 and 10,000. [Citrix-Xen] Enter an integer between 1 and 65535. In the XML files for L-Servers and L-Server templates, set the value for "CPUWeight". Enabled when the VM type is set to "Hyper-V" or "Citrix-Xen".

Key	Description
dynamic_memory	<p>[Hyper-V] Specify the dynamic memory settings.</p> <ul style="list-style-type: none"> - When dynamic memory is enabled Specify "true". - When dynamic memory is disabled Specify "false". <p>When omitted, the value varies depending on the initial memory size and memory buffer specified when creating an L-Server.</p> <ul style="list-style-type: none"> - When the initial memory size or memory buffer is configured Dynamic memory is enabled - When neither initial memory size nor memory buffer is configured Dynamic memory is disabled <p>When dynamic memory is disabled, the values specified for memory_startup_size and memory_buffer_rate will be ignored. Enabled when the VM type is set to "Hyper-V".</p>
memory_startup_size	<p>[Hyper-V] Specify the initial amount of memory to be allocated at startup.</p> <p>Enter a value between 0.1 and the limit of memory size. In the XML files for L-Servers and L-Server templates, set the value for "StartupRAM". When setting this value for a virtual machine, enable dynamic memory in the XML file to be specified when creating an L-Server template or L-Server, or do not specify dynamic memory. When no L-Server template is used and dynamic memory settings are not specified in the XML file specified when creating an L-Server, dynamic memory is enabled or disabled based on the existence of this setting and the setting for memory_buffer_rate.</p> <ul style="list-style-type: none"> - When this setting or memory_buffer_rate are set Dynamic memory is enabled - When this setting and memory_buffer_rate are not set Dynamic memory is disabled <p>When dynamic memory is disabled, this setting is ignored. Enabled when the VM type is set to "Hyper-V".</p>
memory_buffer_rate	<p>[Hyper-V] Specify the percentage of memory to be reserved as a buffer.</p> <p>Enter an integer between 5 and 2000 in units of percent. In the XML files for L-Servers and L-Server templates, set this value for "MemoryBuffer". When setting this value for a virtual machine, either enable dynamic memory in the XML file to be specified when creating an L-Server template or L-Server, or do not specify dynamic memory. When no L-Server template is used and dynamic memory is not specified in the XML file specified during L-Server creation, dynamic memory setting is enabled or disabled based on whether this setting and the setting for memory_startup_size exist.</p> <ul style="list-style-type: none"> - When this setting or memory_startup_size exists Dynamic memory is enabled - When this setting and memory_startup_size are not set Dynamic memory is disabled

Key	Description
	When dynamic memory is disabled, this setting is ignored. Enabled when the VM type is set to "Hyper-V".
memory_weight	[Hyper-V] Specify the priority for allocation of memory. Enter an integer between 0 and 10,000. In the XML files for L-Servers and L-Server templates, set this value for "MemoryWeight". Enabled when the VM type is set to "Hyper-V".
max_definable_memory_size	[KVM] Specify the maximum amount of memory that can be configured for the VM guest on KVM. Enter a value in the range from the limit of memory size to the memory size of a physical server, using a number with up to one decimal place, in units of gigabytes. The memory amount for the VM guest can be changed, using this value as the upper limit. When omitted, this memory size is the same as the amount of physical memory for the VM host. When specifying this item, if the amounts of memory mounted on the VM hosts registered in a VM pool are not the same, specify the memory capacity using a lower value than that of the VM host with the lowest memory capacity. When specifying values exceeding the physical memory capacity, starting of an L-Server will fail. Enabled when the VM type is set to "RHEL-KVM".
memory_hotplug	[KVM] Specify enabling/disabling of the memory hotplug function for VM guests. - When enabling the memory hotplug function Specify "true". - When disabling the memory hotplug function Specify "false". If left blank, "true" is set. The default is "true". The relationship between memory_hotplug and max_definable_memory_size settings is explained in " Table 8.5 Relationship Between memory_hotplug and max_definable_memory_size Settings [KVM] ". Enabled when the VM type is set to "RHEL-KVM".
clock_offset	[KVM] Specify "UTC" or "LOCAL" for the offsets of the virtual hardware clock (virtual CMOS) for virtual machines. If left blank, "LOCAL" is set. The default is "LOCAL". Enabled when the VM type is set to "RHEL-KVM".

Table 8.5 Relationship Between memory_hotplug and max_definable_memory_size Settings [KVM]

Setting of memory_hotplug	Setting of max_definable_memory_size	
	When Settings are Configured	When Omitted
"true", or when the settings are omitted	Configure the max_definable_memory_size values for the maximum memory values.	Configure the total physical memory size of the host for the maximum memory size.
"false"	The value of the memory size is equal to the maximum memory size.	The value of the memory size is equal to the maximum memory size.

Setting of memory_hotplug	Setting of max_definable_memory_size	
	When Settings are Configured	When Omitted
	<p>However, depending on the L-Server operation, the setting value for max_definable_memory_size may be enabled.</p> <ul style="list-style-type: none"> - When creating an L-Server: Enabled - When modifying L-Server specifications: Disabled 	



See

When not describing a parameter in the VM specific information definition file, refer to each element name in "15.3.2 Definition Information for Virtual L-Servers (XML)" in the "Reference Guide (Command/XML) CE".



Note

When modifying specifications of an L-Server to which resources have been allocated, the settings in this definition file are not reflected because priority is given to the values already configured for the L-Server. In this case, enter new values in the XML file and then execute the appropriate commands to reflect the changes.

When individual parameters are specified when creating an L-Server template or L-Server, priority is given to those settings over those in this definition file.

8.1.3 Definition Files of Priority for Resource Selection on Thin Provisioning

When setting to automatic selection for resource selection while creating L-Server or attaching a disk under the condition that both storage pools with and without the configuration of thin provisioning attributes remain the same priority, either of their resources can be given higher priority.

When the definition file has been edited, restart the manager.

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvnr/customize_data

Definition File Name

storage.rcxprop

Definition File Format

In the definition file, the items to set are entered on individual lines. Each line is entered in the following format.

<pre>Item_specified= Value_specified</pre>
--

Definition File Items

- SELECT_THIN_PROVISIONING_POOL_FIRST

When both storage pools with and without the configuration of thin provisioning attributes remain the same priority, either of their resources can be given higher priority for automatic selection of storage resource.

- If "true" is specified
A storage pool with thin provisioning attributes will be given priority.
- If "false" is specified
A storage pool without thin provisioning attributes will be given priority.
- If nothing is specified
"false" is set.

Example

An example definition file is indicated below.

```
SELECT_THIN_PROVISIONING_POOL_FIRST = true
```

8.1.4 Definition Files when Creating a Virtual L-Server Using a Server which cannot Use ServerView Agents

As ServerView Agents cannot be used for the following servers, the hardware configuration information (CPU core count, CPU clock speed, memory capacity, etc.) cannot be acquired.

- PRIMERGY CX1000 series servers
- Other vendor's servers

When creating a virtual L-Server after installing VM management software on the servers above, it is necessary to register a managed server, after creating a definition file first, and defining the configuration information.

In the following cases, create the definition file first, and then register the hardware information with Resource Orchestrator again.

- If the target server was registered with Resource Orchestrator before creation of the definition file
- When modifying the configuration information (CPU core count, CPU clock speed, memory capacity, etc.) in the definition file of a server that has been registered with Resource Orchestrator

For details, refer to "Chapter 9 Hardware Maintenance" in the "Operation Guide CE".

Note

When there are differences between the values in the definition file and the actual configuration information of the server, creation or starting of the virtual L-Server may fail, or the virtual machine may be deployed using incorrect CPU and memory information.

Be sure to confirm that the values entered in the definition file and the actual configuration information of the server are the same.

Location of the Definition File

[Windows Manager]
Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]
/etc/opt/FJSVrcvmr/customize_data

Definition File Name

server_spec.rcxprop

Character Code

[Windows Manager] [Linux Manager]
UTF-8

Line Break Code

[Windows Manager]
CR/LF

[Linux Manager]
LF

Definition File Format

- The following line must be entered in the first line of definition files.

```
ServerSpec,V1.1
```

- In the definition file, enter the configuration information (CPU core count, CPU clock speed, memory capacity, etc.), separated by commas (",").

When defining two or more servers, use line breaks.
Each line is entered in the following format.

```
physical_server, cpu_core_count, cpu_clock, memory_size[, cpu_type]
```

- Blank spaces between data and commas (",") are ignored.

If there is duplicated configuration information (CPU core count, CPU clock speed, memory capacity, etc.) for the same physical server, the values that appear first will be used.

- When adding comments, start the line with a number sign ("#").

Definition File Items

physical_server

Enter the same physical server name as the one entered when registering a managed server.

cpu_core_count

Enter the total number of physical CPU cores.

Enter an integer between 0 and 999.

If "0" is entered, a hyphen ("-") will be displayed in the General information of the Resource Details window, indicating that no virtual L-Server will be created.

cpu_clock

Enter the CPU clock speed.

Enter an integer between 0 and 999,999.

Use megahertz for the unit. Enter 1,000 MHz for 1 GHz, for example.

If "0" is entered, a hyphen ("-") will be displayed in the General information of the Resource Details window, indicating that no virtual L-Server will be created.

memory_size

Enter the total memory size.

Enter an integer between 0 and 999999999.

Use megabytes for the unit. Enter 1,024 MB for 1 GB, for example.

If "0" is entered, a hyphen ("-") will be displayed in the General information of the Resource Details window, indicating that no virtual L-Server will be created.

cpu_type

Enter the CPU type.

The string must be composed of alphanumeric characters and symbols (ASCII characters 0x20 to 0x7e), except for commas (","), and can be up to 64 characters long.

When omitted, a hyphen ("-") is displayed.



Example

An example definition file is indicated below.

```

ServerSpec,V1.1

#####
# server_spec.rcxprop
#
#All Rights Reserved, Copyright(C) FUJITSU LIMITED 2014
#####
#
# physical_server, cpu_core_count, cpu_clock, memory_size, cpu_type
#

server001, 8, 3160, 4096, Intel(R) Xeon(R)
server002, 8, 2660, 12288, Intel(R) Xeon(R)
server003, 2, 2000, 65536
server004, 4, 4000, 4096, Intel(R) Xeon(R) Processor E5501

```

8.1.5 Definition Files when Creating a Virtual L-Server Using VMware ESXi on Another Vendor's Servers

It is necessary to define that the server can be used as a VM software agent without using an agent for Resource Orchestrator, by creating the definition files before registering a server. When registering the server, select the [Register agent] checkbox, and register the server as VM host. In VM hosts registered using these definitions, obtain the server status or hardware configuration information (CPU core count, CPU clock speed, memory capacity, etc.) from VM software.

When the definition file is changed after registration, the modification is not valid.

Note

- The server cannot be used for anything other than a VM host (spare server or Windows/Linux server).
- Even if the following settings are configured, priority is given to the information obtained from VM software.
 - Configuration when Creating a Virtual L-Server Using a Server which cannot Use ServerView Agents
 - Configurations to specify "Enable" for server management software (ServerView) when creating a server
- On VM hosts registered using this definition, the following functions cannot be used.
 - Server switchover
- In the system configuration file for pre-configuration, do not describe the values in the following section header parameter for section name [Server]: If the values are described, registration fails.
 - snmp_community_name

Location of the Definition File

[Windows Manager]
Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]
 /etc/opt/FJSVrcvnr/customize_data

Point

In the storage location above, the sample definition file (server_control.sample.rcxprop) is stored. When using the sample as the definition file, place the file after deleting the ".sample" included in the file name.

Definition File Name

server_control.rcxprop

Character Code

[Windows Manager] [Linux Manager]
UTF-8

Line Break Code

[Windows Manager]
CR/LF

[Linux Manager]
LF

Definition File Format

- The following line must be entered in the first line of definition files.

```
ServerControl,V1.0
```

- In the definition file, the name of each server is described on an individual line.

When defining two or more servers, use line breaks.
Each line is entered in the following format.

```
physical_server
```

Even if there are multiple same physical server names in the individual lines, no errors occur.

- When adding comments, start the line with a number sign ("#").

Definition File Items

physical_server

Enter the same physical server name as the one entered when registering a managed server.

Enter a character string beginning with an alphabetical character and containing up to 15 alphanumeric characters and hyphens ("-"). The following physical server names are ignored.

- Blade Servers
- PRIMEQUEST Servers
- SPARC Enterprise Servers
- Fujitsu M10 Servers
- Unregistered Server

 Information

When there are no definition files when registering a server, or when the physical server name to register is not described, the server is regarded as being a Fujitsu server.

 Example

An example definition file is indicated below.

```
ServerControl,V1.0  
  
#####  
# server_control.rcxprop
```

```
#
#All Rights Reserved, Copyright(C) FUJITSU LIMITED 2012
#####
#
# physical_server
#

server1
server2
```

8.1.6 Definition File for Alive Monitoring

When using alive monitoring, create the definition file and specify the parameters for alive monitoring. The configuration of this parameter must be unique in the system.

The alive monitoring of virtual L-Server monitors the heartbeat of VM guests corresponding to the virtual L-Server by using the heartbeat monitoring functions of server virtualization software.

For details on heartbeat monitoring functions, refer to the server virtualization software manual.

[VMware]

For Resource Orchestrator alive monitoring functions, configure the heartbeat monitoring settings in "VM Monitoring" for VMware HA on each VM guest.

[Hyper-V]

For Resource Orchestrator alive monitoring functions, configure the heartbeat monitoring settings in "Heartbeat setting" for MSFC on each VM guest.



Note

When changing configuration of alive monitoring on server virtualization software, the modification is not reflected on Resource Orchestrator.

Therefore, do not change alive monitoring configurations on server virtualization software.

Location of the Definition File

The file in which the default values are described is located during installation.

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data\alive_monitoring

[Linux Manager]

/etc/opt/FJSVrcvnr/customize_data/alive_monitoring

Definition File Name

- vm_VMware.rcxprop
- vm_Hyper-V.rcxprop

The file name is not case sensitive.

Definition File Format

In the definition file, the items to set are entered on individual lines. Each line is entered in the following format.

```
Item_specified =
Value_specified
```

When adding comments, start the line with a number sign ("#").

Specified Items for vm_VMware.rcxprop

min_uptime

Specify "Minimum uptime" in the heartbeat monitoring settings for VMware.

Enter an integer between 0 and 100000. The unit is seconds.

"120" is specified as the default.

failure_interval

Specify "Failure interval" in the heartbeat monitoring settings for VMware.

Enter an integer between 1 and 100000. The unit is seconds.

"30" is specified as the default.

max_failures

Specify "Maximum per-VM resets" in the heartbeat monitoring settings for VMware.

Enter an integer between 1 and 1000.

"3" is specified as the default.

max_failure_window

Specify "Maximum resets time window" in the heartbeat monitoring settings for VMware.

Enter -1, and an integer between 1 and 1000. The unit is hours.

When -1 is specified, "None" is configured.

"1" is specified as the default.

off_override_cluster

When configuring to disable alive monitoring in Resource Orchestrator, overwrite the heartbeat monitoring settings for VMware clusters, and specify if disabling the heartbeat monitoring settings of VM guests.

To disable heartbeat monitoring configuration of VM guests, specify "true".

To configure the same settings of VM guest heartbeat monitoring as the settings of VMware cluster, specify "false".

"false" is specified as the default.



Note

When applying the modified details to an already created L-Server, execute the rcxadm lserver modify command after changing the definition files.

For details on the following parameters, refer to the VMware manual.

- Minimum uptime
- Failure interval
- Maximum per-VM resets
- Maximum resets time window

Specified items for vm_Hyper-V.rcxprop

restart_period

Specify "Period for restarts [mm:ss]" in the heartbeat monitoring settings for MSFC.

Enter an integer between 0 and 3599. The unit is seconds.

Specify a smaller value of time than that specified in "retry_period_on_failure".

"900" is specified as the default.

restart_threshold

Specify "Maximum restarts in the specified period" in the heartbeat monitoring settings for MSFC.

Enter an integer between 0 and 4294967295.

"1" is specified as the default.

failover

Specify "If restart is unsuccessful, fail over all resources in this service or application" in the heartbeat monitoring settings for MSFC.

When performing failover, specify "true".

When not performing failover, specify "false".

"true" is specified as the default.

retry_period_on_failure

Specify "If all the restart attempts fail, begin restarting again after the specified period [hh:mm]" in the heartbeat monitoring settings for MSFC.

Enter -1, and an integer between 0 and 1439. The unit is minutes.

When -1 is specified, it is disabled.

When specifying 0 to 1,439, specify a larger value of time than that specified in "restart_period".

"60" is specified as the default.



When applying the modified details to an already created L-Server, execute the `rcxadm lserver modify` command after changing the definition files.

Refer to the MSFC manual for details on each parameter.

8.1.7 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 a virtual L-Server. Use the UTF-8 character code for OS property definition files.



The OS property definition file can be configured using the "Setup Wizard" of the ROR console.

Refer to "3.1 Setup Wizard" in the "User's Guide for Infrastructure Administrators CE" for information on "Setup Wizard".

For details on the [OS] Tab, refer to the following:

[VMware]

Refer to "[8.2.9 \[OS\] Tab Configuration](#)".

[Hyper-V]

Refer to "[8.3.9 \[OS\] Tab Configuration](#)".

[KVM]

Refer to "[8.6.8 \[OS\] Tab Configuration](#)".

[Solaris Zones]

Refer to "[8.7.8 \[OS\] Tab Configuration](#)".

[OVM for SPARC]

Refer to "[8.8.7 \[OS\] Tab Configuration](#)".

[Citrix-Xen]

Refer to "[8.9.8 \[OS\] Tab Configuration](#)".

[OVM for x86 3.x]

Refer to "[8.10.8 \[OS\] Tab Configuration](#)".

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]
 /etc/opt/FJSVrcvnr/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 on 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.

Key = Value

When adding comments, start the line with a number sign ("#").

Definition File Items

Specify the following items in a definition file.

Table 8.6 List of Items

Item	Key	Value	Remarks
Domain name	workgroup_name	(*1)	For Windows
	domain_name	(*1)	For Linux
DNS search path	dns_search_path	(*1)	-
Full name	full_name	(*1)	-
Organization name	org_name	(*1)	-
Product key	product_key	(*1)	-
License mode	license_mode	Specify one of the following: - "seat"(number of connected clients) - "server"(in the unit of servers: number of servers used at the same time)	-
Maximum number of connections	license_users	(*1)	-
Administrator password	admin_password	(*1)	-
Administrator user name	admin_user	(*1, *2)	-
Root role password	root_role_password	(*1, *2)	-
Hardware clock configuration	hwclock	Specify one of the following: - "UTC"	-

Item	Key	Value	Remarks
		- "LOCAL"	
DNS server (When configuring for each NIC on Windows) (*3)	nic <i>N</i> _dns_address <i>X</i>	Specify the IP address using numerical values (between 0 and 255) and periods. (*3) When not configuring a DNS server, specify a hyphen ("-").	For <i>N</i> , specify the NIC number. For <i>X</i> , specify primary ("1") or secondary ("2").
DNS server (When configuring all NICs using the same settings on Windows)	dns_address <i>X</i>	Specify the IP address using numerical values (between 0 and 255) and periods.	For <i>X</i> , specify primary ("1") or secondary ("2"). Priority is given to nic <i>N</i> _dns_address <i>X</i> specifications.
DNS server (for Linux)	dns_address <i>X</i>	Specify the IP address using numerical values (between 0 and 255) and periods.	For <i>X</i> , specify primary ("1"), secondary ("2"), or tertiary ("3").
The domain name of the Active Directory to participate in	windomain_name	Specify a character string containing up to 64 alphanumeric characters, hyphens ("-"), and periods (".") that indicates the Active Directory domain name.	Refer to the following URL for details on the rules for naming the domain. http://support.microsoft.com/kb/909264/en-us (*4), (*5), (*6), (*7), (*8)
The domain account to be used for domain participation authentication	windomain_user	Specify the user name used for domain participation in the following format: (*9) Domain_name\user_name or user_name@domain_name Specify a string containing 256 characters or less.	For details on the limitations of the string length of the user name, refer to the following URL: http://technet.microsoft.com/en-us/library/active-directory-maximum-limits-scalability (*4), (*5), (*6), (*8)
The domain password to be used for domain participation authentication	windomain_password	Specify a string including alphanumeric characters and symbols.	(*4), (*5), (*6), (*8)

*1: For details on the values, refer to the following:

[VMware]

Refer to "[Table 8.15 List of Settings](#)".

[Hyper-V]

Refer to "[Table 8.22 List of Settings](#)".

[KVM]

Refer to "[Table 8.27 List of Settings](#)".

[Solaris Zones]

Refer to "[Table 8.29 List of Settings](#)".

[OVM for SPARC]

Refer to "[Table 8.31 List of Settings](#)".

[Citrix-Xen]

Refer to "[Table 8.32 List of Settings](#)".

[OVM for x86 3.x]

Refer to "[Table 8.34 List of Settings](#)".

*2: Can be specified for Solaris Zones (Solaris 11). In other cases, the value is ignored even if specified.

*3: When omitting keys or values, use the value "dns_addressX" to configure the same values for the NIC definitions of all NICs on Windows.

*4: Can be specified when the VM type is "VMware".

*5: Enabled only when the OS type of the virtual L-Server is Windows.

*6: Not available as the default value for the information of the [OS] tab when creating a virtual L-Server.

*7: When specifying both the domain name (workgroup_name) and the domain name of the Active Directory (windomain_name) to participate in, priority is placed on participation in the Active Directory domain.

*8: The support scope for domain participation authentication in Resource Orchestrator is as follows.

However, there are OS types of virtual L-Server that are not supported by the virtual software depending on the software version. For details, refer to the manuals of virtualization software.

Target	Support Scope
Virtualization software	VMware vSphere 4.0 VMware vSphere 4.1 VMware vSphere 5.0 VMware vSphere 5.1 VMware vSphere 5.5 VMware vSphere 6.0
Virtual L-Server OS type	Microsoft(R) Windows(R) 2008 Microsoft(R) Windows(R) 2008 R2 Microsoft(R) Windows(R) 2012 Microsoft(R) Windows(R) 2012 R2 Microsoft(R) Windows(R) Vista Microsoft(R) Windows(R) 7 Microsoft(R) Windows(R) 8 Microsoft(R) Windows(R) 8.1 Microsoft(R) Windows(R) 10
Resource Orchestrator manager	Windows Manager Linux Manager

*9: [VMware] The specification formats differ depending on the OS type of the virtual L-Server. For details, refer to the following URL:

<http://kb.vmware.com/kb/1012314>

Example

An example definition file is indicated below.

```
# Windows
workgroup_name = WORKGROUP
full_name = WORKNAME
org_name = WORKORGANIZATION
product_key = AAAA-BBBB-CCCC-DDDD
license_mode = server
license_users = 5
admin_password = xxxxxxxx
nic1_dns_address1 = 192.168.0.60
nic1_dns_address2 = 192.168.0.61
nic2_dns_address1 =
nic2_dns_address2 =
windomain_name = Test.TestDom.com
windomain_user =
Administrator@Test.TestDom.com
windomain_password = test0000
```

```
# Linux
domain_name = localdomain
dns_search_path = test.domain.com
hwclock = LOCAL
dns_address1 = 192.168.0.60
dns_address2 = 192.168.0.61
dns_address3 =

# Solaris (SPARC)
admin_user = admin
root_role_password = xxxxxxxx
```

8.2 VMware

This section explains the settings used when using VMware as server virtualization software.

- When Creating a Virtual L-Server

Configure the settings referring to the information in "[8.2.1 Creating Definition Files](#)" or the following sections.

- When Associating L-Servers with Configured Virtual Machines

Refer to "18.4.3 For Virtual Machines" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- Importing to L-Platforms

Refer to "7.2.3 Importing to L-Platform" in the "Operation Guide CE".

8.2.1 Creating Definition Files

This section explains how to create definition files.

For definition files common to virtual L-Servers, refer to "[8.1 Definition Files Commonly Shared when Creating Virtual L-Servers](#)".

This section explains the definition files specific to VMware.

Server Virtualization Software Definition File

Operations related to server virtualization software can be changed by configuring values in the following definition files beforehand.

Use the UTF-8 character code for definition files.

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvmr/customize_data

Definition File Name

vm.rcxprop

Definition File Format

Describe each line of the definition file in the following format:

<i>Key = Value</i>

Definition File Items

Table 8.7 List of Items

Item	Key	Value	Remarks
Configuration of power control for VMware DRS and DPM	drs_power_on_vm	true/false	<p>When server virtualization software is VMware, the values are valid.</p> <ul style="list-style-type: none"> - When starting an L-Server (VM guest), if moving an L-Server (VM guest) between VM hosts using VMware DRS, or turning on a VM host using VMware DPM Specify "true". - If other than the above Specify "false". <p>If left blank, "false" is set. Restarting of the server is not required after changing this configuration.</p> <p>When specifying "true", set VMware DRS and VMware DPM as follows:</p> <ul style="list-style-type: none"> - VMware DRS "partly automatic" or "full automatic" - VMware DPM "off" or "automatic" <p>When specifying "Manual", startup of L-Servers and VM guests may fail.</p> <p>For details on VMware DRS/DPM, refer to "When Using VMware DRS or VMware DPM" in "E.1.2 Preparations for Servers" in the "Design Guide CE".</p>

Definition Files to Configure using Console Connections from Public LAN

When using console connections from the public LAN, configure the connection destination for the VM host in the following definition files:

Location of the Definition File

[Windows Manager]
Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]
/etc/opt/FJSVrcvmr/customize_data

Definition File Name

vm_console.rcxprop

Definition File Format

Specify a folder or tenant name, the physical server name of the VM host, and the corresponding connection destination in one line, separated by commas (",").

folder_or_tenant_name, physical_server_name, destination_to_connect

Definition File Items

Table 8.8 List of Items

Item	Description
Folder or tenant name	Specify the folder name or tenant name using a full path (the first letter must be "/").

Item	Description
Physical server name	Specify the physical server name of the VM host.
Connection destination	Specify the IP address for a VM host that can be connected to through the admin client, or the host name for which name resolution is available in the admin client environment.

Example Definition File

```

/, bx900-1, 192.168.10.100 (*1)
/folderA, bx900-1, host1 (*2)
/folderA/tenantB, bx900-1, 192.168.30.100 (*3)
/folderA/tenantB, bx900-2, 192.168.30.200 (*3)

```

- *1: Definition for root folder (/). The default settings in all tenants.
- *2: Definition for folder (/folderA). Specify the destination to connect to using host name.
- *3: Definition of tenants (/folderA/tenantB). Specify multiple hosts.

Note

- When describing more than three commas (",") in one line, any descriptions after the third comma are ignored.
- When the descriptions start with "#", the string is regarded as a comment line.
- If reading of the definition file fails, set the IP address of the admin LAN for the VM host registered in Resource Orchestrator as the connection destination.
- When the folder or tenant name, and the physical server name do not match the definition file specifications, perform console connections using the IP address of the admin LAN for the VM host.
- When there are multiple VM hosts used in a folder or a tenant, settings using the same folder or tenant must be described separately, in multiple lines.
- When specifying a folder, apply the relevant settings to the sub folders and tenants under that folder.
- When settings targeting the sub folders or tenants under the specified folder are configured, and definitions with the same physical server name also exist, the priority is given to the definitions.

Example

When there are the following definitions of (1) and (2), the folder or tenant name is "/folderA/tenantB" and the physical server name is virtual L-Server of "bx900-1", console connections are performed by using the IP address (2).

```

(1)/folderA,bx900-1,192.168.10.100
(2)/folderA/tenantB,bx900-1,192.168.20.100

```

- When describing the same physical server configurations in the same folder or tenant using multiple lines, the configurations in the latter descriptions are valid.

Example

When there are the following definitions of (1) and (2), the definition (2) is valid.

```

(1)/folderA,bx900-1,192.168.10.100
(2)/folderA,bx900-1,192.168.20.100

```

- When using console connections of a virtual L-Server from the public LAN through the proxy server in the following environments, specify an IP address that can be communicated with using the proxy server.
 - VMware vSphere 5.1
 - VMware vSphere 5.5

GUIRunOnce Definition Files

When the OS of the virtual L-Server is Windows, it is possible to specify the GUIRunOnce command (*) when creating a virtual L-Server with an image specified.

* Note: This is the command that is executed the first time a user performs GUI login on a guest OS.

When specifying the GUIRunOnce command, configure the following definition file.

For details on the GUIRunOnce command, refer to the Sysprep documentation of Microsoft Windows.

Support Scope

The support scope in Resource Orchestrator is shown as below.

However, there are OS types of virtual L-Server that are not supported by the virtual software depending on the software version. For details, refer to the manuals of virtualization software.

Target	Support Scope
Virtualization software	VMware vSphere 4.0 VMware vSphere 4.1 VMware vSphere 5.0 VMware vSphere 5.1 VMware vSphere 5.5 VMware vSphere 6.0
Virtual L-Server OS type	Microsoft(R) Windows(R) 2008 Microsoft(R) Windows(R) 2008 R2 Microsoft(R) Windows(R) 2012 Microsoft(R) Windows(R) 2012 R2 Microsoft(R) Windows(R) Vista Microsoft(R) Windows(R) 7 Microsoft(R) Windows(R) 8 Microsoft(R) Windows(R) 8.1
Resource Orchestrator manager	Windows Manager Linux Manager

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data\sysprep_guirunonce

[Linux Manager]

/etc/opt/FJSVrcvmr/customize_data/sysprep_guirunonce

Definition File Name

Use the file extension ".rcxprop" for an arbitrary file name. However, define the file name using the following character string:

The file name must start with an alphanumeric character, and can contain up to 64 alphanumeric characters, underscores ("_"), and hyphens ("-").

Definition File Format

Describe the definition file in individual lines as below:

<i>Command string specified as the GUIRunOnce command</i>

The command is described using line breaks to separate each command.

As the specified string itself is used, symbols such as double quotes or single quotes must be specified in a format that can be recognized as a command string on Windows.

Empty lines are ignored.

Up to 500 commands (500 lines) can be specified. If a line after the 501th line is specified, the line will be ignored.

Lines starting with "#" are considered as comments.

The command is executed from the first line to the last line, in order. Commands are not executed until the previous command is completed.

Character Code

The character-code of the file is UTF-8.

Line Break Code

Configure the line break code of the file as follows:

[Windows Manager]

CR+LF

[Linux Manager]

LF



Example

c:\setup\setup_first.bat

netsh advfirewall firewall set rule group="remote desktop" new enable=yes

...

c:\setup\setup_last.bat

SCSI Controller Definition File

SCSI controllers for virtual disks connected to guest OSs can be configured for each OS type using the following definition file.

Use the UTF-8 character code for definition files.

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvmr/customize_data



Information

The definition file sample (scsicontroller.rcxprop.sample) is stored in the location above.

When using the sample as the definition file, place the file after deleting the ".sample" included in the file name.

Definition File Name

scsicontroller.rcxprop

Definition File Format

Describe each line of the definition file in the following format:

<i>Key = Value</i>

Character Code

The character-code of the file is UTF-8.

Line Break Code

Configure the line break code of the file as follows:

[Windows Manager]
CR+LF

[Linux Manager]
LF

Definition File Items

Table 8.9 List of Items

Item	Key	Value	Remarks
SCSI controller type	Specify an OS type. (*)	Specify one of the following SCSI controller types: <ul style="list-style-type: none">- buslogic BUS logic parallel- lsilogic LSI logic parallel- lsilogicsas LSI logic SAS- paravirtual VMware paravirtual	For OS types with no SCSI controller type specified, the following SCSI controller is connected: <ul style="list-style-type: none">- LSI logic parallel

* Note: Refer to the following VMware web site and specify the value in the "NAME" column for the corresponding OS.

URL:
<http://www.vmware.com/support/developer/vc-sdk/visdk41pubs/ApiReference/vim.vm.GuestOsDescriptor.GuestOsIdentifier.html>

For Windows Server 2012, refer to the following web site:

URL:
<http://pubs.vmware.com/vsphere-51/topic/com.vmware.wssdk.apiref.doc/vim.vm.GuestOsDescriptor.GuestOsIdentifier.html>

Information

In the definition file, the following values are configured by default:

```
windows8Server64Guest=lsilogicsas  
windows8Guest=lsilogicsas  
windows8_64Guest=lsilogicsas
```

Note

- SCSI controllers are created based on the content of the definition file at the following timings:
 - When creating virtual L-Servers without using cloning images
 - When attaching the 14th, the 28th, or the 42nd data disk

Note that it is not possible to change the type of a SCSI controller that has already been created.

- Due to the design of VMware products, there is no differentiation between Windows Server 2012 and Windows Server 2012 R2. For this reason, it is not possible to configure different SCSI controllers for each of these OSs.
- When more than two lines are written, the configurations described in the last line are valid.
- Blank spaces and tabs directly before and after an equal sign ("=") are ignored.

- Lines starting with "#" are regarded as comment lines.
- If you edit and save a UTF-8 text file using Windows Notepad, the Byte Order Mark (BOM) is stored in the first three bytes of the file, and the information specified on the first line of the file will not be analyzed correctly. When using Notepad, specify the information from the second line.

Example

Example of the Definition File Description

```
#####
# scsicontroller.rcxprop
#
#All Rights Reserved, Copyright(C) FUJITSU LIMITED 2016
#####
windows8Server64Guest=lsilogicsas
windows8Guest=lsilogicsas
windows8_64Guest=lsilogicsas
```

8.2.2 Registering Resources with Resource Orchestrator

This section explains how to register resources with Resource Orchestrator.
Use the following procedure to register resources:

When Using Blade Servers

1. Register VM management software

When registering VM management software, datastores that are created in advance during pre-setup preparations, are automatically registered in Resource Orchestrator as virtual storage resources.

For details on how to register VM management software, refer to "5.2 Registering VM Management Software" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Register chassis

Refer to "5.4.1 Registering Chassis" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Register Managed Servers (within Chassis)

Refer to "5.4.2 Registering Blade Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

4. Register LAN switch blades

Refer to "5.4.3 Registering LAN Switch Blades" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

To register a network device resource, specify a network pool when creating the network device resource.

To register a network resource, specify a network pool when creating the network resource.

For details, refer to "Chapter 14 Registering Resources in Resource Pools" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

When Using Rack Mount or Tower Servers

1. Register VM management software

When registering VM management software, datastores that are created in advance during pre-setup preparations, are automatically registered in Resource Orchestrator as virtual storage resources.

For details on how to register VM management software, refer to "5.2 Registering VM Management Software" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Register Managed Servers

Refer to "5.5.1 Registering Rack Mount or Tower Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Register LAN Switches

Refer to "5.13 Registering LAN Switches (L2 Switches)" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

To register a network device resource, specify a network pool when creating the network device resource.

To register a network resource, specify a network pool when creating the network resource.

For details, refer to "Chapter 14 Registering Resources in Resource Pools" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

When Using PRIMEQUEST Servers

1. Register VM management software

When registering VM management software, datastores that are created in advance during pre-setup preparations, are automatically registered in Resource Orchestrator as virtual storage resources.

For details on how to register VM management software, refer to "5.2 Registering VM Management Software" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Register chassis

Refer to "5.8.1 Registering Chassis (For PRIMEQUEST Servers)" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Register Managed Servers (within Chassis)

Refer to "5.8.2 Registering PRIMEQUEST Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

To register a network device resource, specify a network pool when creating the network device resource.

To register a network resource, specify a network pool when creating the network resource.

For details, refer to "Chapter 14 Registering Resources in Resource Pools" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8.2.3 Registering Resources in Resource Pools

This section explains the registration of resources to resource pools.

Use the following procedure to register a resource to a resource pool:

1. Register VM host resources

Refer to "14.1 VM Host Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Register virtual storage resources

Refer to "14.5 Storage Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Register network device resources

Create network devices to be used on the L-Platform and register those with the type Firewall or SLB in the network pool.

Refer to "14.4 Network Devices" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

4. Register network resources

If the NIC and network resources are connected when an L-Server is created, the settings matching the network resource definition will be registered automatically for the VM host that the L-Server will operate on.

For details, refer to "[8.2.4 Automatic Network Configuration](#)".

A redundant NIC configuration will be configured. When configuring a non-redundant NIC, refer to "[8.2.5 Manual Network Configuration](#)".

Point

When using VMware vDS, in port group creation for distributed virtual switches, set the same VLAN ID used for the port group to the network resource.

For details on how to create a network resource, refer to "14.3 Network Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Information

For details on automatic configuration of network resources, refer to "[8.2.4 Automatic Network Configuration](#)".

- When using VMware vDS

Refer to "When Using Distributed Virtual Switch (VMware vDS)" in "E.1.4 Network Preparations" in the "Design Guide CE".

- When using the definition for port groups excluded from the selections for automatic network configuration

Refer to "When Using the Definition for Port Groups Excluded from the Selections for Automatic Network Configuration" in "E.1.4 Network Preparations" in the "Design Guide CE".

8.2.4 Automatic Network Configuration

If the NIC and network resources are connected when an L-Server is created, the following settings matching the network resource definition will be registered automatically for the VM host that the L-Server will operate on.

- LAN switch blade (when using blade servers)

When using a LAN switch blade in switch mode or end-host mode, a VLAN is configured on the internal connection port.

When creating a network resource, a tagged VLAN is automatically configured on the port of the LAN switch blade specified in the uplink port, using the following procedure.

- From the GUI:

In the [Create a network resource] dialog, check the [Automatically configure VLANs for the uplink ports.] checkbox.

- From the Command-line:

In the XML definition for the network resource, specify "true" for `vlanautosetting` (Automatic VLAN configuration for uplink ports).

- Virtual switches and port groups

- When using physical NICs in the default configuration for blade servers.

If there are no virtual switches or port groups for network resources, they are automatically created.

In this case, the NIC is configured in a redundant configuration depending on the default blade server configuration.

When there are virtual switches and port groups for network resources, the existing virtual switches and port groups are used.

For details on the default blade server configuration, refer to the following:

- [Table 8.10 Default Blade Server Configuration for Network Auto-Configuration \(for PRIMERGY BX900 S1/S2 Chassis\)](#)
- [Table 8.11 Default Blade Server Configuration for Network Auto-Configuration \(for PRIMERGY BX400 S1 Chassis\)](#)
- [Table 8.12 Default Blade Server Configuration for Network Auto-Configuration \(for PRIMERGY BX600 S3 Chassis\)](#)

- In other cases

When using blade servers, rack mount, or tower servers, automatic network configuration including the configuration using an arbitrary physical NIC is possible by defining the physical NIC to be used in the server NIC definition file and then specifying the physical LAN segment defined in the server NIC definition from the network resource.

To reflect the physical NIC configuration specified in the server NIC definition file on Resource Orchestrator, use the `rcxadm nicdefctl commit` command.

- VM guests

VM guests are connected to port groups. If an image is specified, the IP address is automatically configured.

In environments using the clustering function of VM management software, in order to enable the migration of VM guests and operation using the HA function, settings for LAN switch blades, virtual switches, and port groups are performed automatically for all VM hosts comprising the cluster.



See

- For details on the server NIC definitions, refer to "15.13 Server NIC Definition" in the "Reference Guide (Command/XML) CE".
- For details on the `nicdefctl` command, refer to "5.15 rcxadm nicdefctl" in the "Reference Guide (Command/XML) CE".
- For details on how to configure VLAN settings of LAN switch blade uplink ports, refer to "5.4.4 Configuring VLANs on LAN Switch Blades" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".



Note

- After creating an L-Server, if VM hosts are added to the cluster afterwards, Resource Orchestrator network settings are not performed automatically.
Perform the same settings as the existing VM hosts in the cluster configuration for the LAN switch blades and virtual switches of the additional VM hosts.
- For the gateway address, set the IP address of the existing node.

Default Blade Server Configuration to Support Automation of Network Configuration in Resource Orchestrator

Show the default blade server configuration to support automation of network configuration in Resource Orchestrator (server blade, specification of uplink port for network resource, correspondence relation of numbers of LAN switch blade and physical network adapter, etc.) in the following list. When there are no server NIC definitions, for network auto-configuration, the physical network adapter within the server blade is selected according to this list.

Table 8.10 Default Blade Server Configuration for Network Auto-Configuration (for PRIMERGY BX900 S1/S2 Chassis)

Server Blade	Specification of Uplink Port (Location of LAN Switch Blade)	LAN Switch Blade to Use	Physical Network Adapter Number (*6)
BX920 S1 BX920 S2 BX920 S3 BX920 S4 BX922 S2 BX924 S3 BX924 S4 BX2560 M1 BX2560 M2 BX2580 M1 BX2580 M2	CB1 and CB2, or no specification for uplink port	PY-SWB102(PG-SW111) PY-SWB103(PG-SW112)	3,4
		PY-SWB101(PG-SW201) PY-SWB104(PG-SW109) (*1) PY-SWB105 (*2) PY-CFB101 (*2) PY-CNB101 (*2) PY-FEB101 (*3)	1,2
	CB3 and CB4	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109) PY-SWB105 PY-CFB101	5,6

Server Blade	Specification of Uplink Port (Location of LAN Switch Blade)	LAN Switch Blade to Use	Physical Network Adapter Number (*6)
		PY-CNB101 PY-FEB101 (*3)	
	CB5 and CB6	PY-SWB104(PG-SW109) PY-SWB105 PY-CFB101 PY-CNB101 PY-FEB101 (*3)	9,10
	CB7 and CB8	PY-SWB102(PG-SW111) PY-SWB103(PG-SW112)	11,12
		PY-SWB101(PG-SW201)	9,10
BX924 S2	CB1 and CB2, or no specification for uplink port	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109)	1,2
	CB3 and CB4	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109) PY-SWB105 PY-CFB101 PY-CNB101 PY-FEB101 (*3)	3,4
	CB5 and CB6	PY-SWB104(PG-SW109) PY-SWB105 PY-CFB101 PY-CNB101 PY-FEB101 (*3)	7,8
	CB7 and CB8	PY-SWB102(PG-SW111) PY-SWB103(PG-SW112)	9,10
		PY-SWB101(PG-SW201)	7,8
BX960 S1	CB1 and CB2, or no specification for uplink port	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109)	11,12
	CB3 and CB4 (*4)	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109) PY-SWB105 PY-CFB101 PY-CNB101 PY-FEB101 (*3)	3,4
	CB5 and CB6 (*5)	PY-SWB104(PG-SW109) PY-SWB105 PY-CFB101 PY-CNB101 PY-FEB101 (*3)	7,8
	CB7 and CB8 (*5)	PY-SWB102(PG-SW111) PY-SWB103(PG-SW112)	9,10
		PY-SWB101(PG-SW201)	7,8

- *1: When installing a PY-SWB104 (PG-SW109) on CB1 or CB2, set the transmission speed at the down link port of PY-SWB104 (PG-SW109) to 1 Gbps. For details on how to configure the settings, refer to the corresponding hardware manual.
- *2: When mounting PY-SWB105, PY-CFB101, or PY-CNB101 on CB1 and CB2, only BX920 S3 or later models, BX924 S3 or later models, BX2560 M1, BX2560 M2, BX2580 M1, and BX2580 M2 models are supported as server blades.
- *3: When mounting PY-FEB101, only BX920 S3 or later models, BX924 S3 or later models, BX2560 M1, BX2560 M2, BX2580 M1, and BX2580 M2 models are supported as server blades.
- *4: A LAN expansion card is mounted in expansion slot 1.
- *5: A LAN expansion card is mounted in expansion slot 2.
- *6: Use each physical network adapter, by performing redundancy using teaming.

Table 8.11 Default Blade Server Configuration for Network Auto-Configuration (for PRIMERGY BX400 S1 Chassis)

Server Blade	Specification of Uplink Port (Location of LAN Switch Blade)	LAN Switch Blade to Use	Physical Network Adapter Number (*5)
BX920 S2 BX920 S3 BX920 S4 BX922 S2 BX924 S3 BX924 S4 BX2560 M1 BX2560 M2 BX2580 M1 BX2580 M2	CB1 and CB2 (*1), or no specification for uplink port	PY-SWB102(PG-SW111) PY-SWB103(PG-SW112)	3,7
		PY-SWB101(PG-SW201) PY-SWB104(PG-SW109) (*2) PY-SWB105 (*3) PY-CFB101 (*3) PY-CNB101 (*3) PY-FEB101 (*4)	2,6
	CB3 and CB4	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109) PY-SWB105 PY-CFB101 PY-CNB101 PY-FEB101 (*4)	9,10
BX924 S2	CB1 and CB2 (*1), or no specification for uplink port	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109)	2,4
	CB3 and CB4	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109) PY-SWB105 PY-CFB101 PY-CNB101 PY-FEB101 (*4)	7,8

- *1: The same LAN switch blade model should be mounted in CB1 and CB2.
- *2: When installing a PY-SWB104 (PG-SW109) on CB1 or CB2, set the transmission speed at the down link port of PY-SWB104 (PG-SW109) to 1 Gbps. For details on how to configure the settings, refer to the corresponding hardware manual.
- *3: When mounting PY-SWB105, PY-CFB101, or PY-CNB101 on CB1 and CB2, only BX920 S3 or later models, BX924 S3 or later models, BX2560 M1, BX2560 M2, BX2580 M1, and BX2580 M2 models are supported as server blades.
- *4: When mounting PY-FEB101, only BX920 S3 or later models, BX924 S3 or later models, BX2560 M1, BX2560 M2, BX2580 M1, and BX2580 M2 models are supported as server blades.
- *5: Use each physical network adapter, by performing redundancy using teaming.

Table 8.12 Default Blade Server Configuration for Network Auto-Configuration (for PRIMERGY BX600 S3 Chassis)

Server Blade	Specification of Uplink Port (Location of LAN Switch Blade)	LAN Switch Blade to Use	Physical Network Adapter Number (*)
BX600 series servers	NET1 and NET2, or no specification for uplink port	PG-SW107	3,4
	NET3 and NET4	PG-SW104	7,8

* Note: Use each physical network adapter, by performing redundancy using teaming.

The numbers of physical network adapters given above can be checked in "Network Properties" on the [Resource Details] tab.

When the LAN switch blade is in IBP mode, the same physical network adapter as in the case of "no specification for uplink port" in the list above is selected.



See

- For details on the server NIC definitions, refer to "15.13 Server NIC Definition" in the "Reference Guide (Command/XML) CE".
- For details on the nicdefctl command, refer to "5.15 rcxadm nicdefctl" in the "Reference Guide (Command/XML) CE".

In the diagram, the default blade server configurations as described in the following configuration example when using a PRIMERGY BX900 S1 chassis are shown.

Table 8.13 Configuration Example 1

Server blades	BX920 S2
Specification of uplink port	CB1 and CB2
LAN switch blade to use	PY-SWB103(PG-SW112)

Table 8.14 Configuration Example 2

Server blades	BX920 S2
Specification of uplink port	Both "no specification for uplink port" and "CB3 and CB4" are specified
LAN switch blade to use	PY-SWB104(PG-SW109)

Figure 8.1 Blade Server Diagram of Configuration Example 1

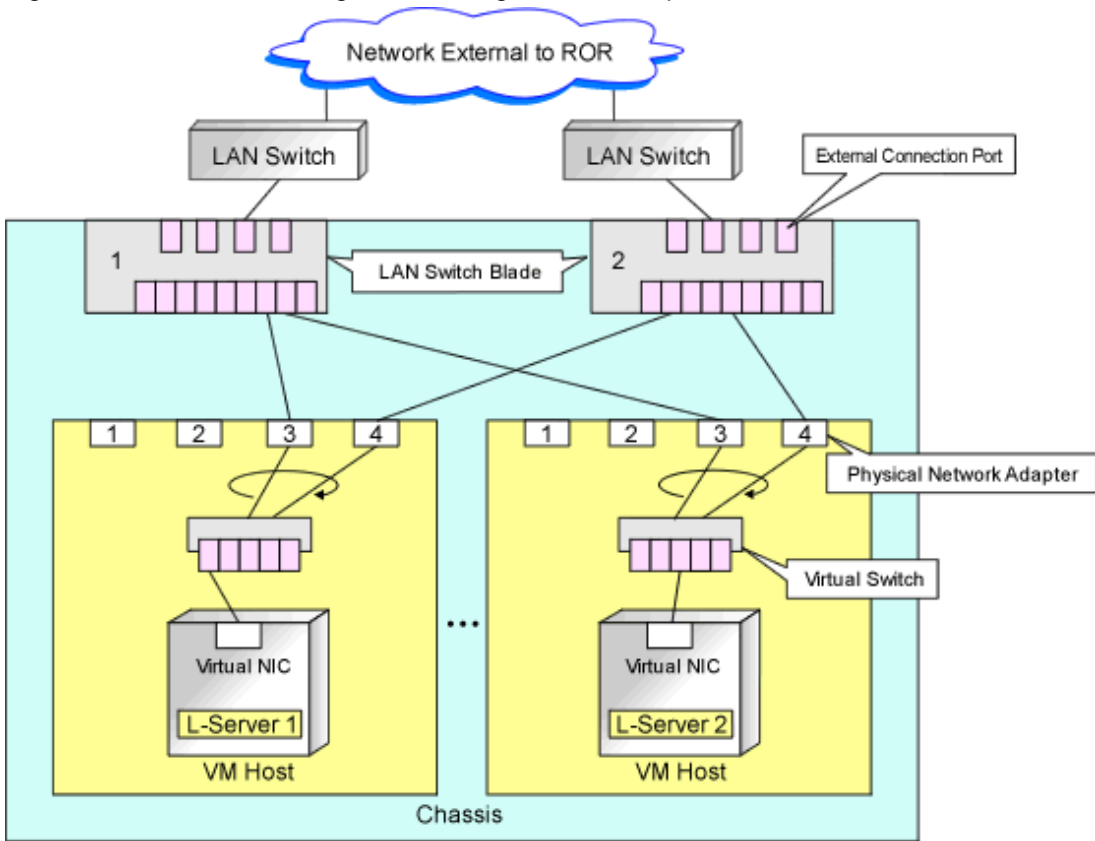
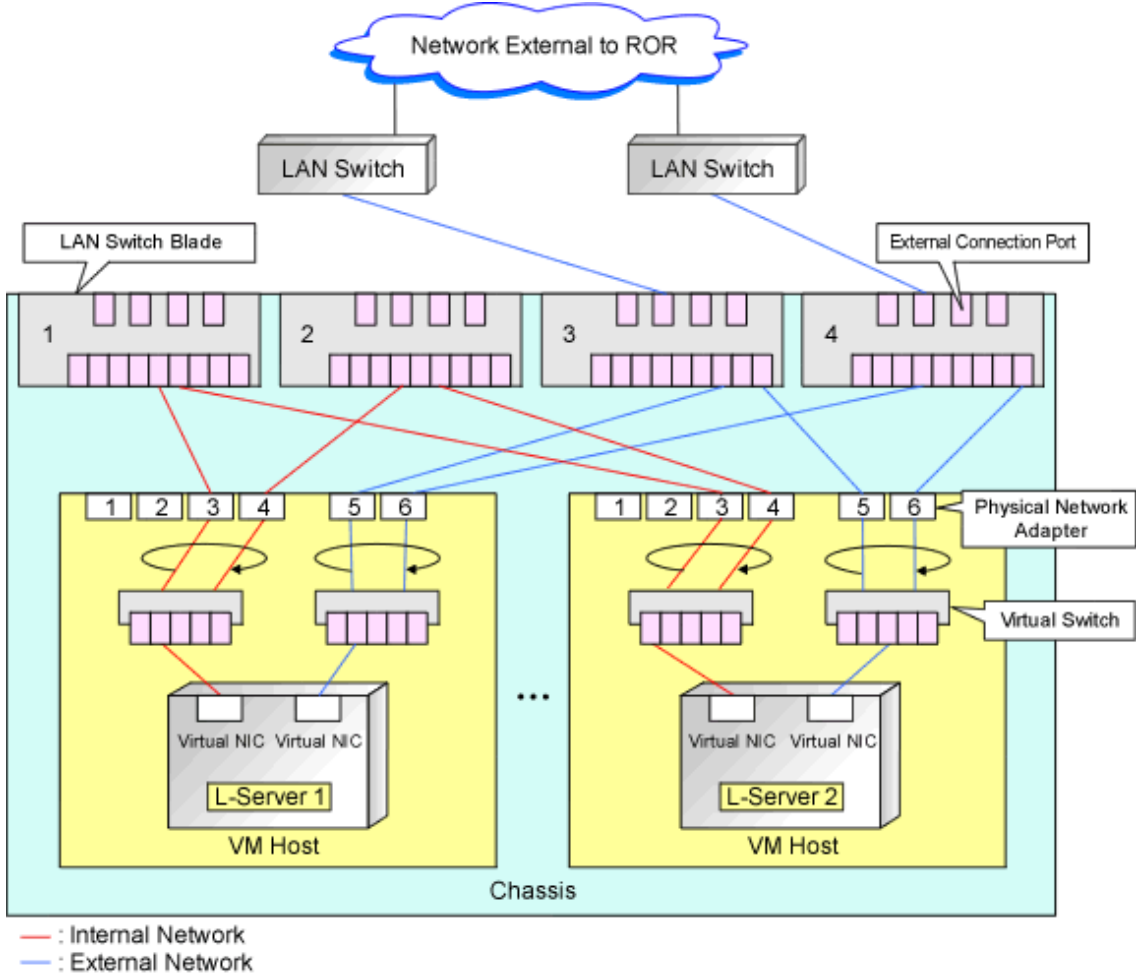


Figure 8.2 Blade Server Diagram of Configuration Example 2



8.2.5 Manual Network Configuration

When using a configuration which is not supported for the network auto-configuration (such as triplicity or quadruplicity of NICs), configure the network using the following procedure:

Create port groups that use the same VLAN ID and have the same name (which is case sensitive) for all VM hosts that compose a cluster configuration.

When using server virtualization software other than VMware with the same manager, set a different port group name from the one used for the virtual switch, virtual network, and virtual bridge on the other server virtualization software.

1. Manually create a virtual switch connected to a physical NIC.
For details on how to create virtual switches, refer to the VMware manual.
2. On the virtual switch was created in step 1, manually create a port group for which a VLAN ID has been set.
For details on how to create port groups, refer to the VMware manual.
3. For the LAN switch blade connected to the physical NICs, configure a VLAN that includes a downlink port.
 - a. Right-click the target LAN switch blade in the server resource tree on the ROR console, and select [Modify]-[Network Settings] from the popup menu.
The [VLAN Settings] dialog is displayed.
 - b. Configure a VLAN.

4. Create a network resource.

- From the GUI:

- a. In the [Create a network resource] dialog containing the VLAN ID that was specified in steps 2 and 3, check the [Use configured virtual switches/port profile.] checkbox and create a network resource.

- From the Command-line:

- a. Create the XML file that defines network resources.

Define the VLAN ID specified in steps 2 and 3 in the XML file.

In this case, specify auto="false" in the Network element.

- b. To create the network resource, execute the rcxadm network create command specifying the XML file created in step a.

The network resources are created.

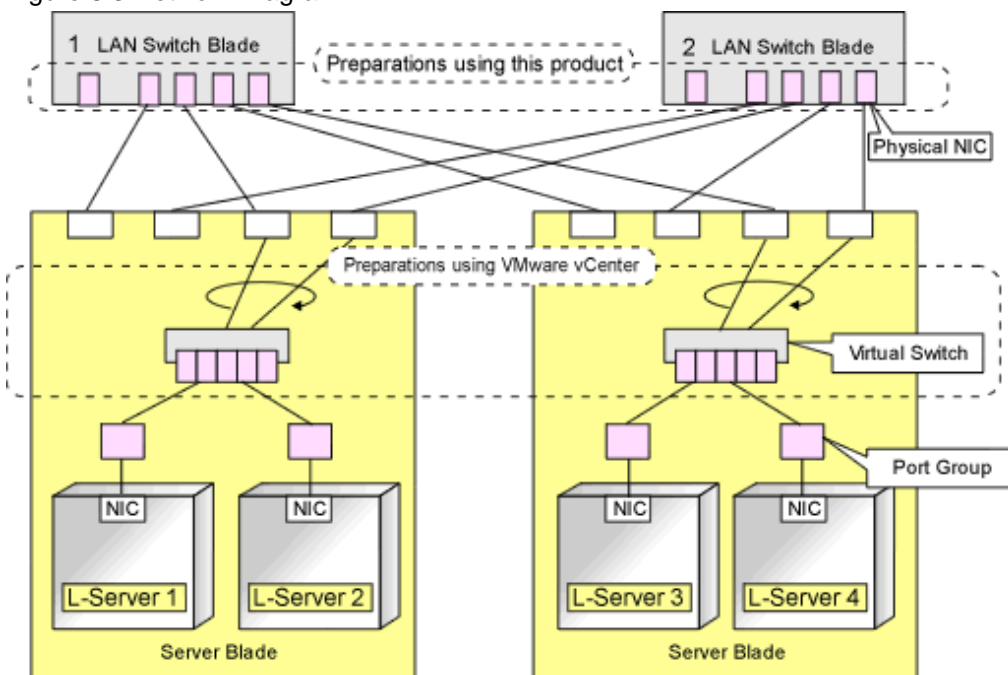
For details on the rcxadm network command, refer to "3.9 rcxadm network" in the "Reference Guide (Command/XML) CE".



See

- For details on the Network element and creation of XML files that define network resources, refer to "15.6 Network Resources" in the "Reference Guide (Command/XML) CE".
- For details on how to configure VLAN settings of LAN switch blade uplink ports, refer to "5.4.4 Configuring VLANs on LAN Switch Blades" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".
- For details on the rcxadm network command, refer to "3.9 rcxadm network" in the "Reference Guide (Command/XML) CE".

Figure 8.3 Network Diagram



8.2.6 Creating L-Server Templates

This section explains how to create an L-Server template.

L-Server templates can be created using the following methods.

- Using the Wizard GUI

L-Server templates can be created using the wizard GUI in the wizard format.

For details on the GUI in the wizard format, refer to "15.1 Operations Using the Wizard GUI" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- Manually

Use the following procedure to create an L-Server template:

1. Export an L-Server template

The sample L-Server templates provided with Resource Orchestrator can be exported.

Refer to "15.2.1 Export" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Edit an L-Server Template

The L-Server template output in step 1 can be edited with an editor, etc.

For details on the L-Server templates for virtual L-Servers, refer to "15.2.2 Virtual L-Server Templates" in the "Reference Guide (Command/XML) CE".

3. Import an L-Server Template

Refer to "15.2.3 Import" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8.2.7 Creating L-Servers

This section explains the creation of L-Servers.

Use the following procedure to create L-Servers:

1. Create an L-Server Using an L-Server Template

a. When there are no cloning images, or when not using already registered cloning images

1. Create an L-Server, referring to "16.1 Creation Using an L-Server Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE". When creating the L-Server, select [None] for images.

2. Install an OS, referring to "[Manual OS Installation](#)".

3. When collecting cloning images after creating an L-Server, the cloning images are stored in the image pool. When collecting cloning images, refer to "[8.2.8 Collecting Cloning Images](#)".

b. When using an existing cloning image

Create an L-Server, referring to "16.1 Creation Using an L-Server Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE". In this case, specify the cloning image that you want to use as an image.

2. Create an L-Server Specifying Individual Specifications

Refer to "16.3 Creation of Virtual L-Servers Using Parameters" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

For details on the [OS] tab settings, refer to "[8.2.9 \[OS\] Tab Configuration](#)".

Manual OS Installation

To manually install an operating system, use the following procedure.

1. Stop the L-Server.

If an L-Server is operating, stop it.

For details on how to stop an L-Server, refer to "17.1.2 Stopping an L-Server" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Connect a console to the L-Server.

Connect a console to the L-Server.

For details on how to connect the console, refer to "Console" in "17.3 Using the L-Server Console" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Connect DVD drives.

Perform connection of DVD drives from the console window.

4. Install an OS manually on the L-Server.

Start an L-Server, and manually install an OS on the L-Server.

When installing an OS manually, refer to the Guest Operating System Installation Guide.

Refer to the relevant version of the document, referring to the following web site:

Guest Operating System Installation Guide

URL: http://www.vmware.com/support/pubs/vs_pubs.html

Configuration after OS Installation

Install VMware Tools after installing an OS.

Use the following procedure to install VMware Tools.

1. Right-click the target L-Server in the orchestration tree, and select [Install VM Tool] from the popup menu.

The confirmation dialog is displayed.

2. Click the [OK] button.

The ISO images are connected to the L-Server for VM guest.

For details on VMware Tools, refer to the information on VMware Tools in "vSphere Basic System Administration" of VMware.

Refer to the relevant version of the document, referring to the following web site:

vSphere Basic System Administration

URL: <http://www.vmware.com/support/pubs/>



Note

- When a connection with the ISO image of VMware Tools has already been established, subsequent operations for the connection will be completed normally. In some cases, a task error may be output on VMware vCenter Server. This error is output by ignoring the message already received from VMware vCenter Server that informs the user that connection has already been established, and does not affect the system operations.
- When the guest OS is RHEL7, it is necessary to install an additional package.
For details, refer to the "Note" in "8.2.8 Collecting Cloning Images".

8.2.8 Collecting Cloning Images

This section explains how to collect cloning images.

Use the following procedure to collect cloning images:

After installing an OS, stop the target L-Server.

1. Right-click the target L-Server in the orchestration tree, and select [Cloning]-[Collect] from the popup menu.
2. Click the [OK] button.

A cloning image is collected.

A given cloning image (identified by its name attribute) can be managed by image version.

If a cloning image is created using VM management software, it can be used as is.

Point

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.

When performing cloning of a Windows OS on an L-Server, the Microsoft Sysprep tool is necessary. The necessary files vary depending on the CPU architecture (x86, x64) of the target system, and the OS version. It is not necessary to obtain new files, since the following OSs include Microsoft Sysprep:

- Windows Server 2008
- Windows Server 2008 R2
- Windows Server 2012
- Windows Vista
- Windows 7
- Windows 8

For details on obtaining tool and its installation, refer to the information regarding the Microsoft Sysprep tool in the "vSphere Basic System Administration" documentation and the following VMware web site.

Refer to the relevant version of the document, referring to the following web site:

vSphere Basic System Administration

URL: <http://www.vmware.com/support/pubs/>

VMware web site

URL: http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1005593

Note

- If an L-Server is created with a specified Windows image, when deploying the image use Sysprep, provided by Microsoft, to reconfigure the properties unique to the server. By executing Sysprep, the user information and OS setting information are reset. For details on Sysprep, refer to the information provided by Microsoft.
- If stopping or restarting of the manager is performed during execution of Sysprep, the operation being executed will be performed after the manager is started. Until the process being executed is completed, do not operate the target resource.
- When using MAK license authentication for activation for the following OSs, Sysprep can be executed a maximum of three times.
 - Windows Server 2008
 - Windows Server 2008 R2
 - Windows Vista
 - Windows 7

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 four times. Therefore, it is recommended not to collect cloning images from L-Servers that have had cloning images deployed, but to collect them from a dedicated master server. The number is also included in the count when Sysprep is performed in the following cases:

- When customizing a guest OS using template functions in VMware
- When creating templates in SCVMM

- If an L-Server is created with a Windows image specified, use Sysprep to set the server specific information again, when starting for the first time after creating the L-Server. After startup and resetting of the server specific information, when the L-Server console is opened from the server virtualization software management window, you will be logged on with Administrator status. Therefore, it is recommended that you log off.
- Note the following points when collecting cloning images from an L-Server that was created using a cloning image.
 - As L-Servers which have not been used even once after creation do not have server specific information set, creation of L-Servers using cloning images collected from an L-Server may fail. When collecting cloning images, set the server specific information on L-Server, after starting the target L-Server.
- When the guest OS is RHEL7, it is necessary to install the following additional package to customize collected cloning images.
deployPkg Tools Plugin

For details on the installation procedure, refer to the following VMware web site:

URL:
https://kb.vmware.com/selfservice/search.do?cmd=displayKC&docType=kc&docTypeID=DT_KB_1_1&externalId=2075048

8.2.9 [OS] Tab Configuration

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.

Do not specify the value, as the value will not be set for the items for which entry is not required.

Table 8.15 List of Settings

Item	Windows		Linux		Description
	Necessity of Entry	Values When Omitted	Necessity of Entry	Values When Omitted	
Host name/ Computer name	Possible	<i>L-Server Name</i>	Possible	<i>L-Server Name</i>	Enter the host name or computer name. [Windows] Enter a character string beginning with an alphanumeric character and containing up to 15 alphanumeric characters and hyphens ("-"). The string cannot be composed solely of numbers. [Linux] Enter a character string beginning with an alphanumeric character and containing up to 63 alphanumeric characters and hyphens ("-"). The string cannot be composed solely of numbers. If this parameter is not specified, the L-Server name is converted and set as indicated above.

Item	Windows		Linux		Description
	Necessity of Entry	Values When Omitted	Necessity of Entry	Values When Omitted	
					If underscores ("_") or periods (".") are used in an L-Server name, they will be replaced with hyphens ("-"), because these characters cannot be used for host names or computer names.
Domain name	Possible	WORKGROUP (*1)	Possible	localdomain (*1)	<p>[Windows] Enter the workgroup name. Settings for participation in a domain cannot be made. The same workgroup name as the computer name cannot be specified. Enter a character string beginning with an alphabetic character and containing up to 15 alphanumeric characters, hyphens ("-"), and periods ("."). Refer to the Microsoft information about the character strings that can be input for workgroup names.</p> <p>[Linux] Enter the domain name. Enter a character string beginning with an alphabetic character and containing up to 255 alphanumeric characters, hyphens ("-"), and periods (".").</p>
DNS search path	Not Required	-	Mandatory	-	Enter a list of domain names to use for DNS searching, using between 1 and 32,767 characters. You can specify the same characters as the domain name. To specify multiple domain names, use a blank space as the separator character.
Full name	Possible	WORKNAME (*1)	Not Required	-	Enter the Windows full name using between 1 and 50 characters. By default, the value defined in the OS property definition file is entered.
Organization name	Possible	WORKORGANIZATION (*1)	Not Required	-	Enter the organization name displayed in the Windows system properties using between 1 and 50 characters.
Product key	Possible	If omitted, the following will happen when the OS is operated: (*1)	Not Required	-	Enter a product key.

Item	Windows		Linux		Description
	Necessity of Entry	Values When Omitted	Necessity of Entry	Values When Omitted	
		<ul style="list-style-type: none"> - For Windows Server 2003, the product key entry screen is displayed the first time the server is started. - For Windows Server 2008 or later, the product key is unregistered. 			
License mode	Possible	Server unit (*1)	Not Required	-	Specify "Seat Unit" (number of connected clients) or "Server Unit" (number of servers used at the same time).
Maximum number of connections	Possible	5 (*1)	Not Required	-	Specify this when "Server Unit" is set (number of servers used at the same time: server). Specify a number between 5 and 9,999.
Administrator password	Possible	-*1)	Not Required	-	Configure the same password as that specified for the local administrator account during L-Server creation. Enter the password using between 1 and 128 alphanumeric characters or symbols. (*2)
Hardware clock configuration	Not Required	-	Possible	Local	Specify one of the following: <ul style="list-style-type: none"> - UTC - Local (LOCAL)
Time zone	Possible	<i>The same time zone as the OS of the manager</i>	Possible	<i>The same time zone as the OS of the manager</i>	Specify the time zone of the OS.

*1: When the value is specified in the OS property definition file, its values are configured.

*2: When a different password from the password of the local administrator account of the images specified during L-Server creation is specified, enter the values according to VM management software specifications.

For details on administrator password settings, refer to the section of customization for virtual machines of the "vSphere Basic System Administration".

vSphere Basic System Administration

URL: <http://www.vmware.com/support/pubs/>

Information

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.

For details, refer to "[8.1.7 OS Property Definition File](#)".

8.2.10 Advisory Notes for VMware Usage

This section explains advisory notes for VMware.

Values for CPU Share and Memory Share

If CPU share and memory share for a virtual L-Server have been set to a value of 1,000,000 or greater using the ROR console, when the VM guest is edited from vSphereClient, these values may be forcibly replaced with 1,000,000.

When setting a value greater than 1,000,000, modify the configuration from the ROR console again.

Operating Systems for which Parameters can be Set and the Prerequisites for Performing the Settings

Depending on the server 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.



Information

Snapshot

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 problem occurs with the applied patch
 - For recovery when a problem occurs when changing operating system parameters
-

VMware Storage VMotion

The following are advisory notes for when using VMware Storage VMotion.

- When disk resources are moved to a newly created datastore which has not yet been detected by Resource Orchestrator, the information of moved disk resources is reflected as follows:
 1. The newly created datastore is detected as a virtual storage resource during regular update.
 2. After being detected as virtual storage resources, the information of moved disk resources is reflected on Resource Orchestrator.
- When using VMware vSphere Client, after completing moving of disk resources, the newest datastore status may not be reflected.

When performing update of the datastore, the newest status is displayed.

VMware FT

When an L-Server is linked with a virtual machine on which VMware FT has been configured, the secondary VM host information can be checked using the following method:

1. Select the target L-Server on the orchestration tree.

In the [Server recovery] on the [Resource Details] tab, VMware FT (*Secondary_VM_host_name*) is displayed.

 **Example**

VMware FT(host2)

When migration to the secondary VM host occurs, the secondary VM host information will be updated by periodic update.

VMware DPM, VMware DRS

When starting an L-Server using VMware DPM or VMware DRS, if moving an L-Server (VM guest) between VM hosts using VMware DRS, or turning on a VM host using VMware DPM, refer to "When using VMware DRS or VMware DPM" in "E.1.2 Preparations for Servers" in the "Design Guide CE".

When using VMware DPM, the VM hosts which compose a cluster need to be registered in a single resource pool. When the VM hosts which compose a cluster are divided into two or more resource pools, the VM host CPU and memory resources of standby mode are not calculated as active VM host's resources.

8.2.11 Overcommit

This section explains the overcommit function for L-Servers.

Overcommit

The VMware overcommit function for the CPU and memory is available on Resource Orchestrator.

The VMware overcommit function for the CPU and memory virtually allows a guest OS to use more resources than that of the actual CPU and memory of a server.

Resource Orchestrator provides the following functions to utilize the VMware overcommit function for the CPU and memory when creating L-Servers.

- Creating an L-Server with the overcommit function for the CPU and memory
 - CPU Performance
The maximum number of CPU resources to be allocated to a virtual machine (Limitation)
 - CPU Reserved
The minimum number of CPU resources to be reserved for a virtual machine (Reservation)
 - CPU Shares
The relative proportion for allocation of CPU resources when there are competing virtual machines (Share)
 - Memory size
 - Memory Reserved
The maximum amount of memory resources to be allocated to a virtual machine (Limitation)
 - Memory Size
The maximum amount of memory resources to be allocated to a virtual machine by the VM host (Memory Size)
- For the virtual L-Server created using Resource Orchestrator, the same value is set for both Memory Reserved and Memory Size.
- Memory Reserved
The minimum amount of memory resources to be reserved for a virtual machine (Reservation)
 - Memory Shares
The relative proportion for allocation of memory resources when there are competing virtual machines (Share)
- Setting an overcommit attribute for a resource pool

Overcommit attributes can be set for resource pools. An L-Server with overcommit attributes can be created using overcommit attributes settings or a resource pool.

- Calculation of available space on VM pools, which uses values set for CPU reservation performance and memory reservation capacity
- Conversion of the free CPU capacity and free memory capacity of VM pools with overcommit attributes

For a VM pool with overcommit attributes, the conversion of free CPU capacity and free memory capacity can be displayed based on the CPU reservation values and memory allocation capacity of an L-Server created beforehand.

- Display of the number of L-Servers that can be created for a VM pool with overcommit attributes

For a VM pool with overcommit attributes, the number of L-Servers that can be created based on the CPU reservation values and memory reservation capacity specified in the L-Server template can be displayed.

For details on L-Servers, refer to "2.2.3 L-Server" in the "Design Guide CE", "[8.2.7 Creating L-Servers](#)", or "Chapter 16 Creating L-Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

For details on resource pools, refer to "2.2.2 Resource Pools" in the "Design Guide CE", or "Chapter 20 Resource Pool Operations" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

For details on the available capacity view or the L-Server conversion view, refer to "20.6 Viewing" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Installation Procedure

Use the following procedure to install overcommit.

1. Create a VM Pool for Overcommit

For details on how to create a VM pool, refer to "Chapter 20 Resource Pool Operations" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Point

- When creating L-Servers that use overcommit and L-Servers that do not, both a VM pool that uses overcommit and a VM pool that does not must be created.
- It is necessary to edit the definition file separately, when migration is not executed using the configuration methods for overcommit functions after performing upgrade of the admin server from ROR V2.3.0 or V3.0.0. For details, refer to "2.3.1.1 Overcommit Definition Files" in the "Release Notes".

Note

- For the VM pool for overcommit, register only VM hosts that support overcommit (VMware, Hyper-V, RHEL-KVM, Solaris Containers, or OVM for SPARC). If VM hosts that do not support overcommit have been registered, move those VM hosts to another VM pool.

If VM hosts that do not support overcommit have been registered in VM pools for overcommit, the following operations cannot be performed.

- Create an L-Server
- Associating L-Servers with configured virtual machines

For RHEL-KVM, associating L-Servers with configured virtual machines is not supported.

- When two or more VM pools using overcommit exist, the VM host the L-Server is deployed to is selected from all VM hosts in the resource pool, regardless of the priority configured.
- When the L-Server is linked to a virtual machine on the VM host in the VM pool used by overcommit, the overcommit attributes of the VM pool which the VM host is registered in are configured on the L-Server.

2. Create a VM Specific Information Definition File

Create a VM specific information definition file. Create a VM specific information definition file when configuring different settings for individual user groups without configuring overcommit settings on the L-Server template.

For VM specific information definition files, refer to "[8.1 Definition Files Commonly Shared when Creating Virtual L-Servers](#)".

3. Export an L-Server template

For details on how to export L-Server templates, refer to "15.2.1 Export" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

L-Server template operations (steps 3 to 5) can be performed using the GUI.

For details on how to operate L-Server templates using the GUI, refer to "15.1 Operations Using the Wizard GUI" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

4. Edit an L-Server Template

Configure the overcommit settings for an L-Server template.

Edit the XML definition of L-Server templates, referring to "15.2.2 Virtual L-Server Templates" in the "Reference Guide (Command/XML) CE".

When configuring overcommit settings using the VM specific information definition file, do not configure the following parameters except "Enabling/disabling overcommit". When overcommit settings are configured in the L-Server template, priority is given to those settings.

- CPU Reserved
- CPU Shares
- Memory Reserved
- Memory Shares

Information

If a template is imported without editing the L-Server template name, the content of the existing L-Server template is overwritten. If an L-Server template is imported after the name is edited from when it was exported, the L-Server template is added.

5. Import an L-Server Template

For details on how to import L-Server templates, refer to "15.2.3 Import" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

6. Create an L-Server

Create an L-Server using the L-Server template created in step 5.

For details, refer to "16.1 Creation Using an L-Server Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

When not using an L-Server template, create an L-Server using a command. Edit the L-Server XML referring to "Chapter 16 Creating L-Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE", and then execute the `rcxadm lserver create` command.

For details on the `rcxadm lserver` command, refer to "3.6 `rcxadm lserver`" in the "Reference Guide (Command/XML) CE".

Point

When you create an L-Server, which uses overcommit from the [Resource] Tab of the ROR console, specify an L-Server template.

7. Confirm the Overcommit Function Settings for an L-Server

To confirm overcommit settings configured for an L-Server, execute the `rcxadm lserver show` command.

Confirm that the command output result includes the line starting with "OverCommit: true".

For details on the `rcxadm lserver` command, refer to "3.6 `rcxadm lserver`" in the "Reference Guide (Command/XML) CE".

Note

When starting of an L-Server fails, the retrieval method varies depending on the L-Server settings.

Perform the following:

- When [Boot Location] of the L-Server is set to [Relocate at startup]

Start the L-Server again. When there is a VM host with an available resource, the L-Server will start on that VM host after several attempts at startup.

- When [Boot Location] of the L-Server is set to [Fixed]

As no VM host is automatically selected, start the L-Server after changing its boot location, or moving or stopping other L-Servers on the same VM host.

For details on how to change the boot location, refer to "16.3 Creation of Virtual L-Servers Using Parameters" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

For details on how to move the boot location, refer to "17.7 Migration between VM Hosts" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Changing L-Server Specifications

This section explains how to modify L-Server specifications.

To change L-Server specifications, execute the `rcxadm lserver modify` command.

For details on the `rcxadm lserver` command, refer to "3.6 `rcxadm lserver`" in the "Reference Guide (Command/XML) CE".



Changing of L-Server specifications will fail if the resources (the number of CPUs, CPU frequency, and memory capacity) of a physical server where a VM host operates are less than the CPU reservation performance and memory reservation capacity.

When CPU performance and memory capacity are smaller than the CPU reservation performance and memory reservation capacity, modification of L-Server specifications fails.

When modifying specifications of an L-Server to which resources have been allocated, the information in the VM specific information definition file is not reflected because priority is given to the values already configured to the L-Server. In that case, enter the new values in the XML file and then use the appropriate commands to reflect the changes.

8.2.12 Participating in an Active Directory Domain

This section explains the function for participation in the Active Directory domain.

When using Windows for a virtual L-Server, the function for participation in the Active Directory domain is available, when creating a virtual L-Server with images specified.

When using the function for participation in an Active Directory domain, perform the following procedure.

1. Edit an OS property definition file

Indicate the name of the Active Directory domain that will be participated in, the account name for domain participation, and the password in the OS property definition file.

For details on the OS property definition file, refer to "[8.1.7 OS Property Definition File](#)".

In addition, in order to use this function it is necessary to meet the requirements for participating in a Microsoft Active Directory domain.

For the requirements, refer to the Active Directory domain documentation from Microsoft.

2. Export an L-Server template

For details on how to export L-Server templates, refer to "15.2.1 Export" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

L-Server template operations (steps 2 to 4) can be performed using the GUI.

For details on how to operate L-Server templates using the GUI, refer to "15.1 Operations Using the Wizard GUI" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Edit an L-Server Template

Specify the settings for participation in the Active Directory domain for an L-Server template.

Edit the XML definition of L-Server templates, referring to "15.2.2 Virtual L-Server Templates" in the "Reference Guide (Command/XML) CE".

4. Import an L-Server Template

For details on how to import L-Server templates, refer to "15.2.3 Import" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

To confirm overcommit settings configured for an L-Server template, execute the `rcxadm template show` command.

For details on the `rcxadm template` command, refer to "8.1 `rcxadm template`" in the "Reference Guide (Command/XML) CE".

5. Create an L-Server

Create an L-Server using the L-Server template created in step 4.

For details, refer to "16.1 Creation Using an L-Server Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

When not using an L-Server template, create an L-Server using a command. Edit the L-Server XML referring to "Chapter 16 Creating L-Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE", and then execute the `rcxadm lserver create` command.

For details on the `rcxadm lserver` command, refer to "3.6 `rcxadm lserver`" in the "Reference Guide (Command/XML) CE".



Note

When the Active Directory domain cannot be accessed or when participation in the domain fails due to insufficiency of account authority or specification of the wrong password, the result should be either of following:

- An L-Server participating in the existing work group (WORKGROUP) is created
- L-Server creation processing fails due to timeout

After performing pre-verification, check if participation in the Active Directory domain can be correctly performed before using it for actual operations.

8.2.13 Usage of GUIRunOnce

This section explains how to use GUIRunOnce.

When the OS of the virtual L-Server is Windows, the GUIRunOnce command (the command executed when the user logs in on the guest OS at the first time) can be specified.

Use the following procedure to use GUIRunOnce:

1. Create a GUIRunOnce command definition file

Create a GUIRunOnce command definition file, and describe the command strings.

For details on the GUIRunOnce command definition file, refer to "8.2.1 Creating Definition Files".

2. Export an L-Server template

For details on how to export L-Server templates, refer to "15.2.1 Export" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

L-Server template operations (steps 2 to 4) can be performed using the GUI.

For details on how to operate L-Server templates using the GUI, refer to "15.1 Operations Using the Wizard GUI" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Edit an L-Server Template

Configure the GUIRunOnce command file for an L-Server template.

Edit the XML definition of L-Server templates, referring to "15.2.2 Virtual L-Server Templates" in the "Reference Guide (Command/XML) CE".

4. Import an L-Server Template

For details on how to import L-Server templates, refer to "15.2.3 Import" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

To confirm overcommit settings configured for an L-Server template, execute the rcxadm template show command.

For details on the rcxadm template command, refer to "8.1 rcxadm template" in the "Reference Guide (Command/XML) CE".

5. Create an L-Server

Create an L-Server using the L-Server template created in step 4.

For details, refer to "16.1 Creation Using an L-Server Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

When not using an L-Server template, create an L-Server using a command. Edit the L-Server XML referring to "Chapter 16 Creating L-Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE", and then execute the rcxadm lserver create command.

For details on the rcxadm lserver command, refer to "3.6 rcxadm lserver" in the "Reference Guide (Command/XML) CE".

8.3 Hyper-V

This section explains how to configure Hyper-V as server virtualization software.

- When Creating a Virtual L-Server

Configure the settings referring to the information in "8.3.1 Creating Definition Files" or the following sections.

- When Associating L-Servers with Configured Virtual Machines

Refer to "18.4.3 For Virtual Machines" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- Importing to L-Platforms

Refer to "7.2.3 Importing to L-Platform" in the "Operation Guide CE".

8.3.1 Creating Definition Files

This section explains how to create definition files.

For definition files common to virtual L-Servers, refer to "8.1 Definition Files Commonly Shared when Creating Virtual L-Servers".

8.3.2 Registering Resources with Resource Orchestrator

This section explains how to register resources with Resource Orchestrator.

Use the following procedure to register resources:

When Using Blade Servers

1. Register VM management software

When registering VM management software, CSV files that are created in advance during pre-setup preparations, are automatically registered in Resource Orchestrator as virtual storage resources.

When configuring L-Server alive monitoring, domain users which belong to the Administrators group for all VM hosts must be specified for the login account for VM management software registered in Resource Orchestrator.

For details on how to register VM management software, refer to "5.2 Registering VM Management Software" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Register chassis

Refer to "5.4.1 Registering Chassis" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Register Managed Servers (within Chassis)

Refer to "5.4.2 Registering Blade Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

4. Register LAN switch blades

Refer to "5.4.3 Registering LAN Switch Blades" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

5. Preparations for Networks (for Manual Network Configuration)

Preparation is necessary in the following cases.

For details, refer to "[Preparations](#)" of "[Connections with Virtual Networks Created in Advance](#)".

- When not performing network redundancy for L-Servers with blade servers
- When using servers other than blade servers

6. Network Resources

To register a network resource, specify a network pool when creating the network resource.

By creating network resources in advance, if the NIC and network resources are connected when an L-Server is created, the following settings matching the network resource definition will be registered automatically.

For details on automatic configuration of network resources, refer to "[8.3.4 Automatic Network Configuration](#)".

When Using Rack Mount or Tower Servers

1. Register VM management software

When registering VM management software, CSV files that are created in advance during pre-setup preparations, are automatically registered in Resource Orchestrator as virtual storage resources.

When configuring L-Server alive monitoring, domain users which belong to the Administrators group for all VM hosts must be specified for the login account for VM management software registered in Resource Orchestrator.

For details on how to register VM management software, refer to "5.2 Registering VM Management Software" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Register managed servers

Refer to "5.5.1 Registering Rack Mount or Tower Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Register LAN Switches

Refer to "5.13 Registering LAN Switches (L2 Switches)" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

4. Preparations for Networks (for Manual Network Configuration)

Preparation is necessary in the following cases.

For details, refer to "[Preparations](#)" of "[Connections with Virtual Networks Created in Advance](#)".

- When not performing network redundancy for L-Servers with blade servers
- When using servers other than blade servers

5. Network Resources

To register a network resource, specify a network pool when creating the network resource.

By creating network resources in advance, if the NIC and network resources are connected when an L-Server is created, the following settings matching the network resource definition will be registered automatically.

For details on automatic configuration of network resources, refer to "[8.3.4 Automatic Network Configuration](#)".

When Using PRIMEQUEST Servers

1. Register VM management software

When registering VM management software, CSV files that are created in advance during pre-setup preparations, are automatically registered in Resource Orchestrator as virtual storage resources.

When configuring L-Server alive monitoring, domain users which belong to the Administrators group for all VM hosts must be specified for the login account for VM management software registered in Resource Orchestrator.

For details on how to register VM management software, refer to "5.2 Registering VM Management Software" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Register chassis

Refer to "5.8.1 Registering Chassis (For PRIMEQUEST Servers)" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Register Managed Servers (within Chassis)

Refer to "5.8.2 Registering PRIMEQUEST Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

4. Preparations for Networks (for Manual Network Configuration)

Preparation is necessary in the following cases.

For details, refer to "Preparations" of "Connections with Virtual Networks Created in Advance".

- When not performing network redundancy for L-Servers with blade servers
- When using servers other than blade servers

5. Network Resources

To register a network resource, specify a network pool when creating the network resource.

By creating network resources in advance, if the NIC and network resources are connected when an L-Server is created, the following settings matching the network resource definition will be registered automatically.

For details on automatic configuration of network resources, refer to "8.3.4 Automatic Network Configuration".

8.3.3 Registering Resources in Resource Pools

This section explains the registration of resources to resource pools.

Use the following procedure to register a resource to a resource pool:

1. Register VM host resources

Refer to "14.1 VM Host Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Register virtual storage resources

Refer to "14.5 Storage Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Register network resources

If the NIC and network resources are connected when an L-Server is created, a VLAN ID is automatically configured for the NIC of the VM guest, and connected to the virtual network.

For details, refer to "8.3.4 Automatic Network Configuration".

- a. In the ROR console orchestration tree, right-click the target network pool, and select [Create Network Resource].

When creating a new network resource, select [New].

When creating a resource using an already registered admin LAN subnet, select [Using existing admin subnet].

The [Create a network resource] dialog is displayed.

- b. Enter the items necessary for network resources.

For details, refer to "14.3 Network Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

4. Register network device resources

Create network devices to be used on the L-Platform and register those with the type Firewall or SLB in the network pool.

Refer to "14.4 Network Devices" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8.3.4 Automatic Network Configuration

Network settings on Hyper-V differ depending on hardware (such as blade servers and rack mount servers), and whether network redundancy will be performed for L-Servers.

- Automatic network configuration for blade servers

Refer to "[Automatic Network Configuration for Blade Servers](#)".

- When not performing network redundancy for L-Servers with blade servers

Refer to "[8.3.5 Manual Network Configuration](#)".

Automatic network configuration using an arbitrary physical NIC is also possible by defining the physical NIC to be used in the server NIC definition file and then specifying the physical LAN segment defined in the server NIC definition from the network resource.

This enables automatic network configuration even in configurations using an arbitrary physical NIC.

To reflect the physical NIC configuration specified in the server NIC definition file on Resource Orchestrator, use the `rcxadm nicdefctl commit` command.



- For details on the server NIC definitions, refer to "15.13 Server NIC Definition" in the "Reference Guide (Command/XML) CE".

- For details on the `nicdefctl` command, refer to "5.15 rcxadm nicdefctl" in the "Reference Guide (Command/XML) CE".

- Network configuration for servers other than blade servers

Refer to "[8.3.5 Manual Network Configuration](#)".

Automatic Network Configuration for Blade Servers

If the NIC and network resources are connected when an L-Server is created, the following settings will be registered automatically for the VM host that the L-Server will operate on.

- LAN switch blades

When using a LAN switch blade in switch mode or end-host mode, a VLAN is configured on the internal connection port.

When creating a network resource, a VLAN can be configured on the port of LAN switch blade specified as the uplink port, by using the following procedure.

- From the GUI:

In the [Create a network resource] dialog, check the [Automatically configure VLANs for the uplink ports.] checkbox.

- From the Command-line:

In the XML definition for the network resource, specify "true" for `vlanautosetting` (Automatic VLAN configuration for uplink ports).

- Virtual Network

When there is no virtual network on the public LAN, it will be created automatically using the virtual interface (IntelPROSet or PRIMECLUSTER GLS)) manually created in advance.

When a network already exists, the virtual network can be used.

- VM guests

Configure a VLAN on the virtual NIC of the VM guest, and connect with the virtual network.

If an image is specified, the IP address is automatically configured. For details on how to configure IP addresses automatically, refer to "Network (NIC)" of "16.3.1 [General] Tab" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

In environments using the clustering function of VM management software, in order to enable the migration of VM guests and operation using the HA function, settings for LAN switch blades and virtual switches are performed automatically for all VM hosts comprising the cluster.

When not configuring the tagged VLAN automatically for the uplink port of network resources, use the ROR console to configure the VLAN settings of uplink ports. Right-click the LAN switch blade in the server resource tree, and select [Modify]-[Network Settings] from the popup menu.

For details, refer to "5.4.4 Configuring VLANs on LAN Switch Blades" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Note

After creating an L-Server, if VM hosts are added to the cluster afterwards, Resource Orchestrator network settings are not performed automatically.

Perform the same settings as the existing VM hosts in the cluster configuration for the LAN switch blades and virtual networks of the additional VM hosts.

Virtual network definition files for blade servers

- When configuring the network for blade servers automatically
It is not necessary to create a virtual network definition file.
- When a virtual network definition file exists and no virtual network with a VLAN ID is defined
The virtual network is automatically configured.
- When a virtual network with a VLAN ID is defined, using a virtual network definition file
It is necessary that a virtual network with the VLAN ID be manually configured beforehand.
For details, refer to "[8.3.5 Manual Network Configuration](#)".

Default Blade Server Configuration to Support Automation of Network Configuration in Resource Orchestrator

The default blade server configuration to support automation of network configuration in Resource Orchestrator (server blades, specification of uplink ports for network resource, correspondence relation of numbers of LAN switch blades and physical network adapters, etc.) is shown in the following list. When there are no server NIC definitions, for network auto-configuration, a virtual network is created using the physical network adapter selected according to this list.

Table 8.16 Default Blade Server Configuration for Network Auto-Configuration (for PRIMERGY BX900 S1/S2 Chassis)

Server Blade	Specification of Uplink Port (Location of LAN Switch Blade)	LAN Switch Blade to Use	Physical Network Adapter Number (*6)
BX920 S1 BX920 S2 BX920 S3 BX920 S4 BX922 S2 BX924 S3 BX924 S4 BX2560 M1 BX2560 M2 BX2580 M1 BX2580 M2	CB1 and CB2, or no specification for uplink port	PY-SWB102(PG-SW111) PY-SWB103(PG-SW112)	3,4
		PY-SWB101(PG-SW201) PY-SWB104(PG-SW109) (*1) PY-SWB105 (*2) PY-CFB101 (*2) PY-CNB101 (*2) PY-FEB101 (*3)	1,2
	CB3 and CB4	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111)	5,6

Server Blade	Specification of Uplink Port (Location of LAN Switch Blade)	LAN Switch Blade to Use	Physical Network Adapter Number (*6)
		PY-SWB103(PG-SW112) PY-SWB104(PG-SW109) PY-SWB105 PY-CFB101 PY-CNB101 PY-FEB101 (*3)	
	CB5 and CB6	PY-SWB104(PG-SW109) PY-SWB105 PY-CFB101 PY-CNB101 PY-FEB101 (*3)	9,10
	CB7 and CB8	PY-SWB102(PG-SW111) PY-SWB103(PG-SW112)	11,12
		PY-SWB101(PG-SW201)	9,10
BX924 S2	CB1 and CB2, or no specification for uplink port	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109)	1,2
	CB3 and CB4	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109) PY-SWB105 PY-CFB101 PY-CNB101 PY-FEB101 (*3)	3,4
	CB5 and CB6	PY-SWB104(PG-SW109) PY-SWB105 PY-CFB101 PY-CNB101 PY-FEB101 (*3)	7,8
		CB7 and CB8	PY-SWB102(PG-SW111) PY-SWB103(PG-SW112)
			PY-SWB101(PG-SW201)
BX960 S1	CB1 and CB2, or no specification for uplink port	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109)	11,12
	CB3 and CB4 (*4)	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109) PY-SWB105 PY-CFB101 PY-CNB101 PY-FEB101 (*3)	3,4
	CB5 and CB6 (*5)	PY-SWB104(PG-SW109) PY-SWB105 PY-CFB101	7,8

Server Blade	Specification of Uplink Port (Location of LAN Switch Blade)	LAN Switch Blade to Use	Physical Network Adapter Number (*6)
		PY-CNB101 PY-FEB101 (*3)	
		PY-SWB102(PG-SW111) PY-SWB103(PG-SW112)	9,10
	CB7 and CB8 (*5)	PY-SWB101(PG-SW201)	7,8

*1: When installing a PY-SWB104 (PG-SW109) on CB1 or CB2, set the transmission speed at the down link port of PY-SWB104 (PG-SW109) to 1 Gbps. For details on how to configure the settings, refer to the corresponding hardware manual.

*2: When mounting PY-SWB105, PY-CFB101, or PY-CNB101 on CB1 and CB2, only BX920 S3 or later models, BX924 S3 or later models, BX2560 M1, BX2560 M2, BX2580 M1, and BX2580 M2 models are supported as server blades.

*3: When mounting PY-FEB101, only BX920 S3 or later models, BX924 S3 or later models, BX2560 M1, BX2560 M2, BX2580 M1, and BX2580 M2 models are supported as server blades.

*4: A LAN expansion card is mounted in expansion slot 1.

*5: A LAN expansion card is mounted in expansion slot 2.

*6: Configure a virtual network automatically on a virtual interface configured beforehand in a redundant configuration using individual physical network adapters. Configure the virtual interface on the managed server using one of following products beforehand.

- Intel PROSet
- PRIMECLUSTER GLS for Windows

Table 8.17 Default Blade Server Configuration for Network Auto-Configuration (for PRIMERGY BX400 S1 Chassis)

Server Blade	Specification of Uplink Port (Location of LAN Switch Blade)	LAN Switch Blade to Use	Physical Network Adapter Number (*5)
BX920 S2 BX920 S3 BX920 S4 BX922 S2 BX924 S3 BX924 S4 BX2560 M1 BX2560 M2 BX2580 M1 BX2580 M2	CB1 and CB2 (*1), or no specification for uplink port	PY-SWB102(PG-SW111) PY-SWB103(PG-SW112)	3,7
		PY-SWB101(PG-SW201) PY-SWB104(PG-SW109) (*2) PY-SWB105 (*3) PY-CFB101 (*3) PY-CNB101 (*3) PY-FEB101 (*4)	2,6
	CB3 and CB4	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109) PY-SWB105 PY-CFB101 PY-CNB101 PY-FEB101 (*4)	9,10
BX924 S2	CB1 and CB2 (*1), or no specification for uplink port	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109)	2,4
	CB3 and CB4	PY-SWB101(PG-SW201) PY-SWB102(PG-SW111) PY-SWB103(PG-SW112) PY-SWB104(PG-SW109) PY-SWB105 PY-CFB101 PY-CNB101 PY-FEB101 (*4)	7,8

- *1: The same LAN switch blade model should be mounted in CB1 and CB2.
- *2: When installing a PY-SWB104 (PG-SW109) on CB1 or CB2, set the transmission speed at the down link port of PY-SWB104 (PG-SW109) to 1 Gbps. For details on how to configure the settings, refer to the corresponding hardware manual.
- *3: When mounting PY-SWB105, PY-CFB101, or PY-CNB101 on CB1 and CB2, only BX920 S3 or later models, BX924 S3 or later models, BX2560 M1, BX2560 M2, BX2580 M1, and BX2580 M2 models are supported as server blades.
- *4: When mounting PY-FEB101, only BX920 S3 or later models, BX924 S3 or later models, BX2560 M1, BX2560 M2, BX2580 M1, and BX2580 M2 models are supported as server blades.
- *5: Configure a virtual network automatically on a virtual interface configured beforehand in a redundant configuration using individual physical network adapters. Configure the virtual interface on the managed server using one of following products beforehand.
 - Intel PROSet
 - PRIMECLUSTER GLS for Windows

Table 8.18 Default Blade Server Configuration for Network Auto-Configuration (for PRIMERGY BX600 S3 Chassis)

Server Blade	Specification of Uplink Port (Location of LAN Switch Blade)	LAN Switch Blade to Use	Physical Network Adapter Number (*)
BX600 series servers	NET1 and NET2, or no specification for uplink port	PG-SW107	3,4
	NET3 and NET4	PG-SW104	7,8

- * Note: Configure a virtual network automatically on a virtual interface configured beforehand in a redundant configuration using individual physical network adapters. Configure the virtual interface on the managed server using one of following products beforehand.
- Intel PROSet
 - PRIMECLUSTER GLS for Windows

The numbers of physical network adapters given above can be checked on the details window of the LAN switch blade.

The MAC address (IP address) information of managed servers can be confirmed in [Hardware Maintenance] on the [Resource Details] tab.

Configure the Intel PROSet or PRIMECLUSTER GLS settings on the managed server in advance, using this MAC address information.

When the LAN switch blade is in IBP mode, create a virtual network on the virtual interface configured beforehand in the redundant configuration using the same physical network adapter as in the case of "no specification for uplink port" in the list above.

Performing the following procedure enables automatic network configuration using an arbitrary physical NIC.

1. Create a server NIC definition and reflect it on Resource Orchestrator.
 - a. Create a server NIC definition
 - Edit the template file and create a server NIC definition.
 - b. Reflect the server NIC definition
 - Execute the `rxadm nicdefctl commit` command to reflect the physical NIC configuration specified in the server NIC definition file on Resource Orchestrator.
 - c. Confirm the reflected server NIC definition
 - Execute the `rxadm nicdefctl show` command and confirm the server NIC definition has been reflected on Resource Orchestrator.
2. Create a network resource.
 - From the GUI:
 - a. In the ROR console orchestration tree, right-click the network pool to create a network resource in, and select [Create Network Resource].
 - When creating a new network resource, select [New].
 - When creating a resource using an already registered admin LAN subnet, select [Using existing admin subnet].
 - b. In the [Create a network resource] dialog, clear the [Use configured virtual switches/port profile.] checkbox.
 - c. In the [Create a Network Resource] dialog, select "Settings" in "Physical LAN Segment".

- d. In the [Physical LAN segment settings] dialog, select the physical LAN segment specified in PhysicalLANSegment name of the server NIC definition.
- From the Command-line:
 - a. Create the XML file that defines network resources.
Specify the physical LAN segment name that was specified for "PhysicalLANSegment name" in the server NIC definition file for "PhysicalLANSegment" in the XML file that defines network resources.
In this case, specify auto="true" in the Network element.
 - b. Create a network resource.
Execute the rcxadm network create command specifying the XML file created in step a.

 See

- For details on the server NIC definitions, refer to "15.13 Server NIC Definition" in the "Reference Guide (Command/XML) CE".
- For details on the nicdefctl command, refer to "5.15 rcxadm nicdefctl" in the "Reference Guide (Command/XML) CE".
- For details on how to define network resources, refer to "15.6 Network Resources" in the "Reference Guide (Command/XML) CE".
- For details on the rcxadm network command, refer to "3.9 rcxadm network" in the "Reference Guide (Command/XML) CE".

 Note

- If there are VM hosts that meet all of the following conditions, automation of network configuration is not supported in the chassis.
 - Network resources with uplink ports specified are used
 - There is a virtual network that uses a NIC in a VM host configuration pattern that differs from the ones supporting automation of network configuration
- If there are VM hosts that meet all of the following conditions, automation of network configuration is not supported.
 - Network resources with no uplink port specified are used
 - There is a virtual network that uses a NIC in a VM host configuration pattern that differs from the ones supporting automation of network configuration

In the diagram, the default blade server configurations as described in the following configuration example when using a PRIMERGY BX900 S1 chassis are shown.

Table 8.19 Configuration Example 1

Server blades	BX920 S2
Specification of uplink port	CB1 and CB2
LAN switch blade to use	PY-SWB103(PG-SW112)
Virtual interface	PRIMECLUSTER GLS

Table 8.20 Configuration Example 2

Server blades	BX920 S2
Specification of uplink port	Both "no specification for uplink port" and "CB3 and CB4" are specified
LAN switch blade to use	PY-SWB104(PG-SW109)
Virtual interface	PRIMECLUSTER GLS

Figure 8.4 Blade Server Diagram of Configuration Example 1

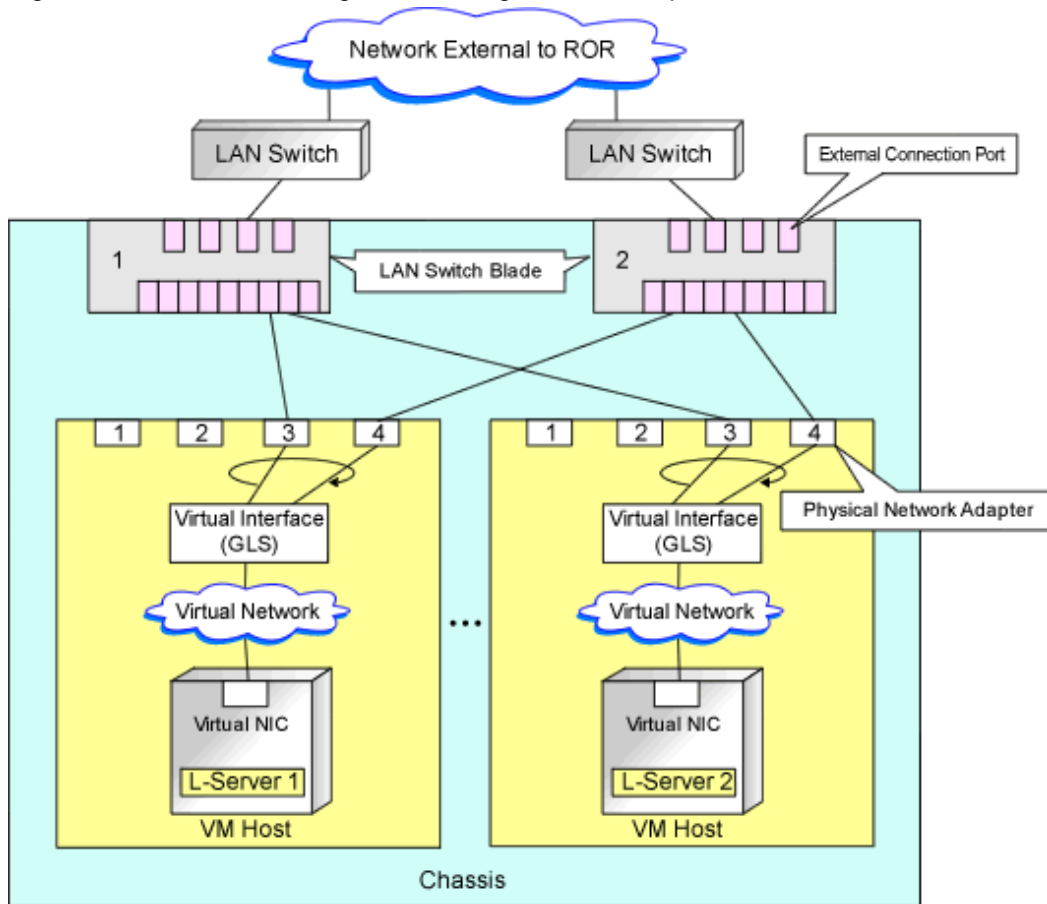
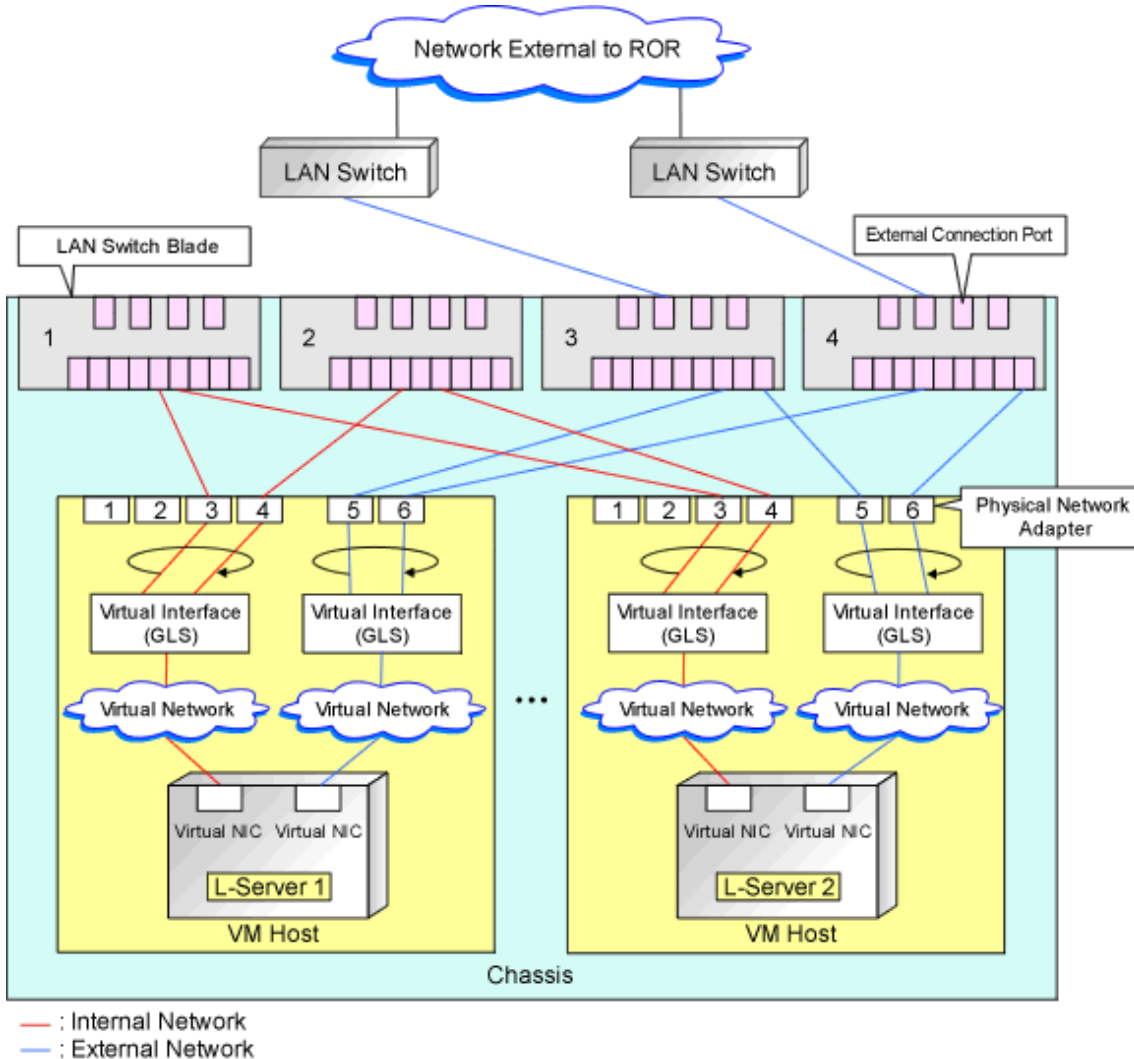


Figure 8.5 Blade Server Diagram of Configuration Example 2



8.3.5 Manual Network Configuration

In the following cases, configure the network manually.

- When using a physical network adapter number that differs from configuration patterns of VM hosts which support automation of network configuration
Refer to "[Configuring Network Resources when Using a Physical Network Adapter Number that Differs from Configuration Patterns of VM Hosts which Support Automation of Network Configuration](#)".
- When not performing network redundancy for L-Servers with blade servers
Refer to "[Connections with Virtual Networks Created in Advance](#)".
- For environments using servers other than blade servers
Refer to "[Connections with Virtual Networks Created in Advance](#)".
- For configurations using VM Network
Refer to "[Network Settings in Configurations Using VM Network](#)".

When a virtual network has already been manually configured and server virtualization software other than Hyper-V is being used with the same manager, set a different name from the one used by the virtual switch, virtual network, and virtual bridge on the other virtualization software.

Configuring Network Resources when Using a Physical Network Adapter Number that Differs from Configuration Patterns of VM Hosts which Support Automation of Network Configuration

When using a physical network adapter number that is different from the one used in the configuration patterns mentioned above, create networks using the following procedure.

1. Create a virtual network with the same name (including upper and lower case characters) for all VM hosts comprising the cluster.

This enables migration of VM guests between VM hosts. When using System Center 2012 Virtual Machine Manager or later versions as VM management software, only "External" can be used for the type of virtual network which is the connection destination for the VM guest.

For details on how to create networks, refer to the SCVMM help.

2. Configure LAN switch blades to enable communication using the tagged VLAN between virtual networks using the same name.

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

The [VLAN Settings] dialog is displayed.

3. Configure a VLAN.

4. Define supported virtual networks and VLAN IDs in the following definition file:

Installation_folder\SVROR\Manager\etc\customize_data\vnetwork_hyperv.rcxprop

For details on definition file format, refer to "[File Format for Virtual Network Definitions](#)".

5. Create Network Resources

- From the GUI:

- a. In the [Create a network resource] dialog containing the VLAN ID that was specified in steps 2 to 4, check the [Use configured virtual switches/port profile.] checkbox and create a network resource.

- From the Command-line:

- a. Create the XML file that defines network resources.

Define the VLAN ID specified in steps 2 to 4 in the XML file.

In this case, specify auto="false" in the Network element.

- b. To create the network resource, execute the rcxadm network create command specifying the XML file created in step a.

The network resources are created.

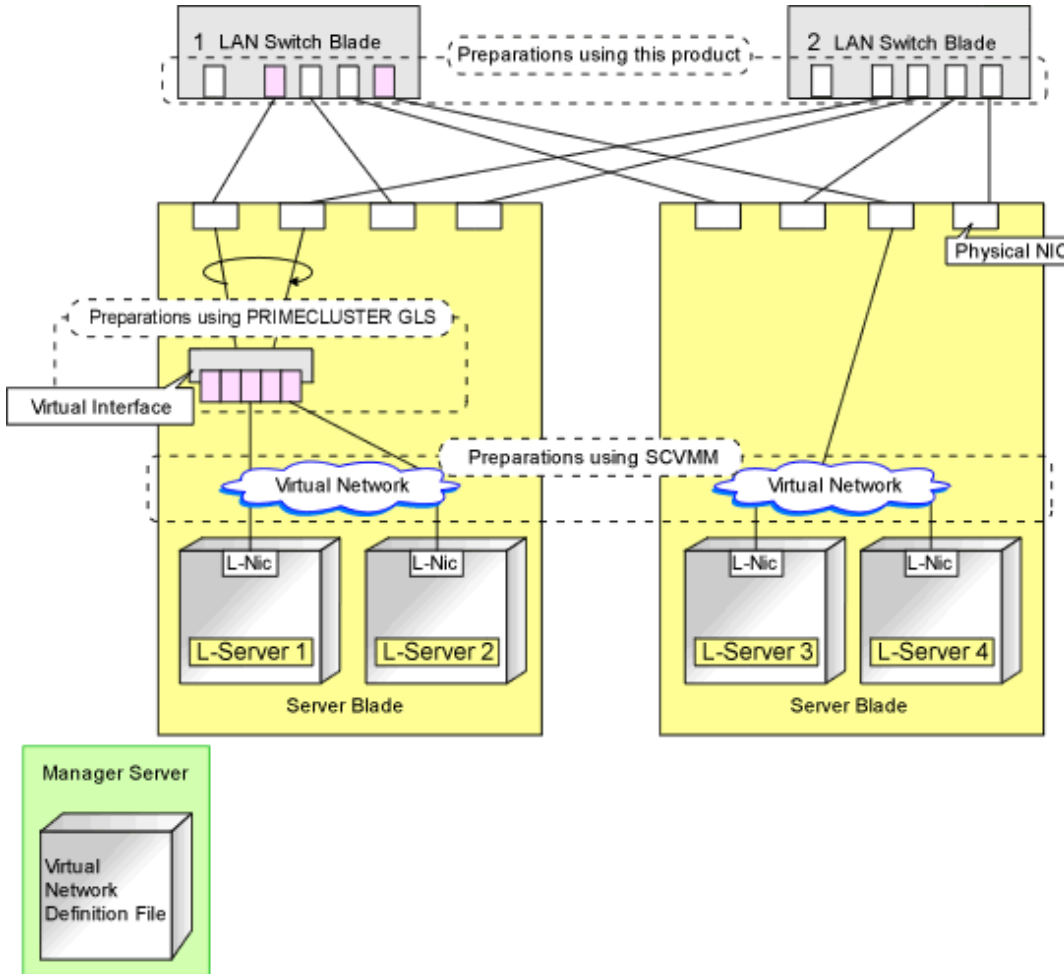


- For details on how to configure VLAN settings of LAN switch blade uplink ports, refer to "5.4.4 Configuring VLANs on LAN Switch Blades" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- For details on the Network element and creation of XML files that define network resources, refer to "15.6 Network Resources" in the "Reference Guide (Command/XML) CE".

- For details on the rcxadm network command, refer to "3.9 rcxadm network" in the "Reference Guide (Command/XML) CE".

Figure 8.6 Network Diagram



Connections with Virtual Networks Created in Advance

When not performing network redundancy for L-Servers with blade servers, and in environments where blade servers are not used, only the function for configuring IP addresses and VLAN IDs on VM guest NICs and connecting NICs of VM guests is provided for virtual networks created in advance. Manually perform virtual network settings in advance.

Additionally, the following settings must be performed in advance.

Preparations

1. Create a Virtual Network

Create a virtual network with the same name (including upper and lower case characters) for all VM hosts comprising the cluster. This enables migration of VM guests between VM hosts. When using System Center 2012 Virtual Machine Manager or later versions as VM management software, only "External" can be used for the type of virtual network which is the connection destination for the VM guest.

For details on how to create networks, refer to the SCVMM help.

2. Configure the Virtual Network Communication

Configure LAN switch blades to enable communication using the tagged VLAN between virtual networks using the same name.

- a. Right-click the target LAN switch blade in the server resource tree on the ROR console, and select [Modify]-[Network Settings] from the popup menu.

The [VLAN Settings] dialog is displayed.

- b. Configure a VLAN.

3. Define the Supported Virtual Network and VLAN ID

Supported virtual networks and VLAN IDs are defined in the following definition file of Resource Orchestrator:

Installation_folder\SVROR\Manager\etc\customize_data\vnetwork_hyperv.rcxprop

For details on definition file format, refer to "[File Format for Virtual Network Definitions](#)".

4. Create Network Resources

- From the GUI:

In the [Create a network resource] dialog containing the VLAN ID that was specified in steps 2 to 3, check the [Use configured virtual switches/port profile.] checkbox and create a network resource.

- From the Command-line:

- a. Create the XML file that defines network resources.

Define the VLAN ID specified in steps 2 to 3 in the XML file.

In this case, specify auto="false" in the Network element.

- b. To create the network resource, execute the rcxadm network create command specifying the XML file created in step a.

The network resources are created.



See

- For details on how to configure VLAN settings of LAN switch blade uplink ports, refer to "5.4.4 Configuring VLANs on LAN Switch Blades" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- For details on the rcxadm network command, refer to "3.9 rcxadm network" in the "Reference Guide (Command/XML) CE".

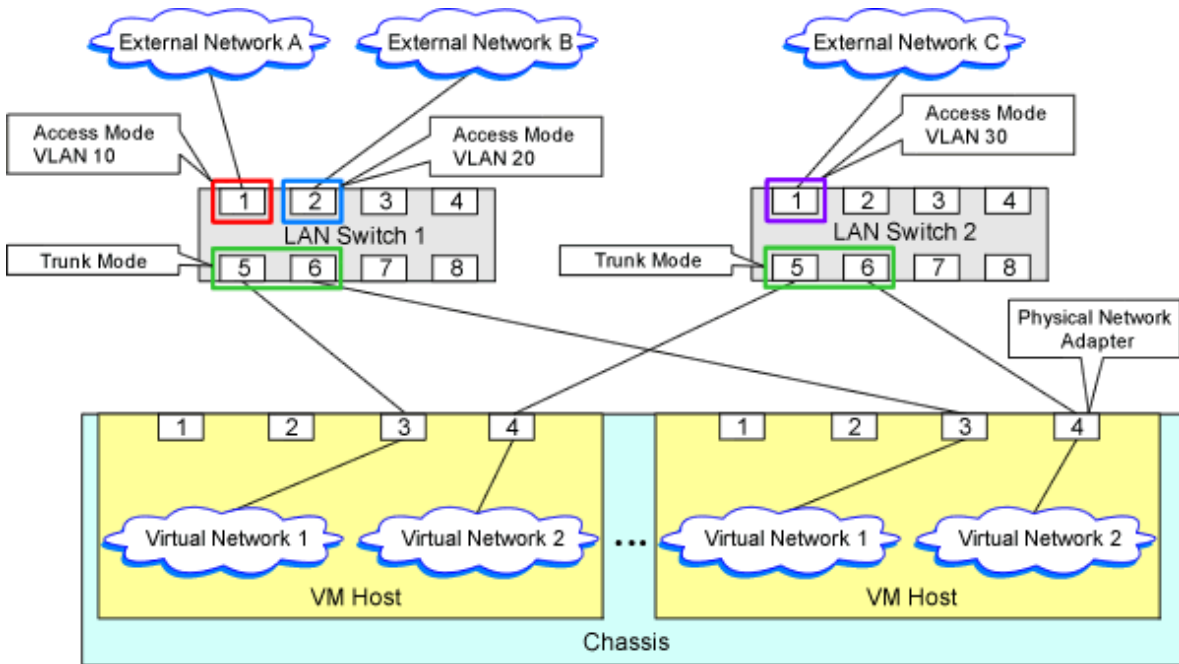
Virtual NIC Automatic Configuration for VM Guests

Configure a VLAN on the virtual NIC of the VM guest, and connect with the virtual network.

If an image is specified, the IP address is automatically configured. For details on how to configure IP addresses automatically, refer to "Network (NIC)" of "16.3.1 [General] Tab" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

For rack mount or tower servers, an example of virtual NIC configuration and connection with virtual networks using network resources is given below:

Figure 8.7 Virtual NIC Configuration and Virtual Network Connection Using Network Resources for Rack Mount or Tower Servers



File Format for Virtual Network Definitions

Describe the virtual network definition file in one line as below:

```
"Virtual Network Name Created on the VM Host"=VLAN ID[, VLAN ID...]
```

For the *VLAN ID*, a value from 1 to 4094 can be specified. When specifying a sequence of numbers, use a hyphen ("-") such as in "1-4094".

Example

```
"Network A"=10
"Network B"=21,22,23
"Network C"=100-200,300-400,500
```

Blank spaces before and after equal signs ("=") and commas (",") are ignored.

Describe the virtual network correctly, as the entry is case-sensitive.

Save files using the UTF-8 character code.

When there are multiple lines with the same virtual network name, all specified lines are valid.

When the same VLAN ID is included in a line with a different virtual network name, the first occurrence in the file is valid and the lines after it are ignored.

Example

```
"Network D"=11
"Network D"=12 (*1)
"Network E"=11,15 (*2)
```

*1: Same as when "Network D"=11,12.

*2: 11 is ignored.

An error occurs during L-Server creation if the definition of the VLAN ID of the network resource connected to the NIC cannot be found.

Configuration for MAC Address Pools

In order to allocate a MAC address to the NIC when creating an L-Server connected to the NIC coordinating with SCVMM when using System Center 2012 Virtual Machine Manager or later versions, use MAC address pools for SCVMM.

When not changing the default MAC address pool on SCVMM, or only one MAC address pool exists for a Hyper-V environment, use that MAC address pool.

When there is no MAC address pool for a Hyper-V environment on SCVMM, create a MAC address pool to allocate MAC addresses using SCVMM.

When there are multiple MAC address pools on SCVMM, use the following procedure to define the MAC address pool to use.

1. Settings When Using Tenants in Resource Orchestrator

When creating multiple host groups on SCVMM, use the following procedure to use the same tenant configurations as that of the host group.

1. Create the same number of tenants as the number of host groups in Resource Orchestrator.
2. Register the VM host located in each host group in the local pool of the corresponding tenant.

2. Definition of a MAC Address Pool Using an L-Server

Define the MAC address pool to use when creating an L-Server in the MAC address pool definition file in Resource Orchestrator.

When dividing MAC address pools for each tenant created in step 1, define the MAC address pool used in each tenant in the MAC address definition file.

When creating multiple host groups in SCVMM, create a definition for each tenant, and specify the MAC address pool allocated to the host group.

For details on the definition file format for MAC address pools, refer to "[Definition File Format for MAC Address Pools](#)".

Definition File Format for MAC Address Pools

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

Definition File Name

The definition file name can be used by dividing it into definitions that are available for each tenant and definitions that are common to the system.

If both a definition file for each tenant and a common definition file exist on the system, priority is given to the definitions indicated in the definition file for each tenant.

- By Tenant

scvmm_mac_pool_*tenant_name*.rcxprop

- Common on System

scvmm_mac_pool.rcxprop

Character Code

UTF-8

Line Break Code

CR/LF

Definition Configuration File Format

Key = Value

Table 8.21 Definition File Items

Item	Description
Key	<ul style="list-style-type: none"> - When one SCVMM is registered all - When multiple SCVMMs are registered scvmm[SCVMM registered name]
Value	<p>Specify the name of a MAC address pool created in SCVMM.</p> <p>When the MAC address pool name being specified includes blank spaces, enclose the MAC address pool name in double quotes (").</p> <p>For details on the character types available for MAC address pools, refer to the SCVMM manual.</p>



Example

- When only one SCVMM is registered, or when multiple SCVMMs are registered and the MAC address pool names used in each SCVMM are the same

```
all = "MAC pool A"
```

- When multiple SCVMMs are registered, and different MAC address pool names are used for each SCVMM

```
scvmm[scvmm1] = "MAC pool A"
scvmm[scvmm2] = "MAC pool B"
```



Note

- When the VM management software to use is System Center Virtual Machine Manager 2008 R2, it is ignored even if the definition files exist.
- If you edit and save a UTF-8 text file using Windows Notepad, the Byte Order Mark (BOM) is stored in the first three bytes of the file, and the information specified on the first line of the file will not be analyzed correctly. When using Notepad, specify the information from the second line.
- More than one blank spaces or tabs at the beginning and end of the line, and before and after equal signs ("=").
- When a line starts with "#", that line is regarded as a comment.
- The details of lines that are not based on the format above are ignored.
- Only lower case is valid for "all", "scvmm[registration_name_of_SCVMM]", and "scvmm" used for keys. If upper case characters are included, the string is ignored.
- When the same key exists in the line, the definitions described last in the line are valid.
- When both the "all" key and "scvmm[registration_name_of_SCVMM]" key exist together, priority is given to the definitions for "scvmm[registration_name_of_SCVMM]".
- The definition file configurations are reflected without restarting the manager in Resource Orchestrator.

Network Settings in Configurations Using VM Network

For configurations using VM Network, a function of System Center 2012 Virtual Machine Manager(hereinafter SCVMM) SP1 or later, the function for connecting a VM Network configured in advance with a virtual L-Server is provided.

Perform the following preconfiguration:

1. Create a logical network on SCVMM.

The logical network can be used only for a VLAN-based configuration.
In the logical network, create a network site depending on the VLAN ID to be used.
For details on how to create networks, refer to the SCVMM help.

2. Configure the virtual switch on the host that is the management target

Configure a logical switch or standard virtual switch for which the logical network created in step 1 can be used.
For details on how to configure switches, refer to the SCVMM or Windows help.

3. Create the VM Network using the logical network configured in step 1 on SCVMM.

Ensure the VLAN ID is specified using this VM Network, and do not perform automatic allocation of VLAN IDs.
For details on how to create networks, refer to the SCVMM help.

4. Define the relation between the VM Network and the VLAN ID in the following definition file of the ROR manager.

```
Installation_folder\SVROR\Manager\etc\customize_data\vnetwork_hyperv.rcxprop
```

For details on definition file format, refer to "File Format for Virtual Network Definitions (Configuration Using VM Network)".

5. Create Network Resources

- From the GUI:

In the [Create a network resource] dialog containing the VLAN ID that was specified in step 4, check the [Use configured virtual switches/port profile.] checkbox and create a network resource.

- From the Command-line:

- a. Create the XML file that defines network resources.

Define the VLAN ID specified in steps 2 to 4 in the XML file.
In this case, specify auto="false" in the Network element.

- b. To create the network resource, execute the rcxadm network create command specifying the XML file created in step a.

The network resources are created.



- For details on how to configure VLAN settings of LAN switch blade uplink ports, refer to "5.4.4 Configuring VLANs on LAN Switch Blades" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".
- For details on the rcxadm network command, refer to "3.9 rcxadm network" in the "Reference Guide (Command/XML) CE".

File Format for Virtual Network Definitions (Configuration Using VM Network)

Definition File Format

The definition file is entered in the following format.

```
"VLAN network name (Standard virtual switch name)"=VLAN ID[, VLAN ID]

[VM Networks]
"VM Network Name"= VLAN ID
```



```
"Network A"=10
"Network B"=21,22,23
"Network C"=100-200,300-400,500
[VM Networks]
"vm network" = 100
```

For the VLAN ID, a value from 1 to 4094 can be specified. When specifying a sequence of numbers, use a hyphen ("-") such as in "1-4094".

Blank spaces before and after equal signs ("=") and commas (",") are ignored.

Describe the virtual network correctly, as the entry is case-sensitive.

Save files using the UTF-8 character code.

When there are multiple lines with the same virtual network name, all specified lines are valid.

When the same VLAN ID is included in a line with a different virtual network name, the first occurrence in the file is valid and the lines after it are ignored.

When the same VLAN ID is included in a line with a different VM Network name, the first occurrence in the file is used and the lines after it are ignored.

When the same VLAN ID is included in the virtual network name and the VM Network name, the VM Network name is valid.

Even if there is a blank space before [VM Networks], it is ignored.

When the VM management software is an earlier version than SCVMM2012 SP1, the VM Network name is ignored even if it is specified.

8.3.6 Create L-Server Templates

This section explains how to create an L-Server template.

L-Server templates can be created using the following methods.

- Using the Wizard GUI

L-Server templates can be created using the wizard GUI in the wizard format.

For details on the GUI in the wizard format, refer to "15.1 Operations Using the Wizard GUI" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- Manually

Use the following procedure to create an L-Server template:

1. Export an L-Server template

The sample L-Server templates provided with Resource Orchestrator can be exported.

Refer to "15.2.1 Export" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Edit an L-Server Template

The L-Server template output in step 1 can be edited with an editor, etc.

For details on the L-Server templates for virtual L-Servers, refer to "15.2.2 Virtual L-Server Templates" in the "Reference Guide (Command/XML) CE".

3. Import an L-Server Template

Refer to "15.2.3 Import" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8.3.7 Creating L-Servers

This section explains the creation of L-Servers.

Use the following procedure to create L-Servers:

- Create an L-Server using an L-Server template
 - When there are no cloning images, or when not using cloning images which have been already registered
 1. Create an L-Server, referring to "16.1 Creation Using an L-Server Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE". When creating the L-Server, select [None] for images.

In this case, the created L-Server may not be displayed in the orchestration tree.
For details, refer to "Note- When the created L-Server is not displayed in the orchestration tree".
For details on the created VM guests or cloning images, refer to "Information- Information created during L-Server creation".
 2. Install an OS, referring to "[Manual OS Installation](#)".
 3. When collecting cloning images after creating an L-Server, the cloning images are stored in the image pool. When collecting cloning images, refer to "[8.3.8 Collecting and Deleting Cloning Images](#)".
 - When using an existing cloning image

Create an L-Server, referring to "16.1 Creation Using an L-Server Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE". In this case, specify the cloning image that you want to use as an image.
- Create an L-Server specifying individual specifications

Refer to "16.3 Creation of Virtual L-Servers Using Parameters" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

For details on the [OS] tab settings, refer to "[8.3.9 \[OS\] Tab Configuration](#)".



Note

When the created L-Server is not displayed in the orchestration tree

When using the following SCVMM functions for the VM of the created L-Server, after this, the L-Server will not be recognized or displayed in the orchestration tree, and operation of the L-Server becomes unavailable.

- Saving in the library, deploying from the library
- New template
- Transfer the template to a cluster node that is not managed by Resource Orchestrator

When "copying" is performed, the copied VM is not recognized as an L-Server.



Information

Information created during L-Server creation

- VM guests created as L-Servers have the following configuration:

Disk and DVD

First disk (system volume)

Connected to the primary channel (0) of IDE device

Second or later disk

Connected to a SCSI adapter as data disk (*)

DVD drive

Connected to the secondary channel (0) of IDE device

* Note: Cannot be used on guest OSs without the integrated service. Only boot disks connected to the IDE adapter can be used.

Virtual network adapter

When a guest OS that Hyper-V supports is specified, a converged network adapter will be used. When a different OS has been selected, an emulated network adapter will be added.

For details on the guest OSs supported by Hyper-V, refer to the following Microsoft web site.

Microsoft download web site

URL: [http://technet.microsoft.com/en-US/library/cc794868\(v=ws.10\).aspx](http://technet.microsoft.com/en-US/library/cc794868(v=ws.10).aspx)
URL: <http://technet.microsoft.com/en-us/library/hh831531.aspx>

CPU type

"1.00GHz Pentium III Xeon" or "3.60 GHz Xeon (2 MB L2 cache)" (the SCVMM default value) is specified. The CPU type is used for internal operations of SCVMM, and it does not indicate the CPU performance.

It is also different from the information displayed for the computer information of the guest OS.

- Using cloning images, collection or deployment of data disks other than system volumes can be selected.

When registering a template created using SCVMM in the image pool of Resource Orchestrator, use a template created from a VM guest that has the system volume (a disk connected to primary channel (0) of the IDE device).

In other configurations, deploying using Resource Orchestrator will create VM guests without system volumes.

Manual OS Installation

Manually install an OS, after configuring the DVD connection settings from the SCVMM management window.

To use a guest OS supported by Microsoft on Hyper-V, it is necessary to install a virtual guest service on the guest OS.

For details on virtual guest service installation, refer to the Help of SCVMM.

8.3.8 Collecting and Deleting Cloning Images

This section explains how to collect and delete cloning images.

Collection of a cloning image

Use the following procedure to collect cloning images:

After installing an OS, stop the target L-Server.

1. Right-click the target L-Server in the orchestration tree, and select [Cloning]-[Collect] from the popup menu.
2. Click the [OK] button.

A given cloning image (identified by its name attribute) can be managed by image version.

If a cloning image is created using VM management software, it can be used as is.



- If an L-Server is created with a specified Windows image, when deploying the image use Sysprep, provided by Microsoft, to reconfigure the properties unique to the server. By executing Sysprep, the user information and OS setting information are reset. For details on Sysprep, refer to the information provided by Microsoft.
- If stopping or restarting of the manager is performed during execution of Sysprep, the operation being executed will be performed after the manager is started. Until the process being executed is completed, do not operate the target resource.
- When using MAK license authentication for activation for the following OSs, Sysprep can be executed a maximum of three times.
 - Microsoft(R) Windows Server(R) 2008 R2
 - Microsoft(R) Windows Server(R) 2008
 - Microsoft(R) Windows(R) 7

- Microsoft(R) Windows Vista(R)

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 four times. Therefore, it is recommended not to collect cloning images from L-Servers that have had cloning images deployed, but to collect them from a dedicated master server. The number is also included in the count when Sysprep is performed when a template is created using SCVMM.

- When using System Center 2012 Virtual Machine Manager or later version as VM management software, only cloning images with high-availability attributes can be used in Resource Orchestrator.

Point

Images are stored in the SCVMM library.

Specify a library that has sufficient disk space available to store the collected images.

When [Automatic selection] 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.

Resource Orchestrator uses SCVMM templates for collection of images.

When collecting images from L-Servers, a template is created using a name with the version number added to the image name. When retrieving the template created by the user as an image, the template is treated as an image.

In order to collect images of L-Servers, a work area equal to the size of the disk (the system volume, all data disks, snapshot, and system configuration file) of the target of L-Server creation is necessary. This work area is released, when collection of images is complete.

When collecting images, collecting only system volumes, or images including data disks can be selected.

In Resource Orchestrator, the virtual hard disk of the primary channel (0) of the IDE device is managed as the system volume.

DVD drives other than the secondary channel (0) of the IDE device are deleted. A DVD drive is added to the secondary IDE channel (0) even if there is no DVD drive in the image. If DVD drives other than this drive exist, they are deleted.

Collection of images cannot be collected, when there are snapshots. Collect images after deleting snapshots. When creating checkpoints from the SCVMM management console or creating snapshots from Hyper-V manager, collection of images will fail.

Collection of cloning images fails, until the merge process of snapshot files is completed, even if the snapshots are deleted.

Collect cloning images after until the merge process is complete.

When the host of Hyper-V is Windows Server 2008 R2, the merge process is performed only when the virtual L-Server has been stopped.

When retrieving SCVMM templates created by users using SCVMM, manage them as follows:

- The template name is the image name.
- The virtual hard disk of the primary channel (0) of the IDE device is managed as a system volume.
- When creating an L-Server using an image which contains data disks other than system volumes, creation of an L-Server including data disks or excluding data disks can be selected.
- When creating an L-Server from an image with no system volume, an L-Server with no system volume will be created.
- On L-Servers created by retrieving an image from a template where DVD drives are connected to somewhere other than the secondary IDE channel (0), these DVD drives will be deleted.
- When L-Servers are created from an image retrieved from a template not connected to a DVD drive, the DVD drive will be added to the secondary IDE channel (0).

Collecting Images of Linux VM Guests

When using SCVMM, System Center 2012 SP1 or later, images cannot be collected from Linux VM guests. This specification is for SCVMM.

Therefore, create a template on SCVMM referring to the procedure described at the following URL: After that, register the created template in Resource Orchestrator as an image.

<http://technet.microsoft.com/en-us/library/hh427282.aspx>

However, it is necessary to satisfy all following conditions in order to use the created template in Resource Orchestrator.

- Install the integration service (ICs) on the Linux VM guest which is used as the source for the template.
- Install the Linux guest agent of SCVMM on the Linux VM guest which is used as the source for the template.
- Configure high-availability in the hardware configuration of the template
- Select an OS for the VM guest from the [Operating System], selecting [Create new Linux operating system customization settings] from [Guest OS Profile] in the operating system configuration of the template

When creating an L-Server specifying the image of a Linux VM guest, each parameter of the L-Server cannot be customized.

Access Control Configuration File of Image Storage Location

By specifying unavailable library shared path names in the access control configuration file of the image storage destination in advance, cloning image storage destinations can be controlled based on user groups.

Configuration File Storage Location

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

Configuration File Name

The configuration files can be divided into definitions that are available for each user group and definitions that are common to the system. When there are both types of files, the limitations of both are valid.

- For User Groups

library_share_user group name_deny.conf

- Common on System

library_share_deny.conf

Configuration File Format

In the configuration file, library shared path names are entered on each line.

Library_shared_path_name



Example

An example configuration file is indicated below:

```
\\rcxvmm1.rcxvmmshv.local\MSSCVMMLibrary  
\\rcxvmm2.rcxvmmshv.local\lib
```

Deleting 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 cloning image to be deleted, and select [Delete] from the popup menu.
3. Click the [OK] button.

The cloning image is deleted.

When SCVMM template creation requirements are not met, or configuration changes are performed outside Resource Orchestrator, collection of images may fail.

When deleting cloning images, the corresponding templates in the SCVMM library are deleted.

When deleting these templates, related files (such as .vhd and .vfd) will remain in the SCVMM library as only template definition files are deleted.

When these related files are unnecessary, delete them individually from SCVMM.

 **Information**

By creating the following setting file beforehand, when deleting cloning images, the related files that have no dependencies with other templates can be deleted at the same time.

Configuration File Storage Location

```
[Windows Manager]
Installation_folder\SVROR\Manager\etc\vm
```

Configuration File Name

```
delete_image_all_files_scvmm
```

Configuration File Format

It is not necessary to describe content in the configuration file.

As in the case of deletion of related files from the SCVMM management console, only the related files are deleted from the SCVMM library. The folder where the related files are stored will remain.

8.3.9 [OS] Tab Configuration

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.

Do not specify the value, as the value will not be set for the items for which entry is not required.

Table 8.22 List of Settings

Item	Windows		Description
	Necessity of Entry	Values When Omitted	
Host name/ Computer name	Possible	<i>L-Server Name</i>	Enter the host name or computer name. Enter a character string beginning with an alphanumeric character and containing up to 15 alphanumeric characters and hyphens ("-"). The string cannot be composed solely of numbers. If this parameter is not specified, the L-Server name is converted and set as indicated above. If underscores ("_") or periods (".") are used in an L-Server name, they will be replaced with hyphens ("-"), because these characters cannot be used for host names or computer names.
Domain name	Possible	WORKGROUP (*)	Enter the workgroup name. Settings for participation in a domain cannot be made. The same workgroup name as the computer name cannot be specified. Enter a character string beginning with an alphabetical character and containing up to 15 alphanumeric characters, hyphens ("-"), and periods (".").

Item	Windows		Description
	Necessity of Entry	Values When Omitted	
			Refer to the information provided by Microsoft about the character string that can be input to the workgroup name.
DNS search path	Not Required	-	Enter a list of domain names to use for DNS searching, using between 1 and 32,767 characters. You can specify the same characters as the domain name. To specify multiple domain names, use a blank space as the separator character.
Full name	Possible	WORKNAME (*)	Enter the Windows full name using between 1 and 50 characters. By default, the value defined in the OS property definition file is entered. For the following OSs, full names are not configured. <ul style="list-style-type: none"> - Microsoft(R) Windows Server(R) 2012 R2 - Microsoft(R) Windows Server(R) 2012 - Microsoft(R) Windows Server(R) 2008 R2 - Microsoft(R) Windows Server(R) 2008 - Microsoft(R) Windows(R) 8.1 - Microsoft(R) Windows(R) 8 - Microsoft(R) Windows(R) 7 - Microsoft(R) Windows Vista(R)
Organization name	Possible	WORKORGANIZATION (*)	Enter the organization name displayed in the Windows system properties using between 1 and 50 characters. For the following OSs, organization names are not configured. <ul style="list-style-type: none"> - Microsoft(R) Windows Server(R) 2012 R2 - Microsoft(R) Windows Server(R) 2012 - Microsoft(R) Windows Server(R) 2008 R2 - Microsoft(R) Windows Server(R) 2008 - Microsoft(R) Windows(R) 8.1 - Microsoft(R) Windows(R) 8 - Microsoft(R) Windows(R) 7 - Microsoft(R) Windows Vista(R)
Product key	Mandatory	- (*)	Omission not possible. Ensure that you specify a valid product key.
License mode	Not Required	-	Even if the license mode is specified, it is not configured in the guest OS.
Maximum number of connections	Not Required	-	Even if the maximum number of connections is specified, it is not configured in the guest OS.
Administrator password	Possible	- (*)	Enter the same password as that specified for the local administrator account during L-Server creation. When specifying a new password, the local administrator account will be overwritten.

Item	Windows		Description
	Necessity of Entry	Values When Omitted	
			Enter the password using between 1 and 128 alphanumeric characters or symbols.
Hardware clock configuration	Not Required	-	Specify one of the following: - UTC - Local (LOCAL)
Time zone	Possible	<i>The same time zone as the OS of the manager</i>	Specify the time zone of the OS.

* Note: When the value is specified in the OS property definition file, its values are configured.

Information

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.

For details, refer to "[8.1.7 OS Property Definition File](#)".

Information

VM Guest Administrator Account Settings Necessary When Creating an L-Server with an Image Specified

When creating an L-Server with an image specified, it is necessary to enter the "administrator password" as a parameter.

The entered "administrator password" is the one set for the Administrator of the built-in administrator account, but on some localized editions of Windows the account name may differ. In addition, when the client OS is Windows 7 or Windows Vista, on standard installations the built-in administrator account is disabled, and the user account created during installation becomes the administrator account.

When an L-Server is created with a cloning image that was collected from a localized edition of Windows or a client OS specified, it is necessary to either configure an administrator account for the administrator and set a password, or change the name of the administrator account with the "Administrator password" so that it fits the description given in the definition file below.

Note that when using a definition file, it is not possible to define different administrator ID settings for different versions of images.

Location of the Definition File

[Windows Manager]
Installation_folder\SVROR\Manager\etc\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. Search the definition file of each user group, from the start, for the administrator name corresponding to the image. When there is no corresponding definition, search in the system's common definition file.

Modification of the definition file is soon reflected, and it becomes valid for the creation of L-Servers from that point.

- For User Groups
image_admin_hyperv_user_group_name.rcxprop
- Common on System
image_admin_hyperv.rcxprop

Definition File Format

In the definition file, describe the image name and account name for which the administrator password has been configured on a single line.

```
Image_name = "Administrator_account_name"
```

The *Administrator_account_name* is displayed enclosed in double quotes (").

Blank spaces and tabs other than those in the *Administrator_account_name* are ignored.

It is possible to use an asterisk ("*") as a wildcard in image names. By specifying an asterisk ("*") it is possible to create substitute strings for strings of indefinite length.

When creating an L-Server from an image, the corresponding image name is searched for from the start of the definition file, and the specified "Administrator password" will be set for the specified administrator account name.

It is necessary to create the definition files using the following line break code and character codes:

- Line Break Code
CR+LF(0x0d0a)
- Character Code
Shift-JIS in a Japanese environment, UTF-8 in other environments



Example

An example definition file is indicated below.

- Image names and administrator account names are set in pairs.

```
FR_WIN2003_001 = "Administrator"  
EN_WIN7_001 = "root"  
EN_WIN7_002 = "admin"
```

- For image names that start with "FR_WIN", use "Administrator" as the name of the administrator account.

```
FR_WIN* = "Administrator"
```

- Use "Administrator" as the name of the administrator account for all images. When an image name is specified using only a wildcard, the definition after that line will be ignored.

```
* = "Administrator"
```

8.3.10 Advisory Notes for Hyper-V Usage

This section explains advisory notes for Hyper-V usage.

Operating Systems for which Parameters can be Set and the Prerequisites for Performing the Settings

Depending on the server 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.

VMware ESX Management

VMware ESX can be managed by SCVMM, but only VM host for Hyper-V can be managed when using SCVMM in Resource Orchestrator.

Management of Citrix(R) XenServer(R)

Citrix(R) XenServer(R) can be managed by Microsoft(R) System Center 2012 Virtual Machine Manager or a later version, but only VM hosts for Hyper-V can be managed when using SCVMM.

Attaching and detaching of disks

- Data disks are connected to the L-Server as SCSI disks. They cannot be connected as IDE disks.
- 14 data disks are connected to the first SCSI card, and 15 data disks are connected to each of the second to fourth SCSI cards.
- 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.
- Adding data disks while the L-Server is operating is possible except when additional SCSI cards become necessary.

Second Generation Virtual Machines

Second generation virtual machines are not supported.

Even when the Hyper-V of the VM host in Resource Orchestrator is Windows Server 2012 R2, only first generation virtual machines are supported.

Snapshot

The Resource Orchestrator snapshot uses the checkpoint function of SCVMM. To collect snapshots, sufficient free space is necessary to create a difference disk on the storage destination of VM guest.

When connecting the VM management software using the path through disk, snapshot creation will fail.

Operation with snapshots collected is not recommended due to the following reasons:

- When snapshots are collected, operation uses disk difference, and performance may deteriorate.
- If a snapshot is created from a VM guest that has been moved between servers (migration), and the snapshot is restored to a different VM host, the status on SCVMM becomes "Stored" and the VM may not be able to be started. In this situation, it is necessary to return the VM guest to the VM host from which the snapshot was collected and then start it.
- For combining of difference disks, it is necessary to delete not only all snapshots collected using Resource Orchestrator, but also all checkpoints created using VM management software. Combining of the disk is automatically performed by SCVMM, but depending on the status of the VM guest, the operation may take a long time, because it is only performed while the target VM guest is stopped.



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

L-Server Parameter Details [General] Tab

When a guest OS that Hyper-V supports is specified for the OS type, a converged network adapter will be added to VM.

When another OS has been selected, an emulated network adapter will be added.

When using a converged network adapter, it is necessary to install a virtual guest service on the guest OS.

For details on virtual guest service installation, refer to the Help of SCVMM.

L-Server Parameter Details [Server] Tab

If an unsupported OS type is specified, there is a chance that 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 OSs which can be specified on the SCVMM management console.

Resource Orchestrator displays all guest OSs in the list in order not to limit user selection, however this does not mean that all guest OSs 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 OSs supported by SCVMM, refer to the Help of SCVMM.

For details on the guest OSs supported by Hyper-V, refer to the following Microsoft web site.

Microsoft download web site

URL: [http://technet.microsoft.com/en-US/library/cc794868\(v=ws.10\).aspx](http://technet.microsoft.com/en-US/library/cc794868(v=ws.10).aspx)

URL: <http://technet.microsoft.com/en-us/library/hh831531.aspx>

L-Server Parameter Details [Disk] Tab

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.

L-Server Parameter Details [Network] Tab

IP addresses can be automatically configured, on the following guest OSs on which the integrated services are installed.

- Microsoft(R) Windows Server(R) 2012 R2
- Microsoft(R) Windows Server(R) 2012
- 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) 8.1
- Microsoft(R) Windows(R) 8
- Microsoft(R) Windows(R) 7
- Microsoft(R) Windows Vista(R)

DVD Disk Operations

DVD disk operations cannot be performed for L-Servers. When using a DVD, use VM management software functions.

Automatic Network Configuration with Intel PROSet for Blade Servers

- The VLAN functions of Intel PROSet are not supported by Resource Orchestrator. Do not use the VLAN functions of Intel PROSet.
- User Accounts used when logging in to the SCVMM server must belong to the Administrator's group of each managed server.
- With SCVMM, NIC information of a managed server recognized once is not updated even if the NIC information is changed.

When changing the Intel PROSet settings of a managed server, use the following procedure to make SCVMM re-realize the NIC information:

1. Disable the virtual NIC of Intel PROSet using the Device Manager of the managed server (Hyper-V).
2. In the SCVMM management console of the admin server (SCVMM), right-click the target host, then select [Refresh].
3. Change the settings of Intel PROSet, and enable the virtual NIC using the Device Manager of the managed server (Hyper-V).
4. In the SCVMM management console of the admin server (SCVMM), right-click the target host, then select [Refresh].

If the information recognized by SCVMM is not reflected even after performing the above operations, follow the steps below to release and reconfigure Intel PROSet.

1. Cancel teaming settings for Intel PROSet on the managed server (Hyper-V).
 2. In the SCVMM management console of the admin server (SCVMM), right-click the target host, then select [Refresh].
 3. Reconfigure teaming settings for Intel PROSet on the managed server (Hyper-V).
 4. In the SCVMM management console of the admin server (SCVMM), right-click the target host, then select [Refresh].
- When setting "ALB" for the teaming mode of Intel PROSet, disable the RLB (Receive Load Balancing) function. This configuration is not supported by Hyper-V.
 - Do not disable NIC devices teamed using Intel PROSet.



.....
If this procedure is not performed correctly, automatic network configuration will fail.
.....

Alive Monitoring Settings

In Resource Orchestrator, alive monitoring functions are enabled by using heartbeat function for Virtual machine resources on MSFC.

The default settings of heartbeat differ depending on the host OS versions. In Resource Orchestrator, if the alive monitoring settings are not specified during creation of L-Servers, the heartbeat settings are disabled, regardless of the default settings.

In order to enable the heartbeat function, enable the alive monitoring function of Resource Orchestrator first.



.....
When using the following OS, the MSFC functions corresponding to these settings are disabled.

- Microsoft(R) Windows Server(R) 2008 R2

When using the following OS, the MSFC functions corresponding to these settings are enabled.

- Microsoft(R) Windows Server(R) 2012 R2
 - Microsoft(R) Windows Server(R) 2012
-

Default Library Server of SCVMM

Do not delete the default library server and library share of SCVMM because it is used as a temporary storage area when creating virtual L-Servers.

Creating virtual L-Servers will fail if they are deleted.

Movement of Storage Areas

When using movement of storage areas, check the following advisory notes.

- When disk resources are moved to a newly created Cluster Shared Volume (CSV) which has not yet been detected by Resource Orchestrator, the information of moved disk resources is reflected as follows:
 - a. The newly created CSV is detected as a virtual storage resource during regular update.
 - b. After being detected as virtual storage resources, the information of moved disk resources is reflected on Resource Orchestrator.

8.3.11 Overcommit

This section explains the overcommit function for L-Servers.

Overcommit

Resource Orchestrator supports the Hyper-V overcommit function for the CPU and dynamic memory.

The Hyper-V overcommit function for the CPU allows virtual allocation of more resources than that of the actual CPU installed on a server to a guest OS.

Hyper-V dynamic memory allows virtual allocation of more memory than that of the actual memory installed on a server to a guest OS.



When using the dynamic memory or the memory weight, the VM host must be one of the following:

- Microsoft(R) Windows Server(R) 2008 R2 SP1 or later
- Microsoft(R) Windows Server(R) 2012 or later

SCVMM must be one of the following in order to be able to manage the target VM hosts:

- System Center Virtual Machine Manager 2008 R2 SP1 or later
- System Center 2012 Virtual Machine Manager or later

If there is no VM host or SCVMM as above, creation and modification of L-Servers with dynamic memory and memory weight enabled will fail.

The guest OSs able to utilize dynamic memory are limited to particular Windows software versions. Refer to the Microsoft web site below.

URL: [http://technet.microsoft.com/en-us/library/ff817651\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/ff817651(WS.10).aspx)

When the VM host is Windows Server 2012 or later, it is not possible to set it from this product though the minimum memory value exists as a setting of the dynamic memory.

The same value as startup memory size is set.

Resource Orchestrator provides the following functions to utilize the Hyper-V overcommit function for the CPU and dynamic memory when creating L-Servers.

- Creating an L-Server with CPU overcommit and dynamic memory configured
 - CPU Performance
 - The maximum number of CPU resources to be allocated to a virtual machine (Limitation)
 - CPU Weight
 - The priority of CPU allocated to a virtual machine
 - Memory size
 - Maximum Memory
 - The maximum amount of memory resources to be allocated to a virtual machine (Limitation)
 - Virtual Machine Memory
 - The maximum amount of memory resources to be allocated to a virtual machine by the VM host (Memory Size)
- For virtual L-Servers created using Resource Orchestrator, set the memory size as follows, depending on the dynamic memory setting:
- When Dynamic Memory is Disabled
- Set only the virtual machine memory.
- When Dynamic Memory is Enabled
- Set only the maximum memory.
- Dynamic Memory
 - Initial Memory Size
 - Initial memory size to be allocated at startup
 - Memory Buffer
 - Available memory to be reserved for a virtual machine as a buffer
 - Memory Weight
 - The priority of memory resources to be allocated to a virtual machine
 - Setting an overcommit attribute for a resource pool

Overcommit attributes can be set for resource pools. An L-Server with overcommit attributes can be created using overcommit attributes settings or a resource pool.
 - Deployment of L-Servers with more resources than those of the server

Creation of an L-Server with more resources than that of the actual CPU or memory installed on a server is possible.

Whether the resulting L-Server can be started depends on the resources available on the VM host.
 - Calculation of available space on VM pools, which uses values set for CPU reservation performance
 - Conversion of the free CPU capacity and free memory capacity of VM pools with overcommit attributes

For a VM pool with overcommit attributes, the conversion of free CPU capacity and free memory capacity can be displayed based on the CPU reservation values and memory allocation capacity of an L-Server created beforehand.
 - L-Server Conversion of a VM Pool with Overcommit Attributes

For the free CPU capacity and free memory capacity of a VM pool with overcommit attributes, L-Server conversion can be displayed based on the CPU reservation values and memory reservation capacity specified in the L-Server template.

For details on L-Servers, refer to "2.2.3 L-Server" in the "Design Guide CE", "[8.3.7 Creating L-Servers](#)", or "Chapter 16 Creating L-Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

For details on resource pools, refer to "2.2.2 Resource Pools" in the "Design Guide CE", or "Chapter 20 Resource Pool Operations" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

For details on the available capacity view or the L-Server conversion view, refer to "20.6 Viewing" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Prerequisites

Admin Server

When using the function for coordination with Resource Orchestrator, Hyper-V, or the overcommit function for the CPU and memory, the only supported admin server OS is Windows.

Installation Procedure

Use the following procedure to install overcommit.

1. Create a VM Pool for Overcommit

For details on how to create a VM pool, refer to "Chapter 20 Resource Pool Operations" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Point

Refer to the "Point" described in "1. Create a VM Pool for Overcommit" in "Installation Procedure" in "8.2.11 Overcommit".

Note

Refer to the "Note" described in "1. Create a VM Pool for Overcommit" in "Installation Procedure" in "8.2.11 Overcommit".

2. Create the definition files.

Create a definition file (VM specific information definition file) when configuring different settings for individual user groups without configuring overcommit settings on the L-Server template.

For VM specific information definition files, refer to "8.1 Definition Files Commonly Shared when Creating Virtual L-Servers".

3. Export an L-Server template

For details on how to export L-Server templates, refer to "15.2.1 Export" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

L-Server template operations (steps 3 to 5) can be performed using the GUI.

For details on how to operate L-Server templates using the GUI, refer to "15.1 Operations Using the Wizard GUI" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

4. Edit an L-Server Template

Configure the overcommit settings for an L-Server template.

Edit the XML definition of L-Server templates, referring to "15.2.2 Virtual L-Server Templates" in the "Reference Guide (Command/XML) CE".

- When overcommit settings are configured in both the L-Server template and the VM specific information definition file
Priority is given to the settings in the L-Server template.
- When configuring individual values for overcommit using the VM specific information definition file
Configure only the following element on the L-Server template.

- Enabling/Disabling Overcommit

Do not specify the following elements:

- CPU Reserved

- CPU Weight
- Initial Memory Size
- Memory Buffer
- Memory Weight

Information

If a template is imported without editing the L-Server template name, the content of the existing L-Server template is overwritten. If an L-Server template is imported after the name is edited from when it was exported, the L-Server template is added.

When editing an L-Server template, check the combination of enabling/disabling dynamic memory, initial memory size, and memory buffer.

- When Dynamic Memory is Enabled
Initial memory size and memory buffer will be adopted when creating an L-Server
- When Dynamic Memory is Disabled
Initial memory size and memory buffer will be ignored when creating an L-Server

5. Import an L-Server Template

For details on how to import an L-Server template, refer to "15.2.3 Import" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

6. Create an L-Server

Create an L-Server using the L-Server template created in step 5.

For details, refer to "16.1 Creation Using an L-Server Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

When not using an L-Server template, create an L-Server using a command. Edit the L-Server XML referring to "Chapter 16 Creating L-Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE", and then execute the `rcxadm lserver create` command.

For details, refer to "3.6 rcxadm lserver" and "15.2.2 Virtual L-Server Templates" in the "Reference Guide (Command/XML) CE".

Point

When you create an L-Server, which uses overcommit from the [Resource] Tab of the ROR console, specify an L-Server template.

7. Confirm the Overcommit Function Settings for an L-Server

To confirm overcommit settings configured for an L-Server, execute the `rcxadm lserver show` command.

Confirm that the command output result includes the line starting with "OverCommit: true".

Additionally, confirm the combination of the dynamic memory setting, initial memory size, and memory buffer.

For details on the `rcxadm lserver` command, refer to "3.6 rcxadm lserver" in the "Reference Guide (Command/XML) CE".

Note

When starting of an L-Server fails, the procedures vary depending on the L-Server settings. Perform the following procedures:

- When [Boot Location] of the L-Server is set to [Relocate at startup]
Start the L-Server again. When there is a VM host with an available resource, the L-Server will start on that VM host after several attempts at startup.

- When [Boot Location] of the L-Server is set to [Fixed]

As no VM host is automatically selected, start the L-Server after changing its boot location, or moving or stopping other L-Servers on the same VM host.

For details on changing the boot location, refer to "16.3 Creation of Virtual L-Servers Using Parameters" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

For details on moving the boot location, refer to "17.7 Migration between VM Hosts" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Changing L-Server Specifications

This section explains how to modify L-Server specifications.

To change L-Server specifications, execute the `rcxadm lserver modify` command.

For details, refer to "3.6 rcxadm lserver" in the "Reference Guide (Command/XML) CE".



Changing of L-Server specifications will fail if the resources (the number of CPUs, CPU frequency, and memory capacity) of a physical server where a VM host operates are less than the CPU reservation performance and memory size.

When CPU performance and memory capacity are smaller than the CPU reservation performance and memory reservation capacity, modification of L-Server specifications fails.

When modifying specifications of an L-Server to which resources have been allocated, the information in the VM specific information definition file is not reflected because priority is given to the values already configured to the L-Server. In that case, enter the new values in the XML file and then execute the appropriate commands to reflect the changes.

8.4 RHEL5-Xen

This section explains how to configure RHEL5-Xen as server virtualization software.

8.4.1 Creating Definition Files

This section explains how to create definition files.

For definition files common to virtual L-Servers, refer to "[8.1 Definition Files Commonly Shared when Creating Virtual L-Servers](#)".

This section explains the definition files specific to RHEL5-Xen.

Storage Connection Definition Files

Give descriptions, separating the admin IP addresses of VM hosts belonging to the scope of PRIMECLUSTER GDS shared classes using commas, and giving the scopes of shared clusters on individual lines.

When changing the shared class configuration, modify the definition files.

Location of the Definition File

```
[Linux Manager]
/etc/opt/FJSVrcvmr/customize_data
```

Definition File Name

```
storage_vmhost.rcxprop
```

Definition File Format

```
vmhost_ipaddr,vmhost_ipaddr,...
```

8.4.2 Registering Resources with Resource Orchestrator

This section explains how to register resources with Resource Orchestrator.

Use the following procedure to register resources:

1. Register storage management software

Register PRIMECLUSTER GDS on VM hosts as storage management software.

Register 1 of the VM hosts belonging to the scope of PRIMECLUSTER GDS shared classes. It is not necessary to register all VM hosts that belong to the scope.

When registering PRIMECLUSTER GDS as storage management software, single disks that were created in advance during pre-setup preparations, are automatically registered in Resource Orchestrator as virtual storage resources.

Execute the rxcadm storagemgr command to register storage management software.

For details on the rxcadm storagemgr command, refer to "5.17 rxcadm storagemgr" in the "Reference Guide (Command/XML) CE".

2. Register Managed Servers (Domain 0)

- a. Register Managed Servers

Refer to "5.5.1 Registering Rack Mount or Tower Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- b. Register LAN Switches

Refer to "5.13 Registering LAN Switches (L2 Switches)" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8.4.3 Registering Resources in Resource Pools

This section explains the registration of resources to resource pools.

Use the following procedure to register a resource to a resource pool:

1. Register VM Host Resources (Domain 0)

- a. 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.

- b. Select the VM host to register.

- c. Click the [OK] button.

2. Register virtual storage resources

- a. 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.

- b. Select the virtual storage resource to register.

- c. Click the [OK] button.

3. Register network resources

If the NIC and network resources are connected when an L-Server is created, the settings matching the network resource definition will be registered automatically for the VM host that the L-Server will operate on.

For details, refer to "[8.4.4 Manual Network Configuration](#)".

- a. In the ROR console orchestration tree, right-click the target network pool, and select [Create Network Resource].

When creating a new network resource, select [New].

When creating a resource using an already registered admin LAN subnet, select [Using existing admin subnet].

The [Create a network resource] dialog is displayed.

- b. Enter the items necessary for network resources.

For details, refer to "14.3 Network Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

4. Register network device resources

Create network devices to be used on the L-Platform and register those with the type Firewall or SLB in the network pool.

Refer to "14.4 Network Devices" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

5. Register Address Set Resources (MAC Addresses)

Create and register an address set resource (MAC address) in the address pool.

For details, refer to "14.6 Address Set Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8.4.4 Manual Network Configuration

For the virtual bridge created in advance, only provide the function for connection with the virtual bridge. Manually perform virtual bridge settings in advance.

Use a different VLAN ID for each virtual bridge to connect with the virtual bridge.

Additionally, the following settings must be performed in advance.

1. Create a virtual bridge

Create a virtual bridge with the same name (including upper and lower case characters) for all VM hosts comprising the cluster. This enables migration of VM guests between VM hosts.

When a virtual bridge has already been manually configured and server virtualization software other than RHEL5-Xen is being used with the same manager, set a different name from the one used by the virtual switch, virtual network, and virtual bridge on the other virtualization software.

2. Configure Virtual Bridge Communication Settings

Right-click the LAN switch blade in the server resource tree, and select [Modify]-[Network Settings] from the popup menu.

Configure LAN switch blades to enable communication using the tagged VLAN between virtual bridges using the same name.

The ROR console can be used for VLAN configuration of LAN switch blade external ports.

For details, refer to "5.4.4 Configuring VLANs on LAN Switch Blades" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Define the Supported Virtual Bridge and VLAN ID

Supported virtual bridges and VLAN IDs are defined in the virtual bridge definition file of Resource Orchestrator.

For details on definition file format, refer to "[File Format for Virtual Bridge Definitions](#)".

4. Create Network Resources

- From the GUI:

- a. In the [Create a network resource] dialog containing the VLAN ID that was specified in steps 2 and 3, check the [Use configured virtual switches/port profile.] checkbox and create a network resource.

- From the Command-line:

- a. Create the XML file that defines network resources.

Define the VLAN ID specified in steps 2 and 3 in the XML file.

In this case, specify auto="false" in the Network element.

- b. To create the network resource, execute the rxcadm network create command specifying the XML file created in step a.

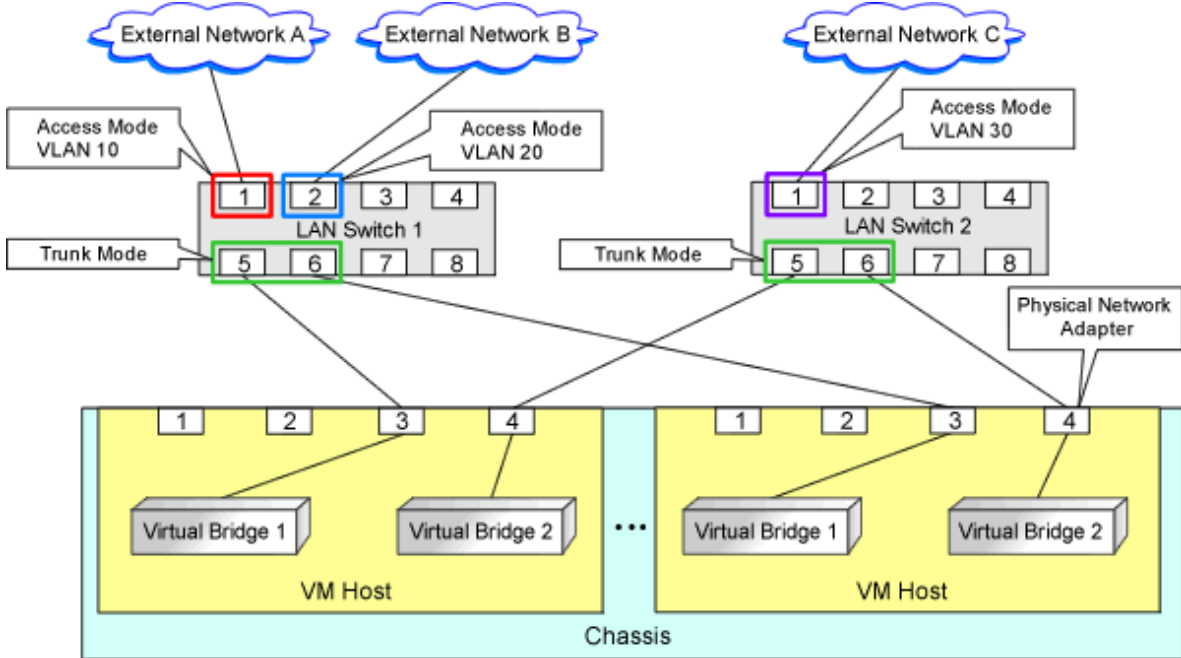
The network resources are created.

For details on the `rcxadm network` command, refer to "3.9 `rcxadm network`" in the "Reference Guide (Command/XML) CE".

For details on the Network element, refer to "15.6 Network Resources" in the "Reference Guide (Command/XML) CE".

An example of virtual NIC configuration and connection with virtual bridge using network resources is given below:

Figure 8.8 Virtual NIC Configuration and Connection with Virtual Networks Using Bridge Resources



File Format for Virtual Bridge Definitions

Location of the Definition File

[Linux Manager]
 /etc/opt/FJSVrcvmr/customize_data

Definition File Name

vnetwork_rhelxen.rcxprop

Definition File Format

Describe the virtual bridge definition file in one line as below:

```
"Virtual bridge name on the VM_host"=VLAN ID
```

For the *VLAN ID*, a value from 1 to 4094 can be specified.

Example

```
"xenbr0"=10
```

Blank spaces before and after equal signs ("=") are ignored.

Describe the virtual bridge correctly, as the entry is case-sensitive.

Save files using the UTF-8 character code.

When there are multiple lines with the same virtual bridge name, all specified lines are valid.

When the same VLAN ID is included in a line with a different virtual bridge name, the first occurrence in the file is valid and the lines after it are ignored.

An error occurs during L-Server creation if the definition of the VLAN ID of the network resource connected to the NIC cannot be found.

8.4.5 Creating L-Server Templates

This section explains how to create an L-Server template.

Create an L-Server using an L-Server template.

The L-Server is the L-Server to collect cloning images from.

L-Server templates can be created using the following methods.

- Using the Wizard GUI

L-Server templates can be created using the wizard GUI in the wizard format.

For details on the GUI in the wizard format, refer to "15.1 Operations Using the Wizard GUI" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- Manually

Use the following procedure to create an L-Server template:

1. Export an L-Server template

Refer to "15.2.1 Export" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Edit an L-Server Template

The L-Server template output in step 1 can be edited with an editor, etc.

For details on the XML definition of L-Server templates, refer to "15.2.2 Virtual L-Server Templates" in the "Reference Guide (Command/XML) CE".

In this case, perform the following configuration:

- Specify "RHEL-Xen" for the VM type.
- Specify "None" for the redundancy.
- Specify "Fixed" for the positioning.

3. Import an L-Server Template

Refer to "15.2.3 Import" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8.4.6 Creating L-Servers

This section explains the creation of L-Servers.

Use the following procedure to create L-Servers:

- Create an L-Server using an L-Server template.

1. Create an L-Server using an L-Server Template.

Execute the `rcxadm lserver create` command, and create an L-Server.

For details on the `rcxadm lserver create` command, refer to "3.6 rcxadm lserver" in the "Reference Guide (Command/XML) CE".

In this case, perform the following configuration:

- For the name of an L-Server template, specify the name of the L-Server template that has been created in advance.
- For VM host, specify the VM host (admin OS) to allocate to the L-Server.

2. Install an OS

For manual OS installation, use the virtual machine manager.

For manual OS installation, refer to the "Red Hat Enterprise Linux 5 Virtualization Guide".

Red Hat Enterprise Linux 5 Virtualization Guide

URL: http://docs.redhat.com/docs/en-US/Red_Hat_Enterprise_Linux/5/html/Virtualization/index.html

3. Collecting a Cloning Image

Collect cloning images after creating an L-Server. Execute `rcxadm image create` to collect cloning images.

When executing `rcxadm image create`, the cloning images are stored in the storage pool.

For details on the `rcxadm image create` command, refer to "4.1 `rcxadm image`" in the "Reference Guide (Command/XML) CE".

Point

When the destination folder for image storage is omitted during the cloning image collection, virtual storage in the same storage pool as the virtual storage used by the L-Server that is the target for collecting cloning images is automatically selected.

- Create an L-Server using Systemwalker Software Configuration Manager.
For details, refer to the "Systemwalker Software Configuration Manager Operation Guide".

In this case, specify the cloning images collected during L-Server creation for images.

Note

When sharing disks among L-Servers, create the `Mh` L-Server, after completing creation of the `Mh-1` L-Server.

When copying the data during the L-Server creation, perform the operation after powering off the L-Server that is the source of the data to be copied. When creating an L-Server while copying data, do not perform power operations on the source of the data to be copied.

L-Server Operations

When using RHEL5-Xen, L-Server operations cannot be performed using the ROR console.

Use the `rcxadm lserver` command, for L-Server operations.

For details, refer to "3.6 `rcxadm lserver`" in the "Reference Guide (Command/XML) CE".

Changing L-Server Specifications

To change L-Server specifications, execute `rcxadm lserver modify`.

For details on the specifications that can be changed, refer to "15.3.2 Definition Information for Virtual L-Servers (XML)" in the "Reference Guide (Command/XML) CE".

The value after changing the specifications can be checked in the [Resource List] tab in the orchestration tree.

From the command-line, execute `rcxadm lserver list` and `rcxadm lserver show`.

For details, refer to "3.6 `rcxadm lserver`" in the "Reference Guide (Command/XML) CE".

Check the CAP value of a guest domain that is operating, using the `virsh schedinfo` command.

Check the CAP value of a guest domain that has been stopped, using the domain configuration files.

For details, refer to the "Red Hat Enterprise Linux 5 Virtualization Guide".

Red Hat Enterprise Linux 5 Virtualization Guide

URL: http://docs.redhat.com/docs/en-US/Red_Hat_Enterprise_Linux/5/html/Virtualization/index.html

The CAP value is calculated as follows:

$$\text{CAP value} = ((\text{Specified_CPU_clock_speed GHz} * 1000) * \text{CPU_number} * 100) / \text{physical_CPU_clock_speed MHz}$$

8.4.7 Advisory Notes for RHEL5-Xen Usage

This section explains advisory notes for RHEL5-Xen.

Required Software

When using RHEL5-Xen, Systemwalker Software Configuration Manager is required.

Admin Server

When using RHEL5-Xen as managed servers, the only supported OS of the admin server is Linux.

Managed servers

When using RHEL5-Xen as managed servers, the only server type available for use as managed servers is RHEL5-Xen.

L-Server OS

When using RHEL5-Xen as managed servers, the only OS supported for the L-Server is Linux.

Snapshot

When using RHEL5-Xen, snapshots cannot be used.

Collect L-Server snapshots using PRIMECLUSTER GDS.

The part of the virtual storage name before "-" is the PRIMECLUSTER GDS class name, and the part after "-" is the single disk name.

The disk resource name corresponds to the volume name.

For details on snapshots, refer to the PRIMECLUSTER GDS manual.

VM Type View

In the ROR console, the VM type of VM host and VM guest for RHEL5-Xen is displayed as "Xen".

Shared Disk View

On the ROR console, when multiple L-Servers have shared disk resources, only the information of one L-Server to which the resources are allocated is displayed.

Check the disk shared information, using the rcxadm disk show command.

Max. Number of Possible L-Servers View

The available space on resources and the space displayed for [the number of L-Servers that can be created] are calculated as follows:

Available Amount of CPUs and [Number of L-Servers that can be Created]

$\text{Total resource space} * 80\% - (\text{Total of resources used for L-Server})$
--

Attaching Resources

When attaching VM hosts, virtual storage or networks, perform the same procedure as in "[8.4.2 Registering Resources with Resource Orchestrator](#)" or "[8.4.3 Registering Resources in Resource Pools](#)".

Hardware Maintenance

When server failure is detected on Systemwalker Software Configuration Manager, open the ROR console, and identify the failed server. For details on server hardware replacement, refer to "Chapter 9 Hardware Maintenance" in the "Operation Guide CE".

Directory for collecting performance information

When registering resources, create the directories and files on the server where the resources are registered that are necessary for performance monitoring. Refer to "[8.6.9 Advisory Notes for RHEL-KVM Usage](#)" for details.

8.5 OVM for x86 2.2

This section explains how to configure OVM for x86 2.2 as server virtualization software.

8.5.1 Creating Definition Files

This section explains how to create definition files.

For definition files common to virtual L-Servers, refer to "[8.1 Definition Files Commonly Shared when Creating Virtual L-Servers](#)".

8.5.2 Registering Resources with Resource Orchestrator

This section explains how to register resources with Resource Orchestrator. Use the following procedure to register resources:

1. Register VM Management Software (Oracle VM Manager)

When registering VM management software, the storage repositories that were created in advance during pre-setup preparations, are automatically registered in Resource Orchestrator as virtual storage resources.

Use the following procedure to register VM management software:

- a. In the ROR console, select [Settings]-[Register]-[Management Software (OVM Manager)].

The [Management Software (OVM Manager)] dialog is displayed.

- b. Set the following items:

Management software name

Enter the name of the target VM management software.

Enter a character string beginning with an alphabetical character and containing up to 15 alphanumeric characters and hyphens ("-").

Location

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

- For Resource Orchestrator admin servers

Specify [Admin Server].

- For servers other than Resource Orchestrator admin servers

Specify [Other Server].

In the IP address entry field, enter the IP address of the server on which VM management software is operating.

"Admin Server" is selected by default.

IP address

Enter the IP address of VM management software. When specifying "Admin Server" for the location, entry is not possible, as the IP address of admin server remains displayed.

Enter the IP address using periods ".".

User ID

Enter the user ID to use to control VM management software.

The string must be composed of alphanumeric characters and symbols (ASCII characters 0x20 to 0x7e), and can be up to 128 characters long.

Specify a user ID with administrative privileges.

Password

Enter the password for VM management software.

The string must be composed of alphanumeric characters and symbols (ASCII characters 0x20 to 0x7e), and can be up to 128 characters long.

- c. Click the [OK] button.

VM management software is registered.

2. Register Managed Servers (Domain 0)

- a. Register Chassis (for Blade Servers)

Refer to "5.4.1 Registering Chassis" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- b. Register Managed Servers

Refer to "5.4.2 Registering Blade Servers" or "5.5.1 Registering Rack Mount or Tower Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- c. Register LAN Switch Blades (for Blade Servers) or LAN Switches (for Rack Mount Servers)

Refer to "5.4.3 Registering LAN Switch Blades" and "5.13 Registering LAN Switches (L2 Switches)" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Network Resources

To register a network resource, specify a network pool when creating the network resource.

By creating network resources in advance, if the NIC and network resources are connected when an L-Server is created, the following settings matching the network resource definition will be registered automatically.

For details on automatic configuration of network resources, refer to "[8.5.4 Manual Network Configuration](#)".

8.5.3 Registering Resources in Resource Pools

This section explains the registration of resources to resource pools.

Use the following procedure to register a resource to a resource pool:

1. Register VM Host Resources (Domain 0)

- a. 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.
- b. Select the VM host to register.
- c. Click the [OK] button.

2. Register virtual storage resources

- a. 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.
- b. Select the virtual storage resource to register.
- c. Click the [OK] button.

3. Register network resources

If the NIC and network resources are connected when an L-Server is created, the settings matching the network resource definition will be registered automatically for the VM host that the L-Server will operate on.

For details, refer to "[8.5.4 Manual Network Configuration](#)".

- a. In the ROR console orchestration tree, right-click the target network pool, and select [Create Network Resource].

When creating a new network resource, select [New].

When creating a resource using an already registered admin LAN subnet, select [Using existing admin subnet].

The [Create a network resource] dialog is displayed.

- b. Enter the items necessary for network resources.

For details, refer to "14.3 Network Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

4. Register network device resources

Create network devices to be used on the L-Platform and register those with the type Firewall or SLB in the network pool.

Refer to "14.4 Network Devices" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8.5.4 Manual Network Configuration

For the virtual bridge created in advance, only provide the function for connection with the virtual bridge. Manually perform virtual bridge settings in advance.

Use a different VLAN ID for each virtual bridge to connect with the virtual bridge.

Additionally, the following settings must be performed in advance.

1. Create a virtual bridge

When configuring a cluster, create a virtual bridge with the same name (including upper and lower case characters) for all VM hosts comprising the cluster. This enables migration of VM guests between VM hosts.

When a virtual bridge has already been manually configured and server virtualization software other than OVM for x86 2.2 is being used with the same manager, set a different name from the one used by the virtual switch, virtual network, and virtual bridge on the other virtualization software.

2. Configure Virtual Bridge Communication Settings

Right-click the LAN switch blade in the server resource tree, and select [Modify]-[Network Settings] from the popup menu.

Configure LAN switch blades to enable communication using the tagged VLAN between virtual bridges using the same name.

The ROR console can be used for VLAN configuration of LAN switch blade external ports.

For details, refer to "5.4.4 Configuring VLANs on LAN Switch Blades" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Define the Supported Virtual Bridge and VLAN ID

Supported virtual bridges and VLAN IDs are defined in the virtual bridge definition file of Resource Orchestrator.

For details on definition file format, refer to "[File Format for Virtual Bridge Definitions](#)".

4. Create Network Resources

- From the GUI:

- a. In the [Create a network resource] dialog containing the VLAN ID that was specified in steps 2 and 3, check the [Use configured virtual switches/port profile.] checkbox and create a network resource.

- From the Command-line:

- a. Create the XML file that defines network resources.

Define the VLAN ID specified in steps 2 and 3 in the XML file.

In this case, specify auto="false" in the Network element.

- b. To create the network resource, execute the rcxadm network create command specifying the XML file created in step a.

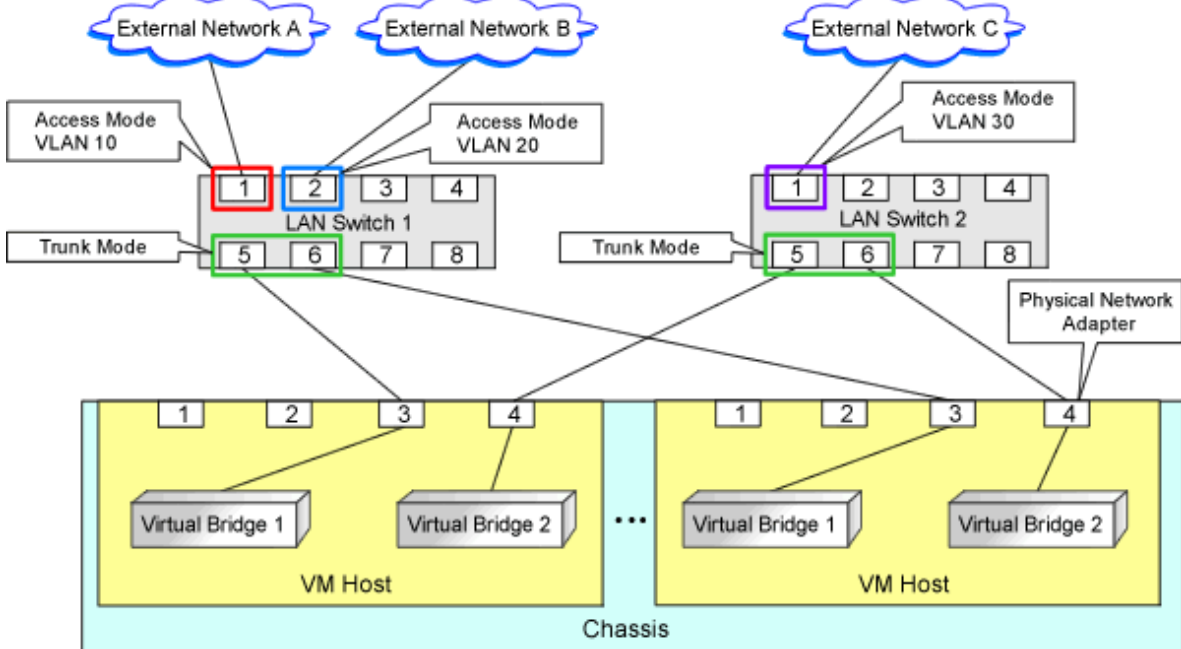
The network resources are created.

For details on the `rcxadm network` command, refer to "3.9 `rcxadm network`" in the "Reference Guide (Command/XML) CE".

For details on the Network element, refer to "15.6 Network Resources" in the "Reference Guide (Command/XML) CE".

An example of virtual NIC configuration and connection with virtual bridge using network resources is given below:

Figure 8.9 Virtual NIC Configuration and Connection with Virtual Networks Using Bridge Resources



File Format for Virtual Bridge Definitions

Location of the Definition File

[Windows Manager]

`Installation_folder\SVROR\Manager\etc\customize_data`

[Linux Manager]

`/etc/opt/FJSVrcvmr/customize_data`

Definition File Name

`vnetwork_oraclevm.rcxprop`

Definition File Format

Describe the virtual bridge definition file in one line as below:

```
"Virtual bridge name on the VM_host"=VLAN ID
```

For the *VLAN ID*, a value from 1 to 4094 can be specified.



Example

```
"xenbr0"=10
```

Blank spaces before and after equal signs ("=") are ignored.

Describe the virtual bridge correctly, as the entry is case-sensitive.

Save files using the UTF-8 character code.

When the same VLAN ID is included in a line with a different virtual bridge name, the first occurrence in the file is valid and the lines after it are ignored.

Example

"xenbr4 "=11
"xenbr5 "=11 (*)

* Note: This line is ignored.

An error occurs during L-Server creation if the definition of the VLAN ID of the network resource connected to the NIC cannot be found.

8.5.5 Creating L-Server Templates

This section explains how to create an L-Server template.

Use the following procedure to create an L-Server template:

1. Export an L-Server template
Refer to "15.2.1 Export" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".
2. Edit an L-Server Template
Refer to "15.2.2 Editing" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".
3. Import an L-Server Template
Refer to "15.2.3 Import" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8.5.6 Creating L-Servers

This section explains the creation of L-Servers.

Use the following procedure to create L-Servers:

1. Create an L-Server Using an L-Server Template
Create an L-Server, referring to "16.1 Creation Using an L-Server Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".
In this case, specify the cloning image that you want to use as an image.
2. Create an L-Server Specifying Individual Specifications
Refer to "16.3 Creation of Virtual L-Servers Using Parameters" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".
For details on the [OS] tab settings, refer to "8.5.8 [OS] Tab Configuration".

Manual OS Installation

To manually install an operating system, use VM management software.

When installing an OS manually, refer to the virtual machine creation section of the "Oracle VM Server User's Guide".

Refer to the relevant version of the document, referring to the following web site:

URL: <http://www.oracle.com/technetwork/indexes/documentation/index.html>

8.5.7 Collecting Cloning Images

This section explains how to collect cloning images.

Use the following procedure to collect cloning images:

After installing an OS, stop the target L-Server.

1. On the ROR console, right-click the target L-Server in the orchestration tree, and select [Cloning]-[Collect] from the popup menu.
2. Click the [OK] button.

A given cloning image (identified by its name attribute) can be managed by image version.

If a cloning image is created using VM management software, it can be used as is.

DVD Drive Configuration

The same DVD drive as the one in the image to be deployed is configured for the L-Server to be created. If there is no DVD drive in the image, no DVD drive will be created on the L-Server.

8.5.8 [OS] Tab Configuration

For OVM for x86 2.2, the values specified in the [OS] tab are not set.

Do not specify the value, as the value will not be set for the items for which entry is not required.

Instead, it is necessary to specify a console password in the OS property definition file.

OS Property Definition File

When creating a VM guest using Oracle VM Manager, specify a console password for connection from Oracle VM Manager to VM guest console. The console password should be specified in the OS definition file in advance. Use the UTF-8 character code for OS property definition files.

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvmr/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 on 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>

When adding comments, start the line with a number sign ("#").

Definition File Items

Specify the following items in a definition file. Other key specifications will be ignored.

Table 8.23 List of Items

Item	Key	Value	Remarks
Console password	console_password	The string must be composed of alphanumeric characters and underscores ("_"), and can be up to 24 characters long.	Specify the password required to open the console.

Example Definition File

An example definition file is indicated below.

```
# group A
console_password = xxxxxxxx
```

8.5.9 Advisory Notes for OVM for x86 2.2 Usage

This section explains advisory notes for when using OVM for x86 2.2.

Operating Systems for which Parameters can be Set and the Prerequisites for Performing the Settings

Depending on the server 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.

VM Host Functions

VM Hosts that have no ability to provide virtual machine and virtual server functions cannot be registered in VM pools.

If those VM Hosts were registered, when a VM host specification used to create L-Servers is omitted, one of the VM host may be selected as the operational VM host.

In this case, even if the VM host is registered in the VM pool, when it is selected to create an L-Server, creation will fail.

Snapshot

When using OVM for x86 2.2, snapshots cannot be used.

Creating L-Servers

When creating L-Servers, set the destination VM host to the Preferred Server of a created VM guest.

L-Server Disk

Disks cannot be detached while they are powered ON.

L-Server Network (NIC)

One or more networks must be specified.

L-Server CPU Performance

For L-Server CPU performance, do not specify a value of less than 1GHz.

Moving an L-Server between Servers (Migration)

When performing migration with an L-Server powered on, after powering it off, the L-Server may be moved back to the previous server. In this case, power off the L-Server before migration, and power it on again after moving it.

When the L-Server is an HVM (Hardware Virtualized Machine)

Installation of paravirtual drivers is required to connect data disks as SCSI disks. If paravirtual drivers are not installed, the OS may fail to recognize the data disks.

SSL Access Method for VM Management Software

When starting VM management software from the management console, SSL-enabled URL or SSL-disabled URL can be specified as the destination. In Oracle VM Manager configurations, if SSL is enabled for access to Oracle VM Manager, the following definition file is required: Use the UTF-8 character code for definition files.

Location of the Definition File

[Windows Manager]
Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]
/etc/opt/FJSVrcvmt/customize_data

Definition File Name

ovmm.rcxprop

Definition File Format

The definition file is entered in the following format.

<i>Key = Value</i>

Definition File Items

Specify the following items in a definition file. Other key specifications will be ignored.

Table 8.24 List of Items

Item	Key	Value	Remarks
Enable/Disable SSL	SSL	"vmm_ip[:port][,vmm_ip[:port]...]" vmm_ip: IP address of SSL-enabled VM management software port: Port number of SSL-enabled VM management software	If the port number is omitted, the default port number (4443) is set.

Example Definition File

An example definition file is indicated below.

Oracle VM Manager ssl = 192.168.2.2:4443,192.168.2.3:4443
--

Name and Number of Detected Virtual Storage Resources

Even if multiple storage repositories are connected to a VM host, only a single virtual storage resource is detected for each VM host. The displayed name of virtual storage resources is the string of the VM host root repository, excluding the path name (/var/ovs/mount).



Example

D1567B83A58D41FEB28FB8897801C7ED

Virtual Storage Resource Free Space

When multiple storage repositories have been connected to the VM host, a storage repository that has the largest available space is displayed as the available space of the virtual storage resource.

Therefore, the space may not decrease in proportion to the virtual disk space created during L-Server creation.

Total Virtual Storage Resource Size

Not displayed.

Virtual Storage Resource Used Space

Not displayed.

Cloning Images Collected from L-Servers

Cloning images are stored in Oracle VM Manager, using the following template name:

```
"cloning_image_name[_index]@version_number"
```

However, in the template editor window of Oracle VM Manager, "@" cannot be included in the template name. When using Oracle VM Manager to edit the template information collected using Resource Orchestrator, modify the template name so that it does not contain "@".

VM Host Status

Even when a VM host is running and the xend daemon is not running, "normal" is displayed as the status of the VM host. If L-Server operation fails when the VM host status is "normal", execute the following command from the VM host to check the status of the xend daemon. If the xend daemon is not running, start it.

- Status Check for the xend Daemon

```
>service xend status <RETURN>
```

- Starting the xend Daemon

```
>service xend start <RETURN>
```

When Managing Multiple Server Pools Using Oracle VM Manager

When creating an L-Server, specify an image, VM host, or virtual storage that satisfies all of the following conditions:

- Belongs to the same server pool as the image and VM host

Check the server pool to which the image and the VM host belong using Oracle VM Manager

- Image

"Server Pool Name" in the "Virtual Machine Templates" list

- VM Host

"Server Pool Name" in the "Servers" list

When adding L-Server disks, it is necessary to specify a virtual storage which is recognized by the VM host for the disk to create.

The name of a virtual storage recognized by the VM host is the string of the root storage repository, excluding the path name (/var/ovs/mount). To check the root storage repository, log in to the VM host, then execute the following command:

```
# ls -l /OVS <RETURN>
```



Example

```
lrwxrwxrwx 1 root root 47 Apr 11 23:15 /OVS -> /var/ovs/mount/D1567B83A58D41FEB28FB8897801C7ED
```

8.6 RHEL-KVM

This section explains how to configure RHEL-KVM as server virtualization software.

8.6.1 Creating Definition Files

This section explains how to create definition files.

For definition files common to virtual L-Servers, refer to "[8.1 Definition Files Commonly Shared when Creating Virtual L-Servers](#)".

Selecting Disk Data Type for Virtual L-Servers [KVM]

When performing the following operations for a virtual L-Server on RHEL-KVM, the data type to be deleted can be selected.

When the definition file has been edited, restart the manager.

- Deleting an L-Server
- Detaching L-Server Disks
- Deleting Cloning Images

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvnr/customize_data

Definition File Name

storage.rcxprop

Definition File Format

In the definition file, the items to set are entered on individual lines. Each line is entered in the following format.

```
Item_specified =  
Value_specified
```

Definition File Items

CLEAN_VM_GUEST_DISK_RESOURCE

When performing the following operations for a virtual L-Server on RHEL-KVM, the data type to be deleted can be selected.

- Deleting an L-Server
- Detaching L-Server Disks

- Deleting Cloning Images
- When the following values are used for specified values.
 - If "true" is specified
The data of disks is deleted.
 - If "false" is specified
The data of disks is not deleted.
- If nothing is specified
"false" is set.

Example

An example definition file is indicated below.

```
CLEAN_VM_GUEST_DISK_RESOURCE = true
```

Note

When specifying "true" for the specified value, check the following advisory notes.

- Operations such as deleting virtual L-Servers on RHEL-KVM will take more time. Operation time changes depending on the number of disks and the disk size.
- When starting to delete disks, message 22502 is output in the event log.
While deleting the disk data, the status of disk resource will be "unknown".
When deletion of the data is complete, the message 22503 is output in the event log, and the status of disk resource changes to "normal".
If the deletion of data fails, message 42504 is output in the event log. The status of disk resources will not be changed from "unknown".

Definition File that Configures Resource Sizes to Secure for VM Hosts [KVM]

To configure the size of the resources to be secured for VM hosts, enter the values in the following definition file:

After defining the settings in the definition file, execute the `rcxadm vmhostctl` command to reflect the description of the definition file on the management information of Resource Orchestrator.

For details on the `rcxadm vmhostctl` command, refer to "5.26 rcxadm vmhostctl" in the "Reference Guide (Command/XML) CE".

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvmr/customize_data

Definition File Name

host_config_RHEL-KVM.rcxprop

Definition File Format

Specify the values separated by commas (",") as follows:

ALL, configuration scope, memory size, CPU capacity

Or

Configuration scope type, configuration scope, memory size, CPU capacity

Definition File Items

The items to specify are shown below.

- When specifying for the entire system

Item	Description	Remarks
ALL	The identifier for specifying the entire system	
Memory size	Setting value <ul style="list-style-type: none"> - Unit: GB - Up to one decimal place - 0 or larger 	- Specification of the unit is not required.
CPU Capacity	{Value}{Unit} <ul style="list-style-type: none"> - Unit <ul style="list-style-type: none"> - Percent: % - Number of physical cores: core - Setting value <ul style="list-style-type: none"> - When using "%" as the unit <ul style="list-style-type: none"> - Integer only - 0 - 100 - When using "cores" as the unit <ul style="list-style-type: none"> - Integer only - 0 or larger 	<ul style="list-style-type: none"> - Specification of the unit is required. - When "%" is specified for the unit, 100 % means the entire VM host. <p>The entire VM host here means physical CPU performance value x the number of physical CPU cores.</p>

- When specifying the values by tenant, pool, or physical server

- Item	Description	Remarks
Configuration scope type	The identifier for specifying the scope of configuration. The following can be specified: <ul style="list-style-type: none"> - When specifying a tenant TENANT - When specifying a pool POOL - When specifying a physical server PHYSICAL_SERVER 	
Setting range	The following can be specified: <ul style="list-style-type: none"> - When specifying a tenant The tenant name including the resource folder name - When specifying a pool The pool name including the resource folder name and the tenant name - When specifying a physical server Physical server name 	

- Item	Description	Remarks
Memory size	Set the value in the same way for setting the memory size of the entire system.	
CPU Capacity	Set the value in the same way for setting the CPU capacity of the entire system.	

Example

An example definition file is indicated below.

```

ALL, 3, 10%

TENANT, /hoge_FLODER/HOGE_TENANT, 4, 20%

POOL, /hoge/VMPool, 3, 1core
POOL, /TENANT_1/hoge_pool, , 20%

PHYSICAL_SERVER, bx600_1, 1
PHYSICAL_SERVER, bx900_1, 4, 3core

```

Note

- About Comment Lines

Lines starting with "#" are regarded as comment lines.

Lines consisting of only blank spaces (" "), tab symbols, and line breaks are also regarded as comment lines.

Comment lines are skipped.

- If there are duplicated definitions, the last occurrence will be used.

- A KVM host that has not been registered to a VM pool can be specified if the physical server has been specified.

- When not defining the memory size, do not define anything between commas (",").

Example

```
POOL,/VMPool,,3core
```

- When not defining the CPU capacity, do not enter anything at the corresponding part.

Example

```
POOL,/VMPool,1
```

8.6.2 Registering Resources with Resource Orchestrator

This section explains how to register resources with Resource Orchestrator.

Use the following procedure to register resources:

When Using Blade Servers

1. Register chassis

Refer to "5.4.1 Registering Chassis" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Register Managed Servers (Hosts)

The procedure differs depending on the managed server to be used.

Refer to "5.4 When Using Blade Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Register LAN switch blades

Refer to "5.4.3 Registering LAN Switch Blades" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

To register a network device resource, specify a network pool when creating the network device resource.

To register a network resource, specify a network pool when creating the network resource.

Refer to "Chapter 5 Registering Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

When Using Rack Mount or Tower Servers

1. Register Managed Servers (Hosts)

The procedure differs depending on the managed server to be used.

Refer to "5.5 When Using Rack Mount and Tower Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Register LAN Switches

Refer to "5.13 Registering LAN Switches (L2 Switches)" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

To register a network device resource, specify a network pool when creating the network device resource.

To register a network resource, specify a network pool when creating the network resource.

Refer to "Chapter 5 Registering Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

When Using PRIMEQUEST Servers

1. Register Chassis

Refer to "5.8.1 Registering Chassis (For PRIMEQUEST Servers)" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Register Managed Servers (within Chassis)

Refer to "5.8.2 Registering PRIMEQUEST Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

To register a network device resource, specify a network pool when creating the network device resource.

To register a network resource, specify a network pool when creating the network resource.

Refer to "Chapter 5 Registering Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

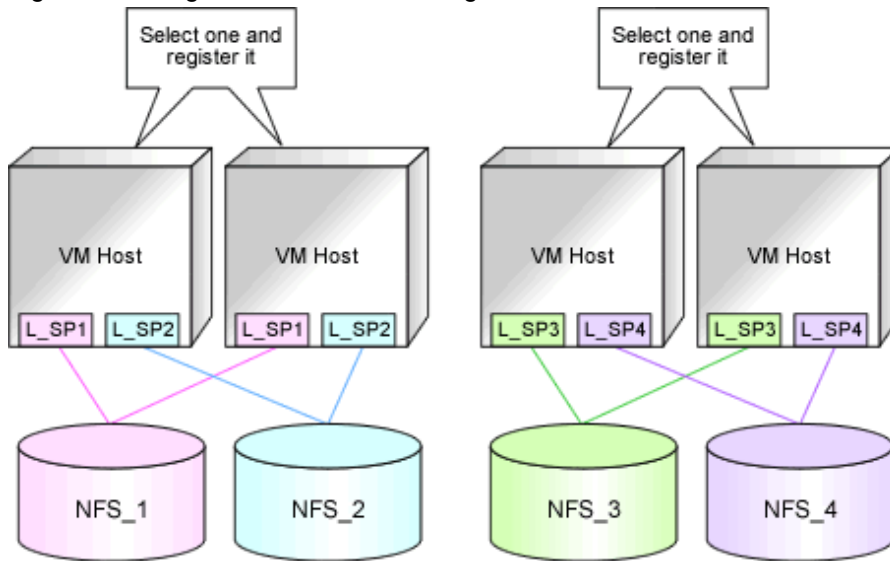
When Using libvirt Storage Pools as Virtual Storage Resources

Register storage management software.

- Register a KVM host as storage management software.

- Register one of the VM hosts which has the same sharing configuration for libvirt storage pools, as storage management software. In addition, register one VM host for each sharing configuration as storage management software.

Figure 8.10 Registration of libvirt Storage Pools



NFS_1 - 4: Directories on the NFS server specified as target paths for libvirt storage pools

L_SP1 - 4: libvirt Storage Pools

When a VM host is registered as storage management software, directories specified as target paths in libvirt storage pools are registered automatically with Resource Orchestrator as virtual storage resources.

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

For details on the `rcxadm storagemgr` command, refer to "5.17 `rcxadm storagemgr`" in the "Reference Guide (Command/XML) CE".

It is also possible to register a virtual storage resource with Resource Orchestrator without waiting for the periodical query of storage management software, by right-clicking the storage management software in the ROR console orchestration tree and then selecting [Update] in the displayed menu.

8.6.3 Registering Resources in Resource Pools

This section explains the registration of resources to resource pools.

Use the following procedure to register a resource to a resource pool:

1. Register VM Host Resources (Hosts)

Refer to "14.1 VM Host Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

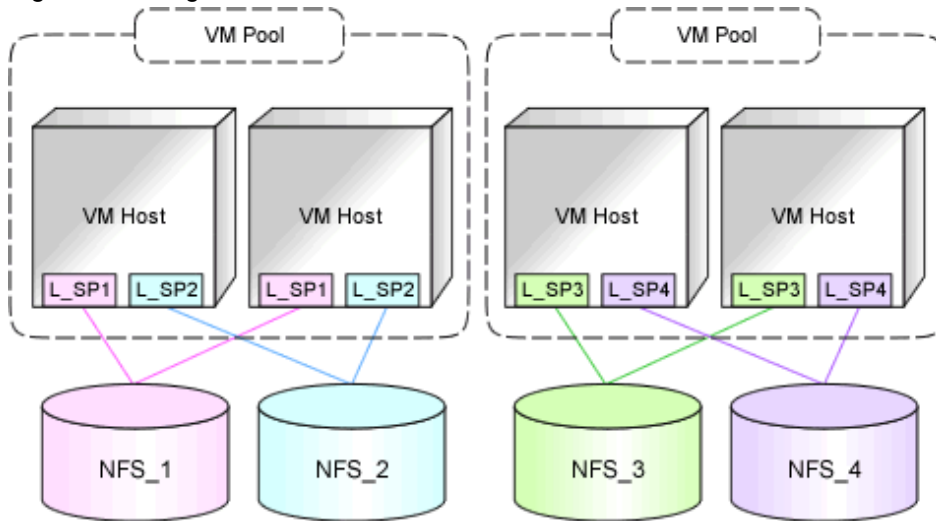
Point

Notes on selecting VM hosts to register in the VM pool when using virtual storage resources

It is recommended to register VM hosts that share the same virtual storage resources in the same VM pool.

It is also recommended to register VM hosts that share different scopes of virtual storage resources in different VM pools.

Figure 8.11 Register VM Pools



2. Register storage resources

Register the virtual storage resources to use when creating an L-Server, or disk resources for VM guests registered in advance, in the resource pool.

- Register virtual storage resources

1. Create a Storage Pool with Thin Provisioning Attributes Configured

Create a storage pool with thin provisioning attributes configured.

For details, refer to "20.2 Creating" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Register virtual storage resources

When a VM host is registered as storage management software, the directory area specified as a target path in a libvirt storage pool is automatically detected as a virtual storage resource. Register the virtual storage resource detected automatically in the storage pool.

For details, refer to "14.5 Storage Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".



Point

This virtual storage resource has thin provisioning attributes.

It can only be registered in a storage pool with thin provisioning attributes.

- Registration of disk resources (raw devices or partitions) for VM guests registered in advance

Refer to "[Registration of disk resources \(raw devices or partitions\) for VM guests registered in advance](#)".

This operation is unnecessary when not using disk resources for VM guests created in advance.

- Registration in a storage pool in an environment where both virtual storage resources and disk resources for VM guests created in advance exist

Use the same operation and registration procedures explained above.

3. Register network resources

If the NIC and network resources are connected when an L-Server is created, the settings matching the network resource definition will be registered automatically for the VM host that the L-Server will operate on.

For details, refer to "[8.6.4 Manual Network Configuration](#)".

- In the ROR console orchestration tree, right-click the target network pool, and select [Create Network Resource].
When creating a new network resource, select [New].
When creating a resource using an already registered admin LAN subnet, select [Using existing admin subnet].
 - The [Create a network resource] dialog is displayed.
 - Enter the items necessary for network resources. For details, refer to "14.3 Network Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".
4. Register network device resources
Create network devices to be used on the L-Platform and register those with the type Firewall or SLB in the network pool.
Refer to "14.4 Network Devices" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".
 5. Register Address Set Resources (MAC Addresses)
Create and register an address set resource (MAC address) in the address pool.
For details, refer to "14.6 Address Set Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Environments with Both Virtual Storage Resources and Disk Resources Created in Advance

Use of RHEL-KVM provides the following benefits:

- There are two types of cloning images
- When allocating storage resources, the following allocations are possible:
 - Disk resources automatically created from virtual storage
 - Disk resources created in advance

When having both of the above types of resources, it is recommended to register each type of resource in different resource pools, as usage conditions differ depending on the resource type.

It is also recommended to register VM hosts that share the same scope of virtual storage resources and disk resources created in advance, in the same VM pool.

For details on the two types of cloning images, refer to "[8.6.7 Collecting Cloning Images](#)" in "[Image Location Type and Storage Location of Cloning Images](#)".

Registration of disk resources (raw devices or partitions) for VM guests registered in advance

Register the raw devices or partitions recognized by VM hosts as disk resources.

When migrating VM guests for virtual L-Servers, register the raw devices or the partitions shared between multiple VM hosts as disk resources defined to be shared.

Register the raw devices or the partitions to store cloning images shared between multiple VM hosts as disk resources defined as shared.

Perform the following procedure:

1. Create a storage pool (admin server)

To use a storage pool other than default one, create the storage pool.

For details on how to create a storage pool, refer to "20.2 Creating" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Execute the rcxvmdiskagt command (managed servers)

Execute the rcxvmdiskagt command on each managed server. The rcxvmdiskagt command displays the raw device or partition information recognized by the VM host. In addition, this command performs redirection and outputs the execution results to a file with the extension ".xml".

Execute this command on all managed servers where disk resources are to be registered.

For details on the rcxvmdiskagt command, refer to "5.25 rcxvmdiskagt" in the "Reference Guide (Command/XML) CE".

```
# /opt/FJSVrcxat/bin/rcxvmdiskagt -ip IP address of the managed server >
rcxvmdiskagt_command_execution_result_XML_file <RETURN>
```

Example

Output Example of the rcxvmdiskagt Command

```
Operated on a VM host (192.168.23.153)

>rcxvmdiskagt -ip 192.168.23.153 <RETURN>

<?xml version="1.0" encoding="utf-8"?>
<VmHost ip="192.168.23.153">
  <Disks>
    <Disk name="*" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300010000" size="10.0"/>
    <Disk name="*" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300020000" size="20.0"/>
    <Disk name="*" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300030000" size="30.0"/>
    <Disk name="*" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300040000" size="10.0"/>
    <Disk name="*" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300050000" size="10.0"/>
  </Disks>
</VmHost>
```

```
Operated on a VM host (192.168.23.154)

>rcxvmdiskagt -ip 192.168.23.154 <RETURN>

<?xml version="1.0" encoding="utf-8"?>
<VmHost ip="192.168.23.154">
  <Disks>
    <Disk name="*" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300010001" size="10.0"/>
    <Disk name="*" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300020001" size="20.0"/>
    <Disk name="*" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300030001" size="30.0"/>
    <Disk name="*" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300040001" size="10.0"/>
    <Disk name="*" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300050001" size="10.0"/>
  </Disks>
</VmHost>
```

3. Delete unnecessary Disk elements (managed servers)

Delete the <Disk> elements for the following items, from the file that was output in step 2.

- raw devices or partitions not used by the VM guests
- raw devices or partitions which are to be used by the VM host but are not mounted
- LVM disks

Example

Example of an XML file with <Disk> Elements Deleted

```
XML file output on the VM host (192.168.23.153)

<?xml version="1.0" encoding="utf-8"?>
<VmHost ip="192.168.23.153">
  <Disks>
```

```

<Disk name="*" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300010000" size="10.0"/>
<Disk name="*" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300020000" size="20.0"/>
<Disk name="*" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300030000" size="30.0"/>
</Disks>
</VmHost>

```

XML file output on the VM host (192.168.23.154)

```

<?xml version="1.0" encoding="utf-8"?>
<VmHost ip="192.168.23.154">
  <Disks>
    <Disk name="*" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300010001" size="10.0"/>
    <Disk name="*" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300020001" size="20.0"/>
    <Disk name="*" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300030001" size="30.0"/>
  </Disks>
</VmHost>

```

4. Create an XML file storage directory (admin server)

Create a directory for storing the XML file created in steps 2 and 3 on the admin server.

5. Store XML files (admin server)

Store the XML file created in steps 2 and 3 in the directory created in step 4.

6. Execute the rcxvmdisk command (admin server)

Execute the rcxvmdisk command on the admin server. The rcxvmdisk command displays part of the disk resource configuration information for virtual L-Servers in XML format. In addition, this command performs redirection and outputs the execution results to a file with the extension "xml".

For details on the rcxvmdisk command, refer to "5.24 rcxvmdisk" in the "Reference Guide (Command/XML) CE".

For details on the XML file, refer to "15.4.1 Disk Resources [KVM]" in the "Reference Guide (Command/XML) CE".

```

# /opt/FJSVrcvnr/bin/rcxvmdisk -dir Storage directory for XML files of command execution results >
XML file of disk resource configuration information for virtual L-Servers <RETURN>

```

 Example

Execution Example of the Following Case:

Storage directory for XML files of rcxvmdiskagt command execution results: /root/rcxvmdiskagt_dir

XML file of disk resource configuration information for virtual L-Servers: /root/rcxvmdiskagt_dir/rcxvmdisk_Storage_Pool_1.xml

```

# /opt/FJSVrcvnr/bin/rcxvmdisk -dir /root/rcxvmdiskagt_dir > /root/
rcxvmdisk_Storage_Pool_1.xml <RETURN>

```

Example XML file of disk resource configuration information for virtual L-Servers

```

<?xml version="1.0" encoding="utf-8"?>
<Storage>
  <Pool name="*" />
  <VmHosts>
    <VmHost ip="192.168.23.153">
      <Disks>
        <Disk name="*" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300010000" size="10.0"/>
        <Disk name="*" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300020000" size="20.0"/>
        <Disk name="*" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300030000" size="30.0"/>
      </Disks>
    </VmHost>
  </VmHosts>
</Storage>

```

```

</VmHost>
<VmHost ip="192.168.23.154">
  <Disks>
    <Disk name="*" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300010001" size="10.0"/>
    <Disk name="*" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300020001" size="20.0"/>
    <Disk name="*" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300030001" size="30.0"/>
  </Disks>
</VmHost>
</VmHosts>
</Storage>

```

7. Specify the storage pool name

For the *name* attribute of the <Pool> element in the XML file of disk resource configuration information for virtual L-Servers that was created in step 6, specify the name of the storage pool in which disk resources for virtual L-Servers are to be registered. For the *name* attribute of each <Disk> element, specify the disk resource name.



Example

Example of the XML file of disk resource configuration information for virtual L-Servers when registering disk resources based on the following information:

XML file name of disk resource configuration information for virtual L-Servers: rcxvmdisk_Storage_Pool_1.xml

Storage pool name: Storage_Pool_1

raw Device or Partition Path on the VM host (192.168.23.153) raw Device or Partition Path on the VM host (192.168.23.154)	Disk Resource Name
/dev/disk/by-id/scsi-3600000e00d0000000001321300010000 /dev/disk/by-id/scsi-3600000e00d0000000001321300010001	disk_resource_10gb
/dev/disk/by-id/scsi-3600000e00d0000000001321300020000 /dev/disk/by-id/scsi-3600000e00d0000000001321300020001	disk_resource_20gb
/dev/disk/by-id/scsi-3600000e00d0000000001321300030000 /dev/disk/by-id/scsi-3600000e00d0000000001321300030001	disk_resource_30gb

In order to migrate VM guests for virtual L-Servers, register the raw devices or the partitions shared between multiple VM hosts as disk resources defined to be shared.

XML file of disk resource configuration information for virtual L-Servers

```

<?xml version="1.0" encoding="utf-8"?>
<Storage>
  <Pool name="Storage_Pool_1" />
  <VmHosts>
    <VmHost ip="192.168.23.153">
      <Disks>
        <Disk name="disk_resource_10gb" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300010000" size="10.0"/>
        <Disk name="disk_resource_20gb" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300020000" size="20.0"/>
        <Disk name="disk_resource_30gb" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300030000" size="30.0"/>
      </Disks>
    </VmHost>
    <VmHost ip="192.168.23.154">
      <Disks>
        <Disk name="disk_resource_10gb" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300010001" size="10.0"/>
        <Disk name="disk_resource_20gb" path="/dev/disk/by-id/scsi-3600000e00d0000000001321300020001" size="20.0"/>
      </Disks>
    </VmHost>
  </VmHosts>
</Storage>

```

```
<Disk name="disk_resource_30gb" path="/dev/disk/by-id/
scsi-3600000e00d0000000001321300030001" size="30.0"/>
</Disks>
</VmHost>
</VmHosts>
</Storage>
```

8. Create and register disk resources in a storage pool (admin server)

Specify the XML file of disk resource configuration information for virtual L-Servers which was created in step 7, then execute the `rcxadm disk` command. Disk resources for virtual L-Servers are created and registered in the storage pool.

```
# /opt/FJSVrcvnr/bin/rcxadm disk register -file
XML_file_of_disk_resource_configuration_information_for_virtual_L-Servers <RETURN>
```



Example

Execution Example of the Following Case:

XML file of disk resource configuration information for virtual L-Servers: `/root/rcxvmdiskagt_dir/rcxvmdisk_Storage_Pool_1.xml`

```
# /opt/FJSVrcvnr/bin/rcxadm disk register -file /root/rcxvmdiskagt_dir/
rcxvmdisk_Storage_Pool_1.xml <RETURN>
```



Point

Register the disk resources that one VM host can use in one storage pool. Creating the L-Server might fail when disk resources have been divided between two or more storage pools.

8.6.4 Manual Network Configuration

For the virtual bridge created in advance, only provide the function for connection with the virtual bridge. Manually perform virtual bridge settings in advance.

Use a different VLAN ID for each virtual bridge to connect with the virtual bridge.

Additionally, the following settings must be performed in advance.

1. Create a virtual bridge

Create a virtual bridge with the same name (including upper and lower case characters) for VM hosts managed by Resource Orchestrator.

This enables migration of VM guests between VM hosts.

When configuring a virtual bridge and server virtualization software other than RHEL-KVM is being used with the same manager, set a different name from the one used by the virtual switch, virtual network, and virtual bridge on the other virtualization software.

2. Configure Virtual Bridge Communication Settings

Right-click the LAN switch blade in the server resource tree, and select [Modify]-[Network Settings] from the popup menu.

Configure LAN switch blades to enable communication using the tagged VLAN between virtual bridges using the same name.

The ROR console can be used for VLAN configuration of LAN switch blade external ports.

For details, refer to "9.3.6 Pre-configuring LAN Switch Blades on Managed Blade Systems" in the "Design Guide CE".

3. Define the Supported Virtual Bridge and VLAN ID

Supported virtual bridges and VLAN IDs are defined in the virtual bridge definition file of Resource Orchestrator.

For details on definition file format, refer to "[File Format for Virtual Bridge Definitions](#)".

4. Create Network Resources

- From the GUI:

- a. In the [Create a network resource] dialog containing the VLAN ID that was specified in steps 2 and 3, check the [Use configured virtual switches/port profile.] checkbox and create a network resource.

- From the Command-line:

- a. Create the XML file that defines network resources.

Define the VLAN ID specified in steps 2 and 3 in the XML file.

In this case, specify auto="false" in the Network element.

- b. To create the network resource, execute the rcxadm network create command specifying the XML file created in step a.

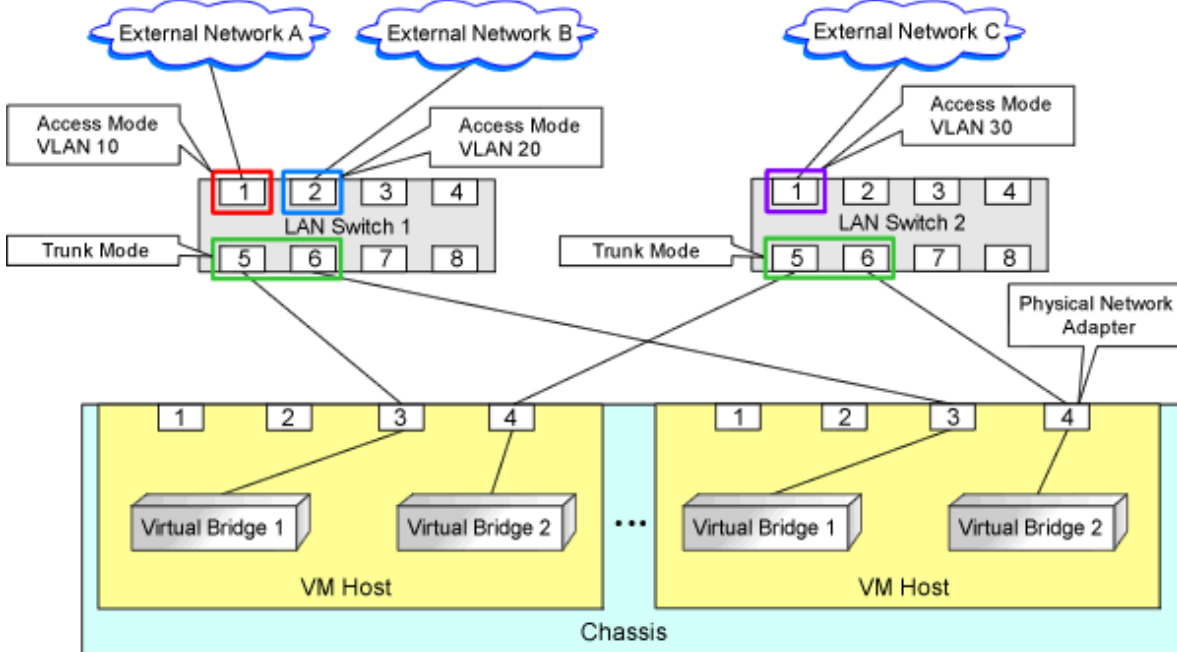
The network resources are created.

For details on the rcxadm network command, refer to "3.9 rcxadm network" in the "Reference Guide (Command/XML) CE".

For details on the Network element, refer to "15.6 Network Resources" in the "Reference Guide (Command/XML) CE".

An example of virtual NIC configuration and connection with virtual bridge using network resources is given below:

Figure 8.12 Virtual NIC Configuration and Connection with Virtual Networks Using Bridge Resources



File Format for Virtual Bridge Definitions

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvmr/customize_data

Definition File Name

vnetwork_rhelkvm.rcxprop

Definition File Format

Describe the virtual bridge definition file in one line as below:


```
"Virtual bridge name on the VM_host"=VLAN ID
```

For the *VLAN ID*, a value from 1 to 4094 can be specified.

Example

```
"br0"=10
```

Blank spaces before and after equal signs ("=") are ignored.

Describe the virtual bridge correctly, as the entry is case-sensitive.

Save files using the UTF-8 character code.

When there are multiple lines with the same virtual bridge name, all specified lines are valid.

When the same VLAN ID is included in a line with a different virtual bridge name, the first occurrence in the file is valid and the lines after it are ignored.

An error occurs during L-Server creation if the definition of the VLAN ID of the network resource connected to the NIC cannot be found.

8.6.5 Creating L-Server Templates

This section explains how to create an L-Server template.

Create an L-Server to collect cloning images from using an L-Server template.

1. Export an L-Server template

Refer to "15.2.1 Export" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Edit an L-Server Template

For details on the XML definition of L-Server templates, refer to "15.2 L-Server Template" in the "Reference Guide (Command/XML) CE".

In this case, perform the following configuration:

- Specify [RHEL-KVM] for the VM type.
- Specify "None" for the redundancy.
- Specify "Fixed" for the positioning.

3. Import an L-Server Template

Refer to "15.2.3 Import" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8.6.6 Creating L-Servers

This section explains the creation of L-Servers.

Create an L-Server to collect virtual cloning images to be used by Resource Orchestrator.

If no cloning images exist, create an L-Server.

- Create an L-Server using an L-Server template

- When there are no cloning images, or when not using already registered cloning images

1. Create an L-Server, referring to "16.1 Creation Using an L-Server Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

When creating the L-Server, select [None] for images.

When creating an L-Server without specifying a cloning image for deployment, the specification method depends on the type of disk resource allocated as the system disk.

- When allocating disk resources (qcow2 format image files) created from virtual storage resources

When selecting a disk resource, ensure "Virtual Storage" is selected for Resource Type.

- When allocating disk resources for VM guests created in advance

When selecting disk resources, select one of the following:

"Automatic"

"Storage Pool"

"Disk"

2. Install an OS

For manual OS installation, use the virtual machine manager.

For manual OS installation, refer to the "Red Hat Enterprise Linux 6 Virtualization Administration Guide".

Red Hat Enterprise Linux 6 Virtualization Administration Guide

URL: http://docs.redhat.com/docs/en-US/Red_Hat_Enterprise_Linux/6/html/Virtualization_Administration_Guide/index.html

The manuals for Red Hat Enterprise Linux can be referred to from the following URL.

URL: https://access.redhat.com/site/documentation/en-US/Red_Hat_Enterprise_Linux/index.html

3. Collecting a Cloning Image

When collecting cloning images after creating an L-Server, the cloning images are stored in the image pool.

When collecting cloning images, refer to "[8.6.7 Collecting Cloning Images](#)".

- When using an existing cloning image

Create an L-Server, referring to "16.1 Creation Using an L-Server Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE". In this case, specify the cloning image that you want to use as an image.

Only cloning images whose image location type is the same as the disk type of the L-Server can be deployed.

For details, "[Conditions for Collection and Updating of Cloning Images](#)" in "[8.6.7 Collecting Cloning Images](#)".

- Create an L-Server specifying individual specifications

Refer to "16.3 Creation of Virtual L-Servers Using Parameters" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

For details on the [OS] tab settings, refer to "[8.6.8 \[OS\] Tab Configuration](#)".



Note

- When a virtual L-Server on which an OS is not installed is powered on, the same amount of memory as the physical memory on the VM host is secured.
- When using a Linux cloning image, ensure that the system volume for the guest OS is not in an LVM configuration.

Creating an L-Server for Infrastructure Administrators

When all of the following conditions are met, select "Virtual Storage" for the resource type, and then select a virtual storage resource to use.

- When not deploying cloning images
- When using virtual storage resources

When one of the following conditions is met, refer to "[Storage Resources to be Selected](#)".

- When selecting a resource using the [Disk] tab
- When selecting a storage pool

Storage Resources to be Selected

Both disk resources created automatically from virtual resources and disk resources for VM guests created in advance can be allocated to an L-Server.

This section explains the relationships between the storage resources selected according to the resource type specified on the [Disk] tab and the cloning images selected for Image on the [General] tab in the ROR console.

- When the image location type of cloning images is "Virtual Disk"
 - When Automatic or Storage Pool is selected, a virtual storage resource is selected.
- When the image location type of cloning images is "Raw Disk" or "Do not deploy" is selected
 - When Automatic or Storage Pool is selected, a disk resource for VM guests is selected.

Conditions for Creating L-Servers that Use Cloning Images

The types of disk resources that can be used as the system disk of the L-Server differ depending on the image location type of cloning images.

- Only disk resources of the same disk type as the image location type of cloning images can be used.
 - When the image location type of cloning images is "Virtual Disk"
 - Disk resources created automatically from virtual storage resources can be used.
 - When the image location type of cloning images is "Raw Disk"
 - Disk resources that were created in advance can be used.

For details on image location types of cloning images, "[Image Location Type and Storage Location of Cloning Images](#)" in "8.6.7 Collecting Cloning Images".

- Confirm that the following storage conditions are met:
 - When the image location type of cloning images is "Virtual Disk"

The following libvirt storage pools are defined on the same VM host:

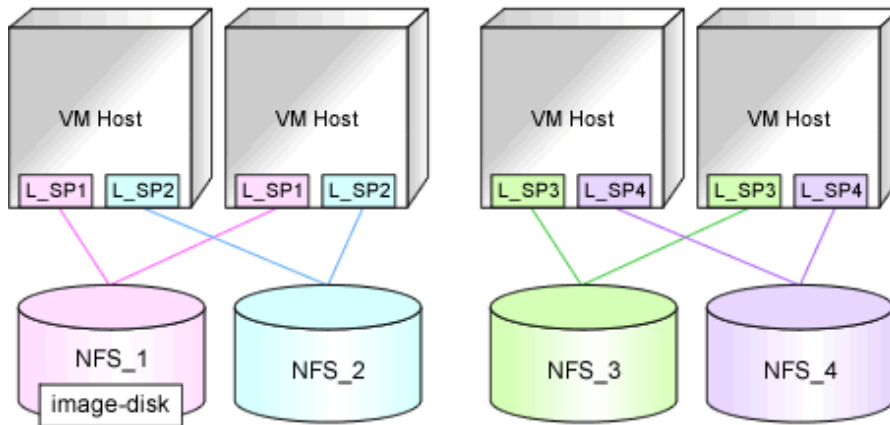
- The libvirt storage pool corresponding to the virtual storage resource to which the disk resource where cloning images are stored belongs
- The libvirt storage pool corresponding to the virtual storage resource that automatically creates the disk resource used as the system disk of the L-Server

Examples are given below.

- L-Servers can be created on the VM host where L_SP1 and L_SP2 are defined.

- L-Servers cannot be created on the VM host where L_SP3 and L_SP4 are defined.

Figure 8.13 Configuration Example in the Case Where the Image Location Type of Cloning Images is "Virtual Disk"



NFS_1 - 4: Directories on the NFS server specified as target paths for libvirt storage pools (virtual storage resources)

L_SP1 - 4: libvirt Storage Pools

image-disk: The disk resource for storing deployed cloning images

- When the image location type of cloning images is "Raw Disk"

All of the following conditions must be satisfied:

- The following LUNs exist on the same VM host
 - The LUN for the disk resource where cloning images are stored
 - The LUN for the disk resource for VM guests used as the system disk of the L-Server
- The size of each LUN must be larger than the size of each cloning image

8.6.7 Collecting Cloning Images

Collecting a Cloning Image

This section explains how to collect cloning images.

Use the following method to collect cloning images.

After installing an OS, stop the target L-Server.

1. Right-click the target L-Server in the orchestration tree, and select [Cloning]-[Collect] from the popup menu.
2. Click the [OK] button.

A cloning image is collected.

A given cloning image (identified by its name attribute) can be managed by image version.

Point

- When the destination folder for image storage is omitted during the collection of cloning images, an accessible disk from a VM host in the same storage pool as the disk used by the L-Server that is the target for collecting cloning images is automatically selected.
- Ensure that the cloning image has a unique name.

- When collecting cloning images, if specification of the storage location is omitted, the disk resource is selected automatically based on the type of the system disk.
 - When the disk resource type of the system disk of the target L-Server is "Virtual Disk"

A virtual storage resource accessible from a VM host is automatically selected from the same storage pool as the one where the system disk used by that L-Server is registered.
 - When the disk resource type of the system disk of the target L-Server is "Raw Disk"

A disk resource accessible from a VM host is automatically selected from the same storage pool as the one where the system disk used by that L-Server is registered.



When automatically configuring the IP address or the host name on the OS for the L-Server to create, follow the procedures below, as the preparations and conditions differ depending on the OS type and storage location type of the cloning image to use.

- When using a Linux cloning image

Ensure all of the following conditions are satisfied:

- The SELinux setting for the guest OS is "disabled"
- The system volume for the guest OS is not in an LVM configuration
- When starting the guest OS, configure the settings not to start the Network Manager of the guest OS.
- Preparations

Install the packages described below on the VM host on which Virtual L-Servers will be deployed.

The package that satisfies the following conditions described in "Table-Required Packages of Agent for Red Hat Enterprise Linux 6 [Linux] [KVM]" in "6.1.2.3 Required Packages" in the "Overview"

- The OS architecture is Intel64, the OS type is Linux, and a cloning image with "Virtual Disk" configured for the storage location is being used

- When using a Linux (SELinux) cloning image

Ensure all of the following conditions are satisfied:

- The system volume for the guest OS is not in an LVM configuration
- When starting the guest OS, configure the settings not to start the Network Manager of the guest OS.
- Preparations

Install the packages described below on the VM host on which Virtual L-Servers will be deployed.

The package that satisfies the following conditions described in "Table-Required Packages of Agent for Red Hat Enterprise Linux 6 [Linux] [KVM]" in "6.1.2.3 Required Packages" in the "Overview"

- The OS architecture is Intel64 and a Linux (SELinux) cloning image is being used

- When using a Windows cloning image

- Combination of the VM host and the virtual L-Server supporting the OS auto-configuration functions

Combinations of the versions of VM hosts supporting the OS auto-configuration functions and the OS versions of virtual L-Servers are as follow:

Table 8.25 Combinations of the Versions of VM Hosts Supporting the OS Auto-configuration Functions and the OS Versions of Virtual L-Servers

		OS Versions of Virtual L-Servers				
		Microsoft(R) Windows Server(R) 2008 R2	Microsoft(R) Windows Server(R) 2012 Standard	Microsoft(R) Windows Server(R) 2012 Datacenter	Microsoft(R) Windows Server(R) 2012 R2 Standard	Microsoft(R) Windows Server(R) 2012 R2 Datacenter
Versions of VM hosts	Red Hat(R) Enterprise Linux(R) 6.2	Yes	No	No	No	No
	Red Hat(R) Enterprise Linux(R) 6.3					
	Red Hat(R) Enterprise Linux(R) 6.4 or later	Yes	Yes	Yes	No	No

Yes: The OS auto-configuration functions are supported.

No: The OS auto-configuration functions are not supported. However, creation of L-Servers will succeed.

Versions other than the above are not configured, even if the version is entered on the [OS] tab.

- Preparations

Perform the following preparations:

- Install the packages described below on the VM host on which Virtual L-Servers will be deployed.
The package that satisfies the following conditions described in "Table-Required Packages of Agent for Red Hat Enterprise Linux 6 [Linux] [KVM]" in "6.1.2.3 Required Packages" in the "Overview"

[KVM]

Required when all of the following conditions are satisfied:

- The OS architecture is Intel64
- When a Windows cloning image is being used
- For L-Servers from which cloning images will be collected, install the virtio driver (the driver to recognize virtual devices) for Windows.
There are virtio drivers related to memory, network, and disk I/O.
When drivers related to memory or disk I/O are provided by RedHat, endure that they are installed.

For details, refer to the following section in the "Red Hat Enterprise Linux 6 Virtualization Host Configuration and Guest Installation Guide".

Chapter 9. Installing a fully-virtualized Windows guest

Chapter 10. KVM Para-virtualized Drivers

URL:

http://docs.redhat.com/docs/en-US/Red_Hat_Enterprise_Linux/6/html/Virtualization_Host_Configuration_and_Guest_Installation_Guide/index.html

The manuals for Red Hat Enterprise Linux can be referred to from the following URL.

URL:

https://access.redhat.com/site/documentation/en-US/Red_Hat_Enterprise_Linux/index.html

- Edit the registry of the L-Server the cloning image will be collected from as follows:

Value Name	Data Type	Value
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\WindowsNT\CurrentVersion\Winlogon\DefaultPassword	REG_SZ	Administrator's password (*)

* Note: Ensure the Administrator's password is entered.

OS auto-configuration cannot be performed, even if the password of another user ID with Administrator privileges is entered.

The tool to edit the registry above is stored in the Resource Orchestrator DVD-ROM (the first one).

Storage Location for Tool

/DISK1/Common/kvm_windows_setting

File Name for Tool

passwd_for_cloning.bat

Use the following procedure to execute the tools.

1. Store the tools in the folder for the L-Server to collect cloning images from.
2. Execute the command prompt as an administrator.
3. Execute the tools from the command prompt.
The prompt to enter the password is displayed.
4. Enter the password for the Administrator.
The password entered in the registry above is configured.

Example

C:\> passwd_for_cloning.bat

When performing OS auto-configuration, the following registries are edited by Resource Orchestrator.

Value Name

- HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\ RunOnce
- HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\WindowsNT\CurrentVersion\Winlogon\AutoAdminLogon
- HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\WindowsNT\CurrentVersion\Winlogon\DefaultUserName

Also, the following registries are read by Resource Orchestrator.

Value Name

- HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\ProductName
- HKEY_LOCAL_MACHINE\SYSTEM\ControlSet001\Control\SessionManager\Environment\PROCESSOR_ARCHITECTURE

Information

The response files that exist in the L-Server OS to collect a cloning image from cannot be used in the OS auto-configuration functions of Resource Orchestrator.

Note

- If an L-Server is created with a specified Windows image, when deploying the image use Sysprep, provided by Microsoft, to reconfigure the properties unique to the server. By executing Sysprep, the user information and OS setting information are reset.

For details on Sysprep, refer to the information provided by Microsoft.

- If stopping or restarting of the manager is performed during execution of Sysprep, the operation being executed will be performed after the manager is started.

Until the process being executed is completed, do not operate the target resource.

- When using MAK license authentication for activation of Windows Server 2008 images OS, Sysprep can be executed a maximum of three times. Since Sysprep is executed when creating L-Server with images specified, collection of cloning images and creation of L-Servers with images specified cannot be performed more than four times. Therefore, it is recommended not to collect cloning images from L-Servers that have had cloning images deployed, but to collect them from a dedicated master server.
- If an L-Server is created with a Windows image specified, use Sysprep to set the server specific information again, when starting for the first time after creating the L-Server. After startup, and resetting of the server specific information, when the L-Server console is opened you will be logged on with Administrator status. Therefore, it is recommended that you log off.
- Note the following points when collecting cloning images from an L-Server that was created using a cloning image.

As L-Servers which have not been used even once after creation do not have server specific information set, creation of L-Servers using cloning images collected from an L-Server may fail.

When collecting cloning images, set the server specific information on L-Server, after starting the target L-Server.

Information

The disk resource in which cloning images are stored will be in the state where all of the following conditions are met:

- "Already allocated" is displayed for the "Allocation" in the "Configuration Information" that can be confirmed in "Disk Details".
- There is no information in "L-Server Properties".
- There is information in the "Stored Image".

When collecting cloning images, enter the disk resource name to use for storing cloning images in Comment. The relationship between the cloning image and the disk resource can be checked in "Comment" for each resource in the "Resource List".

Image Location Type and Storage Location of Cloning Images

Cloning images with their VM type set to RHEL-KVM are stored in disk resources. There are the following two types of cloning images according to the disk resource type.

- Cloning images whose image location type is "Virtual Disk"
 - Cloning images stored in the disk resources created automatically from virtual storage resources
- Cloning images whose image location type is "Raw Disk"
 - Cloning images stored in the disk resources created in advance.

Conditions for Collection and Updating of Cloning Images

The conditions for collection and updating of cloning images are as follows:

- When collecting cloning images, only cloning images whose image location type is the same as the disk type of the system disk used by the target L-Server can be collected.
- When updating cloning images, only cloning images whose image location type is the same as the disk type of the system disk used by the target L-Server can be updated.

Table 8.26 Conditions for Collection and Updating of Cloning Images

Image Location Type of Cloning Images	L-Server System Disk Type	Possibility of Updating
Virtual Disk	Virtual Disk	Yes

Image Location Type of Cloning Images	L-Server System Disk Type	Possibility of Updating
	Raw Disk	No
Raw Disk	Virtual Disk	No
	Raw Disk	Yes

Yes: Both collection and update is possible.

No: Neither collection nor update is possible.

- The following storage conditions must be satisfied:
 - When the disk resource type of the system disk of the L-Server is "Virtual Disk"

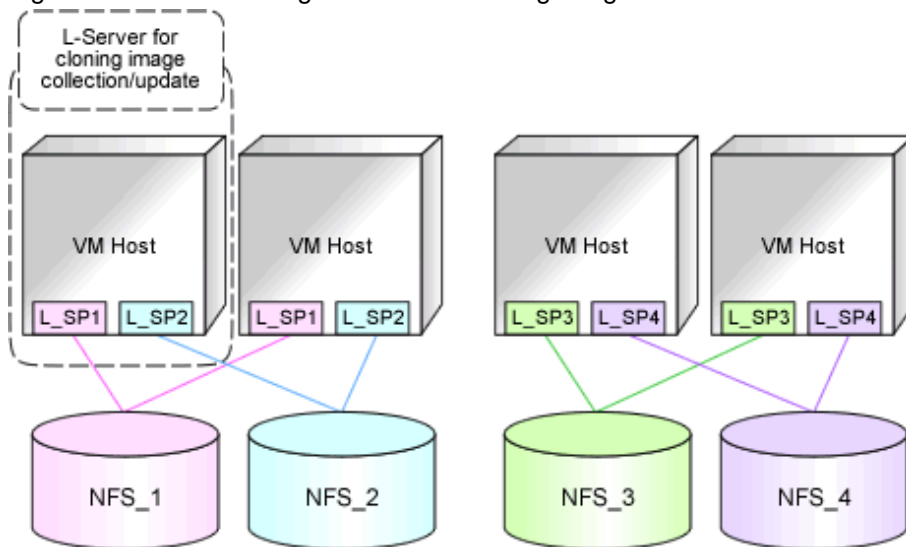
The following libvirt storage pools are defined on the same VM host:

- The libvirt storage pool corresponding to the virtual storage resource to which the disk resource used as the system disk of the L-Server belongs
- The libvirt storage pool corresponding to the virtual storage resource which will be used for storing cloning images

Examples are given below.

- Virtual storage resources corresponding to L_SP1 and L_SP2 can be used as cloning image storage locations.
- Virtual storage resources corresponding to L_SP3 and L_SP4 cannot be used as cloning image storage locations.

Figure 8.14 Virtual Storage Usable as Cloning Image Locations



NFS_1 - 4: Directories on the NFS server specified as target paths for libvirt storage pools (virtual storage resources)

L_SP1 - 4: libvirt Storage Pools

- When the image location type of cloning images is "Raw Disk"
 - All of the following conditions must be satisfied:
 - The following LUNs are defined on the same VM host
 - The LUN for the disk resource created in advance, which will be used as the system disk of the L-Server
 - The LUN for the disk resource created in advance, which will be used as the storage location of cloning images
 - Each LUN is larger than the system disk of the L-Server

8.6.8 [OS] Tab Configuration

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.

Do not specify the value, as the value will not be set for the items for which entry is not required.

When the OS type on the [Server] tab is "Linux", "Windows", or "Linux(SELinux)", the items can be entered. When the OS type is "Other", the items cannot be entered.

The [OS] tab cannot be configured in the following cases:

- When the SELinux setting for the host OS is "Enable"
- When the system volume for the guest OS is LVM

Table 8.27 List of Settings

Item	Linux/Linux(SELinux)		Windows		Description
	Necessity of Entry	Values When Omitted	Necessity of Entry	Values When Omitted	
Host name/Computer name	Possible	<i>L-Server Name</i>	Possible	<i>L-Server Name</i>	<p>Enter the host name or computer name.</p> <p>[Windows] Enter a character string beginning with an alphanumeric character and containing up to 15 alphanumeric characters and hyphens ("-"). The string cannot be composed solely of numbers.</p> <p>[Linux] Enter a character string beginning with an alphanumeric character and containing up to 63 alphanumeric characters and hyphens ("-"). The string cannot be composed solely of numbers.</p> <p>If underscores ("_") or periods (".") are used in an L-Server name, they will be replaced with hyphens ("-"), because these characters cannot be used for host names or computer names.</p> <p>If the item is not specified, the L-Server name is converted and set as indicated above.</p>
Domain name	Possible	localdomain (*1)	Possible	WORKGROUP (*1)	<p>[Linux] Enter the domain name. Enter a character string beginning with an alphabetic character and containing up to 255 alphanumeric characters, hyphens ("-"), and periods (".").</p> <p>[Windows] Enter the workgroup name. Settings for participation in a domain cannot be made. The same workgroup name as the computer name cannot be specified. Enter a character string beginning with an</p>

Item	Linux/Linux(SELinux)		Windows		Description
	Necessity of Entry	Values When Omitted	Necessity of Entry	Values When Omitted	
					alphabetical character and containing up to 15 alphanumeric characters, hyphens ("-"), and periods ("."). Refer to the information provided by Microsoft about the character string that can be input to the workgroup name.
DNS search path	Possible	-	Not Required	-	Enter a list of domain names to use for DNS searching, using between 1 and 32,767 characters. You can specify the same characters as the domain name.
Full name	Not Required	-	Possible	WORKNAME (*1)	Enter the Windows full name using between 1 and 50 characters. By default, the value defined in the OS property definition file is entered.
Organization name	Not Required	-	Possible	WORKORGANIZATION (*1)	Enter the organization name displayed in the Windows system properties using between 1 and 50 characters.
Product key	Not Required	-	Possible	- (*1)	Enter a product key.
License mode	Not Required	-	Not Required	-	Even if the license mode is specified, it is not configured in the guest OS.
Maximum number of connections	Not Required	-	Not Required	-	Even if the maximum number of connections is specified, it is not configured in the guest OS.
Administrator password	Not Required	-	Possible	- (*1)	Configure the same password as that specified for the local administrator account during L-Server creation. When specifying a new password, the local administrator account will be overwritten. Enter the password using between 1 and 128 alphanumeric characters or symbols.
Hardware clock configuration	Not Required	Local	Not Required	-	Specify one of the following: - UTC - Local (LOCAL) Even if the above is specified, it is not reflected on the guest OS.
Time zone	Possible	<i>The same time zone as the OS of the manager</i>	Possible	<i>The same time zone as the OS of the manager</i>	Specify the time zone of the OS.

*1: When the value is specified in the OS property definition file, its values are configured.

*2: When the OS type of the cloning image is Windows, the values for the [OS] Tab or the OS property definition file can only be configured automatically when using the OS version described in the following reference.

"Combinations of the Versions of VM Hosts Supporting the OS Auto-configuration Functions and the OS Versions of Virtual L-Servers" in "When using a Windows cloning image" in ["8.6.7 Collecting Cloning Images"](#)

Information

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.

For details, refer to "8.1.7 OS Property Definition File".

L-Server Operations

Use the ROR console or the `rcxadm lserver` command for L-Server operations.

For details on how to operate an L-Server using the ROR console, refer to "Chapter 17 L-Server Operations" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

For details on the `rcxadm lserver` command, refer to "3.6 rcxadm lserver" in the "Reference Guide (Command/XML) CE".

Changing L-Server Specifications

Use the ROR console or the `rcxadm lserver modify` command to change L-Server specifications.

For details on the specifications that can be changed, refer to "Chapter 17 L-Server Operations" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

The value after changing the specifications can be checked in the [Resource List] tab in the orchestration tree.

From the command-line, execute `rcxadm lserver list` and `rcxadm lserver show`.

For details, refer to "3.6 rcxadm lserver" in the "Reference Guide (Command/XML) CE".

8.6.9 Advisory Notes for RHEL-KVM Usage

This section explains advisory notes for RHEL-KVM.

VM Type View

In the ROR console, the VM type of RHEL-KVM VM hosts and VM guests is displayed as "RHEL-KVM".

Snapshot

The operations that can be performed differ depending on the disk configuration and power status of the L-Server.

Conditions for collecting, restoring, and deleting of snapshots are as follows:

- The L-Server is powered off
- The operations that can be performed differ depending on the type of the disk resources connected to the L-Server, as shown below.

Operation	Type of Disk Resources Connected to the L-Server		
	Raw Disks Only	Virtual Disks Only	Both Raw Disks and Virtual Disks
Collection	No	Yes	No
Restoration	No	Yes	Yes
Deletion	No	Yes	Yes

Yes: Possible.

No: Not possible.

Note

Japanese and double-byte characters cannot be used for comments.

Restoring the collected snapshots resets the following parameters for the L-Server back to the state at the time when collection was performed.

- Number of CPUs
- CPU Performance
- Memory Size
- Maximum Memory Size
- Disk Configuration
- Networks
- OS Settings

Guest OS Automatic Configuration

When using RHEL-KVM, guest OS auto-configuration can be used for Linux, Windows, and Linux (SELinux).

Note

When the OS type is Windows, OS auto-configuration can be used for the OS versions described below.

["8.6.7 Collecting Cloning Images"](#)

- When using a Windows cloning image
 - OS versions supporting the OS auto-configuration functions

Detaching Disks and Deleting L-Servers

The data in the disk resources for virtual L-Servers cannot be deleted when detaching disks or deleting L-Servers, except when deleting the disk details for virtual L-Servers is enabled using the definition files.

Therefore, it is recommended to delete the data from the disk.

For details on how to delete data on disks, refer to "14.5 Storage Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

For details on how to specify definition files, refer to ["8.6.1 Creating Definition Files"](#).

Configuration for L-Server Live Migration

In RHEL-KVM environments, use SSH to perform live migration on virtual L-Servers.

It is necessary to configure each involved host to enable live migration of an L-Server from the manager.

For details, refer to "E.5.2 Preparations for Servers" in the "Design Guide CE".

Note

When performing live migration using the `virsh migrate` command for KVM, specify both the `--undefinesource` and `--persistent` options.

If the command is executed without specifying these two options, the same VM guests may exist on both the destination and source VM hosts. In this state, the VM guests cannot be turned on using Resource Orchestrator. This occurs to prevent double VM guest startup operations in the state that multiple instances of the same VM guest exist on different VM hosts.

When turning on VM guests, the state where there are multiple instances of the same VM guest must be avoided by using the virsh command. For details, refer to the following section in the "Red Hat Enterprise Linux 6 Virtualization Administration Guide".

- Chapter 14. Managing guest virtual machines with virsh

URL: http://docs.redhat.com/docs/en-US/Red_Hat_Enterprise_Linux/6/html/Virtualization_Administration_Guide/index.html

The manuals for Red Hat Enterprise Linux can be referred to from the following URL.

URL: https://access.redhat.com/site/documentation/en-US/Red_Hat_Enterprise_Linux/index.html

Max. Number of Possible L-Servers View

The available space on resources and the space displayed for [the number of L-Servers that can be created] are calculated as follows:

Available Amount of CPUs and [Number of L-Servers that can be Created]

Total resource space - (Total of resources reserved for VM hosts + Total of resources used for L-Server)

Directory for collecting performance information

When resources are registered, the directories and files that are necessary for performance monitoring are created on the server where the resources are registered.

The directories and files are created in the following location. (Files with the same name in the same location are overwritten.)

`/ {Home directory of the user ID specified when registering the resources} / dsa_temp_*`

Do not delete the above directory until the resources themselves are deleted.

Performance information will not be collected if this directory is deleted. Restart the Manager if the directory is deleted accidentally.

The above directory is not automatically deleted when the resources are deleted. Delete it manually.

Live Migration to Copy Disks between Storage that are not Shared

Do not perform live migration to copy disks between storage that are not shared, from within VM software.

Such operation is not supported by Resource Orchestrator.

Migration

When specifying cold migration for migration while powered on, migration may fail.

Perform migration after powering off. After that, wait a couple of minutes and then power on again.

Corrective Action for Failure of a VM host Registered as Storage Management Software

When a VM host registered as storage management software fails, creation and deletion of virtual L-Servers and addition and deletion of disks cannot be performed using the virtual storage (libvirt storage pools) managed by the storage management software.

In order to make these operations possible, it is necessary to change storage management software.

Change the IP address of the storage management software to the IP address of a VM host which has the same sharing configuration for libvirt storage pools as the failed VM host.

To change the IP address of the storage management software, execute the modify subcommand of the rxcadm storagemgr command.

For details on the rxcadm storagemgr command, refer to "5.17 rxcadm storagemgr" in the "Reference Guide (Command/XML) CE".

Specification of Enable/Disable of the memory_hotplug Function

The value specified for enable/disable of the memory_hotplug function is configured for each individual virtual L-Server while creating a virtual L-Server.

However, the configured value cannot be modified after creating a virtual L-Server.

For details on memory_hotplug, refer to "[8.1.2 VM Specific Information Definition File](#)".

8.6.10 Overcommit

This section explains the overcommit function for L-Servers.

Overcommit

The RHEL-KVM overcommit function for the CPU and memory is available on Resource Orchestrator.

The RHEL-KVM overcommit function for the CPU and memory virtually allows a guest OS to use more resources than that of the actual CPU and memory of a server.

Resource Orchestrator provides the following functions to utilize the RHEL-KVM overcommit function when creating L-Servers.

- Setting an overcommit attribute for a resource pool

Overcommit attributes can be set for resource pools. If an L-Server template with the overcommit attribute configured is used, an L-Server with the overcommit attribute configured can be created by selecting the resource from the resource pool with overcommit configured.

- Deployment of L-Servers with more resources than those of the server

Creation of an L-Server with more resources than that of the actual CPU or memory installed on a server is possible.

Whether the resulting L-Server can be started depends on the resources available on the VM host.

Installation Procedure

1. Create a VM Pool for Overcommit

For details on how to create a VM pool, refer to "Chapter 20 Resource Pool Operations" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".



.....
Refer to the "Point" described in "1. Create a VM Pool for Overcommit" in "[Installation Procedure](#)" in "[8.2.11 Overcommit](#)".
.....



.....
Refer to the "Note" described in "1. Create a VM Pool for Overcommit" in "[Installation Procedure](#)" in "[8.2.11 Overcommit](#)".
.....

2. Create a VM Specific Information Definition File

Create a VM specific information definition file. Create a VM specific information definition file when configuring different settings for individual user groups without configuring overcommit settings on the L-Server template.

For VM specific information definition files, refer to "[8.1 Definition Files Commonly Shared when Creating Virtual L-Servers](#)".

For details on how to edit the L-Server template, or create and check an L-Server, perform the operations of step 3 and later described in "[8.2.11 Overcommit](#)". Since the values that can be configured in the L-Server template or the VM specific information definition files as described in the reference differ depending on the VM types, replace the values with ones for KVM.



Due to limitations of the KVM management application, it may take a few minutes until the amount of memory used by VM is reflected on the ROR console.

8.7 Solaris Zones

This section explains the settings used when using Solaris Zones as server virtualization software.

- When Creating a Virtual L-Server

Configure the settings referring to the information in "8.7.1 Creating Definition Files" or the following sections.

- When Associating L-Servers with Configured Virtual Machines

Refer to "18.4.3 For Virtual Machines" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- Importing to L-Platforms

Refer to "7.2.3 Importing to L-Platform" in the "Operation Guide CE".

8.7.1 Creating Definition Files

This section explains how to create definition files.

For definition files common to virtual L-Servers, refer to "8.1 Definition Files Commonly Shared when Creating Virtual L-Servers".

This section explains the definition files specific to Solaris Zones.

Definition Files of Managed Resource Pools for Solaris Zones

In Resource Orchestrator, the resource pool for Solaris Zones, with the name "pool_resource", is the target of management.

When changing the managed resource pools for Solaris Zones, specify either MANAGED_POOL or the admin IP address for the VM host, or both of them, in the definition file in advance.

When MANAGED_POOL and the admin IP address of the VM host are both specified, priority is given to the admin IP address of the VM host.

Use the UTF-8 character code for definition files.

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvnr/customize_data



The sample definition file (container_resource.sample.rcxprop) is stored in the storage location above.

When using the sample as the definition file, place the file after deleting the ".sample" included in the file name.

Definition File Name

container_resource.rcxprop

Definition File Format

In the definition file, an item to define is entered on each line. Each line must be entered in the following format.

Key = Value

If there is duplicated configuration information for the same VM host, the values that appear first will be used.

Table 8.28 Definition File Items

Key	Description
MANAGED_POOL	Specify this item when using common resource pools for Solaris Zones in the overall managed VM host (global zone) in Resource Orchestrator.
<i>Admin IP address of the VM host</i>	Define a Solaris Zones resource pool for each managed VM host (global zone) in Resource Orchestrator.

When there are no definitions corresponding to the managed VM host, the resource pool with the name "pool_resource" will be the target of management.

 **Note**

- In a Solaris Zone environment, it is necessary to enable the resource pools service corresponding to MANAGED_POOL specified in the definitions.
- When definitions are changed during operation, or the name of the resource pool for Solaris Zones is changed, also change the calculation and display of the resource capacity in Resource Orchestrator. Do not change the definitions during operation.
- When changing the VM host IP address, also modify the definition files.
- When the descriptions start with "#", the string is regarded as a comment line.

Definition Files of Reserved Memory Size for VM Hosts

Define the reserved memory size for the global zone of a Solaris Zone.

When calculating and displaying available memory resources, the reserved memory size for VM hosts specified in this definition file is used.

Use the UTF-8 character code for definition files.

Location of the Definition File

[Windows Manager]
Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]
 /etc/opt/FJSVrcvmr/customize_data

 **Information**

The sample definition file (global_zone_reserved_memory.rcxprop.sample) is stored in the location above. When using the sample as the definition file, place the file after deleting the ".sample" included in the file name.

Definition File Name

global_zone_reserved_memory.rcxprop

Definition File Format

In the definition file, an item to define is entered on each line. Each line must be entered in the following format.

<i>Key</i> = <i>Value</i>

When the same key is stated in multiple lines, the definition in the line described last is valid.

Definition File Items

Specify the following items:

Key	Description
ALL	Specify the reserved memory size to be used between VM hosts (global_zone) managed by ROR. Enter an integer. The unit of the value is MB.
<i>Admin IP address of the VM host</i>	Specify the reserved memory size for the VM host (global_zone) to which the specified IP address has been assigned. Enter an integer. The unit of the value is MB. Priority is given to this setting over the value specified for ALL.

Note

- If this definition is modified during operation, the resource amount calculated and displayed by Resource Orchestrator will be changed as well.
- When changing the IP address of the VM host, modify this definition file.
- If valid values are not specified in this definition file, it will be treated as if the value for capped-memory configured for the global zone has been specified.
If capped-memory has not been configured for the global zone, it will be treated as if 0 has been specified.

Definition File for SPARC-specific Functions

When using the following functions in Solaris Zones, configure this definition file.

- Settings for enabling Solaris Zones

Define if registering VM hosts as Solaris Zones regardless of whether the Logical Domains Manager daemon is enabled or disabled.

This definition is used when registering the agent of a VM host. It has no effect on the types of registered VM hosts.

[Solaris Zones (Solaris 11)]

- Configuration of the time-out period of the OS installation process performed during L-Server creation

The time-out period of the OS installation process is set to 6 hours (21600 seconds).

To modify the value of the time-out period from the default, specify the desired time-out period in this definition file.

- Configuration of a VM host with "auto" specified for the mac-address property for the anet resource in a non-global zone

When creating an L-Server for the VM host specified in this definition file, "auto" is set for the mac-address property of the anet resource in the non-global zone.

Perform this setting if modification of the MAC address of virtual NIC when restarting the L-Server causes no problems.

Storage Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvnr/customize_data

Information

The sample definition file (sparc_vm.rcxprop.sample) is stored in the location above.

When using the sample as the definition file, place the file after deleting the ".sample" included in the file name.

Definition File Name

sparc_vm.rcxprop

Character Code

UTF-8

Line Break Code

[Windows Manager]
CR/LF

[Linux Manager]
LF

Definition File Format

In the definition file, an item to define is entered on each line. Each line must be entered in the following format.

<i>Key = Value</i>

When duplicate key values are detected, the process operates based on the last definition detected.

Definition File Items

Specify the following items:

Key	Description
ALWAYS_ZONE	<p>Specify if registering VM hosts as Solaris Zones regardless of whether the Logical Domains Manager daemon is enabled or disabled.</p> <ul style="list-style-type: none">- If "true" is specified Registers VM hosts as Solaris Zones regardless of whether the Logical Domains Manager daemon is enabled or disabled.- If "false" is specified Registers VM hosts based on whether the Logical Domains Manager daemon is enabled or disabled.
ZONE_INSTALL_TIMEOUT	<p>Configure the time-out period for the OS installation process performed when creating an L-Server using seconds. The range of specifiable values is 1 to 43200. When this key is not specified, or an invalid value is specified, the default value (21600 seconds) is set for the time-out period.</p>
ZONE_CHANGEABLE_MAC_HOSTS	<p>When creating an L-Server for the global zone on a virtual server, specify a global zone for which "auto" has been configured for the value for the mac-address property of an anet resource in the non-global zone.</p> <p>Specify an admin LAN IP address of the VM host. Multiple values can be specified by separating each value with a comma (",").</p> <p>Avoid having both non-global zones with "auto" specified and non-global zones with something other than "auto" specified for each global zone at the same time. Otherwise powering on of non-global zones may fail.</p> <p>When this key is specified, the values configured for the properties of the anet resource change as follows:</p> <ul style="list-style-type: none">- The non-global zone on the global zone specified for this key mac-address property: auto mac-slot property: not configured- The non-global zone on the global zone not specified for this key mac-address property: factory mac-slot property: the slot identifier of a MAC address which is not in use when the L-Server is created

Key	Description
	For details on each property, refer to the manuals for Solaris Zones.

Example

- When registering VM hosts as Solaris Zones regardless of whether the Logical Domains Manager daemon is enabled or disabled

```
ALWAYS_ZONE=true
```

- When configuring the time-out period for the OS installation process performed during L-Server creation as 18000 seconds (5 hours)

```
ZONE_INSTALL_TIMEOUT=18000
```

- When creating an L-Server, and specifying two global zones (the admin LAN IP addresses are 192.168.10.10 and 192.168.10.20) to specify "auto" for mac-address in anet

```
ZONE_CHANGEABLE_MAC_HOSTS=192.168.10.10,192.168.10.20
```

Note

- When more than two lines are written, the configurations described in the last line are valid.
- Blank spaces and tabs directly before and after an equal sign ("=") are ignored.
- Describe the definitions carefully, as entry is case-sensitive.
- If you edit and save a UTF-8 text file using Windows Notepad, the Byte Order Mark (BOM) is stored in the first three bytes of the file, and the information specified on the first line of the file will not be analyzed correctly. When using Notepad, specify the information from the second line.
- The definition file configurations are reflected without restarting the manager in Resource Orchestrator.

Completion Waiting Time Definition File for the Initial Boot Service [Solaris Zones (Solaris11)]

When creating an L-Server specifying the image to execute the initial boot service, configure this definition file.

When creating an L-Server, after temporarily starting a non-global zone, perform OS customization, and then process the initial boot service. This definition file determines that the initial boot service is completed, if both of the following conditions are satisfied:

- The status of the initial boot service configured in the definition file is "disabled"
- The property value of the script completion flag configured in the definition file is "true"

Note

- When creating an L-Server without configuring the definition file correctly for the image executing the initial boot service, creation of the L-Server may complete before the initial boot service completes. In that case, check if the initial boot service process has completed, by referring to the logs of the initial boot service. If it has not completed, perform corrective action such as executing process again based on the process details of the initial boot service.
- Do not use the initial boot service for which the completion flag for Solaris 11.1 or earlier is not configured. When using the service, the process of waiting for completion cannot be performed correctly, and as a result, the process fails due to timeout.

Storage Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvnr/customize_data



Information

The definition file sample (sparc_first_boot_service.rcxprop.sample) is stored in the location above.

When using the sample as the definition file, place the file after deleting the ".sample" included in the file name.

Definition File Name

sparc_first_boot_service.rcxprop

Character Code

UTF-8

Line Break Code

[Windows Manager]

CR/LF

[Linux Manager]

LF

Definition File Format

In the definition file, an item to define is entered on each line. Each line must be entered in the following format.

```
Image_name=Initial_boot_service_name_(FMRI), Property_name_of_script_completion_name
```

When duplicate keys are detected, the key operates based on the last definition detected.

Definition File Items

Specify the following items:

Key	Description
Image name	Name of the cloning image to use to create an L-Server. In image names, an asterisk ("*") can be used as a wildcard. Therefore, an asterisk ("*") can be specified as the substitute for an unspecified character string. When there are multiple lines to use, the line closest to the top is used.
Initial boot service name (FMRI)	Name of the initial boot service executed when using specified images. The name of the service, in FMRI format, included in the package for the initial boot service specified in the image, in ai_manifest.xml.
Property name of the script completion flag	Property name of the completion flag of the initial boot service.



Example

- When specifying the image name and the initial boot service name as one to one, and also the image name and the property name of the script completion flag as one to one

```
zone_sol11=svc:/site/first-boot-script-svc:default,config/completed
```

- When specifying the same initial boot service name and property name of the script completion flag for an image with a name starting with "zone_"

```
zone_*=svc:/site/first-boot-script-svc:default,config/completed
```

- When specifying the same initial boot service name and property name of the script completion flag for all images

```
*=svc:/site/first-boot-script-svc:default,config/completed
```

Note

- Blank spaces and tabs directly before and after an equal sign ("=") are ignored.
- Describe the definitions carefully, as entry is case-sensitive.
- If you edit and save a UTF-8 text file using Windows Notepad, the Byte Order Mark (BOM) is stored in the first three bytes of the file, and the information specified on the first line of the file will not be analyzed correctly. When using Notepad, specify the information from the second line.
- The definition file configurations are reflected without restarting the manager in Resource Orchestrator.

8.7.2 Registering Resources with Resource Orchestrator

This section explains how to register resources with Resource Orchestrator. Use the following procedure to register resources:

Register Managed Servers (Global Zone)

Refer to "5.9 When Using Fujitsu M10/SPARC Enterprise" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Register the Solaris Zones constructed on the guest domain of OVM for SPARC referring to "[8.7.12 Managing Solaris Zones Configured on a Guest Domain of OVM for SPARC](#)".

When Using zfs Storage Pools as Virtual Storage Resources [Solaris Zones (Solaris 11)]

Register the global zone as the storage management software.

When a global zone is registered as storage management software, zfs storage pools are registered automatically with Resource Orchestrator as virtual storage resources.

Execute the rcxadm storagemgr command to register storage management software.

For details on the rcxadm storagemgr command, refer to "5.17 rcxadm storagemgr" in the "Reference Guide (Command/XML) CE".

It is also possible to register a virtual storage resource with Resource Orchestrator without waiting for the periodical query of storage management software, by right-clicking the storage management software in the ROR console orchestration tree and then selecting [Update] in the displayed menu.

Registering Server Management Software [Solaris Zones (Solaris 10)]

When using Solaris Zones (Solaris 10), register BMC BladeLogic Server Automation as server management software. Perform the necessary preparations before registration.

For details on preparations, refer to "[H.1 Coordination with BMC BladeLogic Server Automation](#)".

For details on how to register server management software, refer to "5.12 Registering BMC BladeLogic Server Automation" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8.7.3 Registering Resources in Resource Pools

This section explains the registration of resources to resource pools.

Use the following procedure to register resources in the resource pool.

The procedures for Solaris 10 Zones and Solaris 11 Zones are different.

When Using Solaris Zones (Solaris 11)

1. Register VM host resources (Global zone)
 - a. 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.
 - b. Select the VM host to register.
 - c. Click the [OK] button.

For details, refer to "14.1 VM Host Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Register storage management software

Register VM Hosts as storage management software.

For details, refer to "5.17 rcxadm storagemgr" in the "Reference Guide (Command/XML) CE".

3. Register Virtual Storage to the Storage Pool

For details, refer to "14.5 Storage Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

4. Register network resources

If the NIC and network resources are connected when an L-Server is created, the settings matching the network resource definition will be registered automatically for the VM host that the L-Server will operate on.

For details, refer to "8.7.4 Manual Network Configuration".

5. Register network device resources

Create a network resource to be used on the L-Platform. If the type of the network devices is Firewall or SLB, register them to the network pool.

For details, refer to "14.4 Network Devices" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

6. Register virtual image resources

Register the virtual image resources used when creating virtual L-Servers in the resource pool.

It is necessary to create a cloning image on the Resource Orchestrator manager, and register it with Resource Orchestrator in advance.

For details, refer to "8.7.5 Creating and Importing Cloning Images".

When Using Solaris Zones (Solaris 10)

1. Register VM host resources (Global zone)
 - a. 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.
 - b. Select the VM host to register.
 - c. Click the [OK] button.

For details, refer to "14.1 VM Host Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".



-
- When deploying multiple L-Servers to an L-Platform at the same time, deploy the same number of L-Servers as the number of VM hosts in the VM pool.

- When using multiple L-Platforms that use the same network, create different VM pools for each L-Platform.

2. Register disk resources

Register the disks used in the non-global zone as disk resources.

When migrating a non-global zone for virtual L-Servers, register the disks shared between multiple global zones as disk resources defined to be shared.

Perform the following procedure:

a. Create a storage pool (admin server)

To use a storage pool other than default one, create the storage pool.

For details on how to create a storage pool, refer to "20.2 Creating" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

b. Execute the rcxvmdiskagt command (managed servers)

Execute the rcxvmdiskagt command on each managed server. The rcxvmdiskagt command displays the disk information stated in /etc/vfstab of the global zone. In addition, this command performs redirection and outputs the execution results to a file with the extension ".xml".

Execute this command on all managed servers where disk resources are to be registered.

For details on the rcxvmdiskagt command, refer to "5.25 rcxvmdiskagt" in the "Reference Guide (Command/XML) CE".

```
# /opt/FJSVrcvat/bin/rcxvmdiskagt -ip IP address of the managed server -vmtyp solaris-zone >
rcxvmdiskagt_command_execution_result_XML_file <RETURN>
```

Example

Output Example of the rcxvmdiskagt Command

```
>rcxvmdiskagt -ip 192.168.23.153 <RETURN>

<?xml version="1.0" encoding="utf-8"?>
<VmHost ip="192.168.23.153">
  <Disks>
    <Disk name="*" path="/ror/zones/zone1" size="10.0"/>
    <Disk name="*" path="/ror/zones/zone2" size="20.0"/>
    <Disk name="*" path="/ror/zones/zone3" size="30.0"/>
    <Disk name="*" path="/ror/zones/zone4" size="40.0"/>
    <Disk name="*" path="/ror/zones/zone5" size="50.0"/>
  </Disks>
</VmHost>
```

c. Delete unnecessary Disk elements (managed servers)

Delete the <Disk> elements for the following items, from the file that was output in step b.

- Disks not used in non-global zones
- Disks which are to be used in a global zone but are not mounted
- LVM disks

Example

Example of an XML file with <Disk> Elements Deleted

```
>rcxvmdiskagt -ip 192.168.23.153 <RETURN>
```



```

<?xml version="1.0" encoding="utf-8"?>
<VmHost ip="192.168.23.153">
  <Disks>
    <Disk name="*" path="/ror/zones/zone1" size="10.0"/>
    <Disk name="*" path="/ror/zones/zone2" size="20.0"/>
    <Disk name="*" path="/ror/zones/zone3" size="30.0"/>
  </Disks>
</VmHost>

```

- d. Create an XML file storage directory (admin server)

Create a directory for storing the XML file created in step b and step c on the admin server.

- e. Store XML files (admin server)

Store the XML file created in step b and step c in the directory created in step d.

- f. Execute the rcxvmdisk command (admin server)

Execute the rcxvmdisk command on the admin server. The rcxvmdisk command displays part of the disk resource configuration information for virtual L-Servers in XML format. In addition, this command performs redirection and outputs the execution results to a file with the extension ".xml".

For details on the rcxvmdisk command, refer to "5.24 rcxvmdisk" in the "Reference Guide (Command/XML) CE".

For details on the XML file, refer to "15.4.3 Disk Resources [Solaris Zones]" in the "Reference Guide (Command/XML) CE".

```

# /opt/FJSVrcvmr/bin/rcxvmdisk -dir Storage directory for XML files of command execution results >
XML file of disk resource configuration information for virtual L-Servers <RETURN>

```

Example

Execution Example of the Following Case:

Storage directory for XML files of rcxvmdisk command execution results: /root/rcxvmdiskagt_dir

XML file of disk resource configuration information for virtual L-Servers: /root/rcxvmdiskagt_dir/rcxvmdisk_Storage_Pool_1.xml

```

# /opt/FJSVrcvmr/bin/rcxvmdisk -dir /root/rcxvmdiskagt_dir > /root/rcxvmdisk_Storage_Pool_1.xml
<RETURN>

```

Example XML file of disk resource configuration information for virtual L-Servers

```

<?xml version="1.0" encoding="utf-8"?>
<Storage>
  <Pool name="*" />
  <VmHosts>
    <VmHost ip="192.168.23.153">
      <Disks>
        <Disk name="*" path="/ror/zones/zone1" size="10.0"/>
        <Disk name="*" path="/ror/zones/zone2" size="20.0"/>
        <Disk name="*" path="/ror/zones/zone3" size="30.0"/>
      </Disks>
    </VmHost>
  </VmHosts>
</Storage>

```

- g. Specify the storage pool name

For the *name* attribute of the <Pool> element in the XML file of disk resource configuration information for virtual L-Servers which was created in step f, specify the name of the storage pool in which disk resources for virtual L-Servers are to be registered. For the *name* attribute of each <Disk> element, specify the disk resource name.

Example

Example of the XML file of disk resource configuration information for virtual L-Servers when registering disk resources based on the following information:

XML file name of disk resource configuration information for virtual L-Servers: rcxvmdisk_Storage_Pool_1.xml

Storage pool name: Storage_Pool_1

Mount Point	Disk Resource Name
/ror/zones/zone1	disk_resource_10gb
/ror/zones/zone2	disk_resource_20gb
/ror/zones/zone3	disk_resource_30gb

XML file of disk resource configuration information for virtual L-Servers

```
<?xml version="1.0" encoding="utf-8"?>
<Storage>
  <Pool name="Storage_Pool_1" />
  <VmHosts>
    <VmHost ip="192.168.23.153">
      <Disks>
        <Disk name="disk_resource_10gb" path="/ror/zones/zone1" size="10.0"/>
        <Disk name="disk_resource_20gb" path="/ror/zones/zone2" size="20.0"/>
        <Disk name="disk_resource_30gb" path="/ror/zones/zone3" size="30.0"/>
      </Disks>
    </VmHost>
  </VmHosts>
</Storage>
```

- h. Create and register disk resources in a storage pool (admin server)

Specify the XML file of disk resource configuration information for virtual L-Servers that was created in step g, then execute the rcxadm disk command. Disk resources for virtual L-Servers are created and registered in the storage pool.

```
# /opt/FJSVrcvmr/bin/rcxadm disk register -file
XML_file_of_disk_resource_configuration_information_for_virtual_L-Servers <RETURN>
```

Example

Execution Example of the Following Case:

XML file of disk resource configuration information for virtual L-Servers: /root/rcxvmdiskagt_dir/rcxvmdisk_Storage_Pool_1.xml

```
# /opt/FJSVrcvmr/bin/rcxadm disk register -file /root/rcxvmdiskagt_dir/rcxvmdisk_Storage_Pool_1.xml
<RETURN>
```

3. Register network resources

If the NIC and network resources are connected when an L-Server is created, the settings matching the network resource definition will be registered automatically for the VM host that the L-Server will operate on.

For details, refer to "[8.7.4 Manual Network Configuration](#)".

4. Register network device resources

Create a network resource to be used on the L-Platform. If the type of the network devices is Firewall or SLB, register them to the network pool.

For details, refer to "14.4 Network Devices" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

5. Register virtual image resources

Register the virtual image resources used when creating virtual L-Servers in the resource pool.

It is necessary to create a BladeLogic virtual package in advance and register it with Resource Orchestrator.

For details, refer to "[8.7.5 Creating and Importing Cloning Images](#)".

8.7.4 Manual Network Configuration

Specify the network interface to be allocated to an L-Server (non-global zone) based on the network resource. Therefore, it is necessary to associate the network resource and the network interface in the global zone in advance.

When Using Solaris Zones (Solaris 11)

A virtual NIC is automatically allocated to the network interface associated using the `anet` of Solaris 11 during L-Server creation.

In the global zone, only one network interface can be associated with one network resource. However, it is possible to associate multiple network interfaces by associating the `aggr Link` created using the `dladm create-aggr` command.

The VLAN ID specified for the network resource is set to the virtual NIC.

To associate network resources and network interfaces, use the definition file.

For details on definition file format, refer to "[File Format for Virtual Network Definitions](#)".

When Using Solaris Zones (Solaris 10)

In the global zone, only one network interface can be associated with the network resource. When there are multiple network interfaces in the global zone, create a network resource for each network interface.

When using exclusive IP settings, the network interface in the global zone must be allocated to only one non-global zone. Only specify the network resources for one L-Server.

Use the VLAN ID as an identifier in order to associate the network resource with the network interface in the global zone. Use different VLAN IDs for each network interface in the global zone.

The VLAN ID is used as an identifier, but VLAN settings are not performed. When VLAN settings are required, configure them in advance.

To associate network resources and network interfaces, use the definition file.

For details on definition file format, refer to "[File Format for Virtual Network Definitions](#)".

Preparation

It is necessary to configure the following settings beforehand.

1. Check the Network Interface

In VM hosts (global zones) managed with Resource Orchestrator, check that the network interfaces used by VM guests are not being used.

When migrating VM guests (non-global zone) between VM hosts (global zones), check if the source and destination network interfaces have the same name.

When configuring the network interface, if using a server virtualization software other than a Solaris Zone on the same manager, check that a different name from the one used for a virtual switch, a virtual network, or a virtual bridge on the other server virtualization software is used.

2. Define the Supported Network Interface and VLAN IDs.

Define the supported network interface and VLAN IDs in the virtual network definition file for Resource Orchestrator.

For details on definition file format, refer to "[File Format for Virtual Network Definitions](#)".

3. Create Network Resources

- From the GUI:

Create network resources using the VLAN IDs specified in step 2.

In the [Create a network resource] dialog, check the [Use configured virtual switches/port profile.] checkbox.

- From the Command-line:

a. Create the XML file that defines network resources.

Define the VLAN ID specified in step 2 in the XML file.

In this case, specify auto="false" in the Network element.

b. To create the network resource, execute the rxcadm network create command specifying the XML file created in step a.

The network resources are created.

For details on the rxcadm network command, refer to "3.9 rxcadm network" in the "Reference Guide (Command/XML) CE".

For details on the Network element, refer to "15.6 Network Resources" in the "Reference Guide (Command/XML) CE".

File Format for Virtual Network Definitions

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvnr/customize_data

Definition File Name

vnetwork_solariscontainer.rcxprop

Definition File Format

Describe the network definition file in one line as below:

- When Using Solaris Zones (Solaris 11)

```
"Physical link or aggr Link"=VLAN ID
```

When using Solaris 11 Zones, specify the link where the virtual NIC is created, on the left side. Physical Link and aggr Link can be specified. When specifying a physical Link, a device instance name including the driver name and device instant number, and a generic link name can be specified.

- When Using Solaris Zones (Solaris 10)

```
"Network interface name"=VLAN ID
```

When using Solaris 10 Zones, specify the network interface allocated to an L-Server (non-global zone), on the left side. A device instance name including the driver name and device instant number can be specified.

For the VLAN ID, a value from 1 to 4094 can be specified.

Note

- Blank spaces before and after equal signs ("=") are ignored.
- Describe the network interface name, physical Link, and aggr Link correctly, as entry is case-sensitive.
- When the same VLAN ID is included in a line with a different network interface name, a physical Link, or an aggr Link, the first occurrence in the file is valid and the lines after it are ignored.
- Save files using the UTF-8 character code.
- An error occurs during L-Server (non-global zone) creation if the definition of the VLAN ID of the network resource connected to the NIC cannot be found.

Example

```
"bge1"=12  
"e1000g0"=34  
"net4"=56  
"aggr1"=78
```

8.7.5 Creating and Importing Cloning Images

This section explains how to create and import cloning images.

8.7.5.1 When Using Solaris Zones (Solaris 11)

Use the following procedure to register cloning images in the image pool.

1. Create Cloning Images

Copy the "[Sample Image File](#)" prepared in "[Storage Location of Sample Image](#)" in the Resource Orchestrator manager by default to the "[Image Storage Directory](#)".

If necessary, edit the sample image file, and create a new cloning image.

When creating a new image file, refer to "[Advisory Notes when Creating a New Image File](#)".

2. Import Cloning Images

Execute the rcxadm image refresh command to import the cloning image.

For details, refer to "4.1 rcxadm image" in the "Reference Guide (Command/XML) CE".

3. Register Cloning Images in the Image Pool

Register the cloning image in the image pool.

For details, refer to "14.7.1 Virtual Image Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Storage Location of Sample Image

The storage location of the sample image is as follows:

When using the sample image itself, copy the whole directory in "[Image Storage Directory](#)".

[Windows Manager]

Installation_folder\SVROR\Manager\etc\vm_image\zone\sample\zone_sol11

[Linux Manager]

/etc/opt/FJSVrcvnr/vm_image/zone/sample/zone_sol11

Sample Image File

Sample Image Name

zone_sol11

File to Configure Images

The files for configuring images for Solaris 11 are as follows:

None of these files can be omitted. If there is a file which does not exist, L-Server creation will end abnormally.

For details on each file, refer to the Solaris manuals.

- zone.conf

The following is the file which describes the output result of the following command:

```
zonecfg -z Non-global_zone_name export
```

However, it is necessary to delete the descriptions of zonpath and anet.

The non-global zone is created based on this file.

Describe the following in the sample file.

```
create -b
set brand=solaris
set autoboot=false
set ip-type=exclusive
```



When creating an L-Server, add or modify the following resources and attributes as necessary.

Therefore, do not describe resources or attributes which are in exclusive relationships with these attributes in zone.conf.

- zonpath

Even if zonpath is described, it is ignored if there are no problems in the content

When there are problems in the zonpath description, the L-Server creation process will end abnormally.

- pool

- capped-memory: physical

- capped-cpu: ncpus

- anet

Even if the anet resource is described, the L-Server will be created successfully if there are no problems in the content.

However, after creation MAC addresses may conflict during operation. In this case, the L-Server will fail to start after stopping.

When there are problems in the descriptions in the anet resource, L-Server creation will end abnormally.

- fs

Example combination of resources and attributes in exclusive relationships

- capped-cpu and dedicated-cpu

- anet and ip-type=shared

- ai_manifest.xml

The AI manifest specified when installing an OS.

The package and the disk partition to install are defined in the XML format.

When creating an L-Server, SOLARIS_REPO in the file is replaced with the global zone settings.

The parts that cannot be modified by the user are those underlined.

```

<?xml version="1.0" encoding="UTF-8"?>
<!--

All rights reserved, Copyright Fujitsu LIMITED 2014

-->
<!DOCTYPE auto_install SYSTEM "file:///usr/share/install/ai.dtd.1">

<auto_install>
  <ai_instance name="zone_ror">
    <target>
      <logical>
        <zpool name="rpool">
          <filesystem name="export" mountpoint="/export"/>
          <filesystem name="export/home"/>
          <be name="solaris">
            <options>
              <option name="compression" value="on"/>
            </options>
          </be>
        </zpool>
      </logical>
    </target>

    <software type="IPS">
      <destination>
        <image>
          <!-- Specify locales to install -->
          <facet_set="false">facet.locale.*</facet>
          <facet_set="true">facet.locale.de</facet>
          <facet_set="true">facet.locale.de DE</facet>
          <facet_set="true">facet.locale.en</facet>
          <facet_set="true">facet.locale.en US</facet>
          <facet_set="true">facet.locale.es</facet>
          <facet_set="true">facet.locale.es ES</facet>
          <facet_set="true">facet.locale.fr</facet>
          <facet_set="true">facet.locale.fr FR</facet>
          <facet_set="true">facet.locale.it</facet>
          <facet_set="true">facet.locale.it IT</facet>
          <facet_set="true">facet.locale.ja</facet>
          <facet_set="true">facet.locale.ja *</facet>
          <facet_set="true">facet.locale.ko</facet>
          <facet_set="true">facet.locale.ko *</facet>
          <facet_set="true">facet.locale.pt</facet>
          <facet_set="true">facet.locale.pt BR</facet>
          <facet_set="true">facet.locale.zh</facet>
          <facet_set="true">facet.locale.zh CN</facet>
          <facet_set="true">facet.locale.zh TW</facet>
        </image>
      </destination>
      <source>
        <publisher name="solaris">
          <origin name="SOLARIS_REPO"/>
        </publisher>
      </source>
      <software_data action="install">
        <name>pkg:/entire@latest</name>
        <name>pkg:/group/system/solaris-small-server</name>
      </software_data>
    </software>
  </ai_instance>
</auto_install>

```

- sc_profile.xml

The SC profile specified when installing an OS.

The information configured in the OS, such as the host name or IP address is defined in the XML format.

The parts that cannot be modified by the user are those underlined.

```
<!DOCTYPE service_bundle SYSTEM "/usr/share/lib/xml/dtd/service_bundle.dtd.1">
<service_bundle type="profile" name="sysconfig">
  <u>service version="1" type="service" name="system/config-user">
    <u>instance enabled="true" name="default">
      <u>property_group type="application" name="root account">
        <propval type="astring" name="login" value="root"/>
        <propval type="astring" name="password" value="ROOT_PASSWORD"/>
        <propval type="astring" name="type" value="ROOT_TYPE"/>
      </u>property_group>
      <u>property_group type="application" name="user account">
        <propval type="astring" name="login" value="USER_NAME"/>
        <propval type="astring" name="password" value="USER_PASSWORD"/>
        <propval type="astring" name="type" value="normal"/>
        <propval type="count" name="gid" value="10"/>
        <propval type="astring" name="shell" value="/usr/bin/bash"/>
        <propval type="astring" name="roles" value="root"/>
        <propval type="astring" name="profiles" value="System Administrator"/>
        <propval type="astring" name="sudoers" value="ALL=(ALL) ALL"/>
      </u>property_group>
    </u>instance>
  </u>service>
  <u>service version="1" type="service" name="system/timezone">
    <u>instance enabled="true" name="default">
      <u>property_group type="application" name="timezone">
        <propval type="astring" name="localtime" value="TIMEZONE"/>
      </u>property_group>
    </u>instance>
  </u>service>
  <u>service version="1" type="service" name="system/environment">
    <u>instance enabled="true" name="init">
      <u>property_group type="application" name="environment">
        <propval type="astring" name="LANG" value="LOCALE"/>
      </u>property_group>
    </u>instance>
  </u>service>
  <u>service version="1" type="service" name="system/identity">
    <u>instance enabled="true" name="node">
      <u>property_group type="application" name="config">
        <propval type="astring" name="nodename" value="HOSTNAME"/>
      </u>property_group>
    </u>instance>
  </u>service>
  <u>service version="1" type="service" name="system/console-login">
    <u>instance enabled="true" name="default">
      <u>property_group type="application" name="ttymon">
        <propval type="astring" name="terminal_type" value="vt100"/>
      </u>property_group>
    </u>instance>
  </u>service>
  <u>service version="1" type="service" name="network/physical">
    <u>instance enabled="true" name="default">
      <u>property_group type="application" name="netcfg">
        <propval type="astring" name="active_ncp" value="DefaultFixed"/>
      </u>property_group>
    </u>instance>
  </u>service>
```



```

<service version="1" type="service" name="network/install">
  <instance enabled="true" name="default">
    <property_group type="application" name="install_ipv4_interface">
      <propval type="astring" name="address_type" value="ADDRESS_TYPE"/>
      <propval type="net_address v4" name="static_address" value="IP_ADDRESS"/>
      <propval type="astring" name="name" value="LINK_NAME/v4"/>
      <propval type="net_address v4" name="default_route" value="DEFAULT_ROUTE"/>
    </property_group>
    <property_group type="application" name="install_ipv6_interface">
      <propval type="astring" name="stateful" value="yes"/>
      <propval type="astring" name="stateless" value="yes"/>
      <propval type="astring" name="address_type" value="addrconf"/>
      <propval type="astring" name="name" value="LINK_NAME/v6"/>
    </property_group>
  </instance>
</service>
<!--
<service version="1" type="service" name="system/name-service/switch">
  <property_group type="application" name="config">
    <propval type="astring" name="default" value="files"/>
    <propval type="astring" name="host" value="files dns"/>
    <propval type="astring" name="printer" value="user files"/>
  </property_group>
  <instance enabled="true" name="default"/>
</service>
<service version="1" type="service" name="system/name-service/cache">
  <instance enabled="true" name="default"/>
</service>
<service version="1" type="service" name="network/dns/client">
  <property_group type="application" name="config">
    <property type="net_address" name="nameserver">
      <net_address_list>
        <value_node value="DNS_ADDR1"/>
        <value_node value="DNS_ADDR2"/>
        <value_node value="DNS_ADDR3"/>
      </net_address_list>
    </property>
    <property type="astring" name="search">
      <astring_list>
        <value_node value="SEARCH_DOM1 SEARCH_DOM2 SEARCH_DOM3"/>
      </astring_list>
    </property>
  </property_group>
  <instance enabled="true" name="default"/>
</service>
-->
</service_bundle>

```

Image Storage Directory

[Windows Manager]

Installation_folder\SVROR\Manager\etc\vm_image\zone\sol11

[Linux Manager]

/etc/opt/FJSVrcvmr/vm_image/zone/sol11

Advisory Notes when Creating a New Image File

Advisory notes when creating a new image file are as follow:

- Create a new image based on the sample image.
Do not modify the file name of the sample image.
- Do not modify the following values described in the sample image file.
 - The definition values described in zone.conf, and ai_manifest.xml
New definitions can be added.
 - Definition values of the following items described in sc_profile.xml
 - Password of the root account (ROOT_PASSWORD)
 - root type (ROOT_TYPE)
 - Setting items of user accounts (USER_NAME, USER_PASSWORD)
 - Time zone (TIMEZONE)
 - System locale (LOCALE)
 - Host name (HOSTNAME)
 - IP address type (ADDRESS_TYPE)
 - IP address, subnet mask (IP_ADDRESS)
 - Default gateway (DEFAULT_ROUTE)
 - NIC name (LINK_NAME)
- The image name detected using the rcxadm image refresh command will be the same as the created folder name.



Example

When a folder named "test" is created to create the image for Solaris 11, the image named "test" is detected.

Installation_folder\SVROR\Manager\etc\vm_image\zone\sol11\test

- The directory name must start with an alphabetic character (upper or lower case), and can contain up to 32 alphanumeric characters or underscores ("_"). Images not conforming to this condition cannot be imported.

8.7.5.2 When Using Solaris Zones (Solaris 10)

Use the following procedure to register cloning images in the image pool.

1. Create a BladeLogic virtual package

From the BladeLogic console, create a BladeLogic virtual package in the following folder.

Depot/ROR/Solaris/vm/container

The name of the virtual package must start with an alphabetic character (upper or lower case), and can contain up to 32 alphanumeric characters or underscores ("_").

For details, contact Fujitsu technical staff.



Point

- There are two methods to create packages. One is to copy the virtual package created when registering the server management software, and the other is to create a new package without using the package created in advance.

Create a package using one of the following methods:

When Creating a New Virtual Package

Configure any necessary additional settings after setting the following items:

[General Settings]

- Zone Name: zone
- Zone Path: /zone
- Resource Pool: pool_resource
- Auto boot on host reboot: unchecked
- Boot Zone after creation: unchecked
- Processor Settings: Default
- Memory Settings: Default

[Network Settings]

- IP Type: Exclusive

[ZFS Data Sets]

- Only UFS can be used as a file system. Do not specify this item.

[Inherited Package-Directories]

- Zone Type: Whole Root

[Custom Attributes]

- zone.cpu-cap is reconfigured, when creating or modifying an L-Server.

When Copying a Virtual Package

Copy the BladeLogic virtual package stored in the following location.

Depot/ROR/Solaris/vm/container/template/Zones

In the virtual package, only the minimum parameters necessary for operations described in "When Creating a New Virtual Package" are configured. Modify the parameters depending on your environment.

The virtual package is added to Resource Orchestrator, when server management software is registered.

- When deploying the created images to VM hosts in Solaris Zones, the images can also be used for other VM hosts.

2. Register the BladeLogic virtual package with Resource Orchestrator

Refer to "17.5.1 Collecting and Registering" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Register the virtual image resource in the resource pool

For details, refer to "14.7.1 Virtual Image Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8.7.6 Creating L-Server Templates

This section explains how to create an L-Server template.

L-Server templates can be created using the following methods.

- Using the Wizard GUI

L-Server templates can be created using the wizard GUI in the wizard format.

For details on the GUI in the wizard format, refer to "15.1 Operations Using the Wizard GUI" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- Manually

Use the following procedure to create an L-Server template:

1. Export an L-Server template

The sample L-Server templates provided with Resource Orchestrator can be exported.

For details on how to export L-Server templates, refer to "15.2.1 Export" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Edit an L-Server Template

The L-Server template output in step 1 can be edited with an editor, etc.

For details on the L-Server templates for virtual L-Servers, refer to "15.2.2 Virtual L-Server Templates" in the "Reference Guide (Command/XML) CE".

3. Import an L-Server Template

For details on how to import L-Server templates, refer to "15.2.3 Import" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8.7.7 Creating L-Servers

This section explains the creation of L-Servers.

When using a Solaris 11 VM host, it is displayed as "Solaris 11" based on the image information stored in the admin server.

For details of the images stored on the admin server, refer to "[8.7.5 Creating and Importing Cloning Images](#)".

Procedure to Create an L-Server

Use the following procedure to create L-Servers:

In this case, specify the cloning image that you want to use as an image.

1. Create an L-Server Using an L-Server Template

Create an L-Server, referring to "16.1 Creation Using an L-Server Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Create an L-Server Specifying Individual Specifications

Refer to "16.3 Creation of Virtual L-Servers Using Parameters" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

For details on the [OS] tab settings, refer to "[8.7.8 \[OS\] Tab Configuration](#)".

The cap values configured in the non-global zone are calculated using the CPU performance and the number of CPUs for L-Servers. The calculation formula is as below.

$$\text{cap value} = \text{CPU performance(GHz)} * \text{number of CPUs} / \text{physical CPU performance(GHz)} * 100$$



Information

Specified Cloning Image Files

When an L-Server is created, an image file with the settings for the non-global zone specified is stored at the following location on the global zone:

```
/ror_zones/VM_guest_name
```

The non-global zone is created referring to this file.

Once creation of the L-Server is completed, the above directory can be deleted.

8.7.8 [OS] Tab Configuration

Enter the parameters to set for the OS when creating the L-Server.

In L-Server creation, perform settings to start the non-global zone.

For Oracle Solaris Zones, only the following parameters are reflected.

Do not specify the value, as the value will not be set for the items for which entry is not required.

Table 8.29 List of Settings

Item	Solaris		Description
	Necessity of Entry	Values When Omitted	
Host name	Possible	L-Server Name	<p>Enter the host name.</p> <p>Enter a character string containing up to 21 alphanumeric characters and hyphens ("-"). Hyphens ("-") cannot be specified for the first or last characters.</p> <p>If this parameter is not specified, the L-Server name is converted and set as indicated above.</p> <p>If underscores ("_") or periods (".") are used in an L-Server name, they will be replaced with hyphens ("-"), because these characters cannot be used for host names or computer names.</p> <p>[Solaris Zones (Solaris 10)] When creating multiple NICs in the host name of the non-global zone, the second and later NICs will be configured in the following format: Specified host name-sequential number</p>
Administrator user name	Possible	root	<p>[Solaris Zones (Solaris 11)]</p> <p>Specify the administrator user name of the L-Server.</p> <p>Enter a character string beginning with an alphabetic character and containing up to 8 alphanumeric characters.</p> <p>If omitted, the value in the OS property definition file is configured. When the value is not specified in the OS property definition file, "root" is configured. (*2)</p>
Administrator password	Possible (*1)	-	<p>Specify the administrator password for the L-Server.</p> <p>Enter the password using between 1 and 255 alphanumeric characters or symbols.</p> <p>If omitted, the value in the OS property definition file is configured. (*2)</p>
Root role password	Mandatory (*3)	-	<p>[Solaris Zones (Solaris 11)]</p> <p>Specify the Root role password.</p> <p>Enter the password using between 1 and 255 alphanumeric characters or symbols.</p> <p>If omitted, the value in the OS property definition file is configured. (*2)</p>
Time zone	Possible	The same time zone as the OS of the manager	<p>[Solaris Zones (Solaris 11)]</p> <p>Specify the time zone of the OS.</p>
System locale	Possible	C (default value for the SC profile)	<p>[Solaris Zones (Solaris 11)]</p> <p>Specify the OS system locale.</p>

*1: Required when using Solaris 11.

*2: [Solaris Zones (Solaris 11)]

OS operations corresponding to value configured for the administrator user name are as follow.

Administrator User Name	OS Operation
root	A root user is created. The password is configured using the value specified for the administrator password.
Something other than root	A user with the specified administrator user name is created. The password is configured using the value specified for the administrator password. The root role is created. The password for the root role is configured using the value specified for Root role password.

*3: The necessity of entering the Root role password is determined based on the value specified for the administrator user name.

Administrator User Name	Root role password
root	Not required
Something other than root	Mandatory

Information

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.

For details, refer to "[8.1.7 OS Property Definition File](#)".

8.7.9 Configuration Required after Creating an L-Server [Solaris Zones (Solaris 11)]

This section explains configuration required after creating an L-Server.

- Setting the public LAN and admin LAN IP addresses

These are required when creating an L-Server with multiple NICs specified.

For an L-Server created by specifying a Solaris 11 image, the IP address specified as the second or successive NICs cannot be reflected to the OS.

Therefore, check the IP address configured for each NIC of the L-Server, and configure the settings on the OS.

In addition, the number attached to the end of the network interface name on the OS is the same as the index number of the L-Server.

Example

When the Index for the NIC is 1, the network interface name on the OS is net1.

- Configuration of the default gateway of the public LAN and the admin LAN

This configuration is required when it corresponds to the following conditions.

- When creating an L-Server with two or more NICs specified
- When specifying the default gateway for a second or successive NIC

Connect to the console of a non-global zone and set up a default gateway using the following procedure.

1. Check the address of the default gateway set as the network resource specified during L-Server creation.
2. Set the address of the default gateway checked in step 1 from the OS.

Refer to the manual of Solaris for the setting method.

- Permission for SSH connections of the root account (when specifying "root" for the administrator user name)

When creating the root account during L-Server creation, in the initial state the tenant administrator and the tenant user cannot log in to the OS using SSH.

It is necessary to permit SSH connections of the root account for the tenant administrator or the tenant user to enable login to the OS using SSH.

Refer to the manual of Solaris for the setting method.

- Use of L-Server Disks

Disk resources connected to the L-Server are equivalent to the following data set in the global zone.

<i>zpool name corresponding to the virtual storage/rcx/ VM guest name/ the diskXXX part of the device path</i>
--

The VM guest name is equivalent to the L-Server name. *XXX* is equivalent to the index number of the disk, without zero suppression. This data set is mounted on the mount point/rcx/diskxxx in the non-global zone.

8.7.10 Advisory Notes for Solaris Zone Usage

This section explains advisory notes regarding use of Solaris Zones.

Resource Pools for Solaris Zones Managed in Resource Orchestrator

In Resource Orchestrator, resource management is performed with one resource pool for a Solaris Zone being managed in each global zone.

The target resource pool can be changed.

For details, refer to "[8.7.1 Creating Definition Files](#)".

Non-Global Zone Names in Solaris Zones

When specifying the names of non-global zones managed by Resource Orchestrator, ensure that those names are unique.

When there are multiple non-global zones with the same name, those zones may be erroneously recognized as the same non-global zone. When managing all non-global zones with the same names as L-Servers, the same names can be used.

Operations when uuids Change in Solaris Zones

In Resource Orchestrator, manage the non-global zone using uuids.

As a Solaris Zone configures a uuid for each OS, when the OS is reinstalled in a non-global zone or when the global zone on which a non-global zone is started is changed, the uuid of the non-global zone changes. When a uuid changes, the operation varies depending on whether the zone is managed as an L-Server.

- When the non-global zone is not being managed as an L-Server

If an operation that leads to uuid change is performed, the non-global zone with the changed uuid will be recognized as a new non-global zone. As a result, the label, comment, and home position setting which were configured for the non-global zone will be cleared. Reconfigure those settings.

- When the non-global zone is being managed as an L-Server

If an operation that leads to uuid change is performed, when the non-global zone with the changed uuid is detected, whether the non-global zone is the same or not is determined based on the non-global zone name. If the zone is determined to be the same, settings which had been configured for that zone before the uuid changed will be inherited.

If the zone is determined to be different, such as when there are multiple non-global zones with the same name, that zone will be recognized as a new non-global zone. In that case, it is necessary to associate the zone with the L-Server and import it into the L-Platform again.

Release the L-Server from the L-Platform and delete the L-Server, then associate the server with the L-Server and import the L-Server to the L-Platform.

For details about releasing the L-Server from the L-Platform, refer to "[7.2.3.3 Releasing L-Servers](#)" in the "Operation Guide CE".

For details about deleting the L-Server, refer to "17.4 Deleting" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

For details about importing the L-Server to the L-Platform, refer to "7.2.3 Importing to L-Platform" in the "Operation Guide CE".

Migration Operations [Solaris Zones (Solaris 10)]

Resource Orchestrator provides a function which migrates non-global zones between global zones (cold migration only). This function is realized by performing the following procedure.

Prerequisites

- The non-global zone to migrate is stopped.
- The servers at the migration source and destination have the same system environment.

Process

1. Detach the non-global zone at the migration source.
Do this using `zoneadm detach`.
2. In the global zone at the migration source, unmount the disk that is mounted on the zone path of the non-global zone.
3. In the global zone at the migration destination, mount the disk on the zone path to be used by the non-global zone, according to the definition in `vfstab`.

The zone path used for the non-global zone is configured according to the definition of the registered disk resource.

4. In the global zone at the migration destination, create a non-global zone.
5. In the global zone at the migration destination, attach the non-global zone.

Here, perform this using `zoneadm attach` with the `-u` option specified.

It is not recommended to perform normal operations while carrying out migration, for the following reasons. Consider the risks before performing migration.

- If the disk resources or global zones are incorrectly configured, Resource Orchestrator will try to attach the non-global zone using an incorrect disk at the destination server. As a result, the data in the non-global zone may be corrupted or the non-global zone may disappear.
- If a migration operation fails, the zone will not be automatically rolled back to the state before the operation.

In that case, log in to the global zones at the migration source and destination and perform recovery.

When doing this, be sure to recover the migration destination first. If you recover the migration source first, the disk will be accessed from both global zones, which may corrupt the data.

CPU Performance and the Number of CPUs for L-Servers

Update the CPU performance and the number of CPUs, using the values calculated by the cap values, when the CPU performance and the number of CPUs for L-Servers are different from the values calculated from the cap values configured in the non-global zone.

When the cap values calculated using the CPU performance and the number of CPUs for L-Servers are the same as those configured for the non-global zone, the CPU performance and the number of CPUs for L-Servers are not updated, and the values are not changed from the configured values.

CPU Performance and the Number of CPUs for L-Servers when Changing cap Values in the Non-global Zone

When increasing the cap value in the non-global zone, the CPU performance for L-Servers may be the same as the value before changing of the cap value, not the CPU performance calculated by the cap value.

If this occurs, increase the cap value by one. After checking if the CPU performance for L-Servers has changed, change the cap value to the intended value.

Changing L-Server Specifications

If the CPU performance is increased by 0.1 GHz when modifying L-Server specifications, but the number of CPUs is not changed, the cap values in the non-global zone may not have been changed.

To change the cap values for certain, change the value by 0.2 GHz or more.

LUNs Shared between Multiple Global Zones

Do not mount LUNs that are shared between multiple global zones or the LUNs for the zone path used by virtual L-Servers by selecting them from the other global zone. Data may be damaged when deploying the virtual L-Server using the disk for the corresponding LUN, due to conflicting LUN access.

Non-global Zone Charges

The following settings need to be made when creating the non-global zone if the non-global zone's CPU or memory will be using the metering and usage fee functions.

However, these settings are not necessary if metering and usage fee functions are not used, or if the CPU or memory are not made the subject of charges.

Table 8.30 Setting Items when creating a non-global zone

Subject of charges	Required settings
CPU	Perform CPU sharing settings
Memory	Perform memory capping settings

Refer to the documentation that that comes with the Operating System for information on CPU sharing and memory capping.

Image Files on the Global Zone

When there is not enough free space in the image file storage area (`/ror_zones`) on the global zone, delete the image files of L-Servers which are not being created. As image files are stored in the following directory, delete the entire directory.

```
/ror_zones/VM_guest_name
```

For details on associating VM guest names with L-Server names, refer to "Point" in "16.1 Creation Using an L-Server Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8.7.11 Overcommit

This section explains the overcommit function for L-Servers.

Overcommit

The Solaris Zone overcommit function for the CPU and memory is available on Resource Orchestrator.

The Solaris Zone overcommit function for the CPU and memory virtually allows a guest OS to use more resources than that of the actual CPU and memory of a server.

Resource Orchestrator provides the following functions to utilize the Solaris Zone overcommit function when creating L-Servers.

- Setting an overcommit attribute for a resource pool

Overcommit attributes can be set for resource pools. If an L-Server template with the overcommit attribute configured is used, an L-Server with the overcommit attribute configured can be created by selecting the resource from the resource pool with overcommit configured.

- Deployment of L-Servers with more resources than those of the server

Creation of an L-Server with more resources than that of the actual CPU or memory installed on a server is possible. Whether the resulting L-Server can be started depends on the resources available on the VM host.

Installation Procedure

1. Create a VM Pool for Overcommit

For details on how to create a VM pool, refer to "Chapter 20 Resource Pool Operations" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".



.....

Refer to the "Point" described in "1. Create a VM Pool for Overcommit" in "Installation Procedure" in "8.2.11 Overcommit".

.....



.....

Refer to the "Note" described in "1. Create a VM Pool for Overcommit" in "Installation Procedure" in "8.2.11 Overcommit".

.....

For details on how to edit the L-Server template, or create and check an L-Server, perform the operations of step 3 and later described in "8.2.11 Overcommit". The values that can be configured in the L-Server template or the VM specific information definition files as described in the reference differ depending on the VM types. In Solaris Zones, the values can only be specified when configuring overcommit in the L-Server template.

8.7.12 Managing Solaris Zones Configured on a Guest Domain of OVM for SPARC

This section explains how to manage Solaris Zones configured on the guest domain of OVM for SPARC.

In this product, Solaris Zones constructed on the guest domain of OVM for SPARC can be managed.

When managing Solaris Zones constructed on the guest domain of OVM for SPARC, it is necessary to register the guest domain that composes the Solaris zones as a VM host.

The procedure for introduction of this product is as follows.

1. Install software on the control domain of OVM for SPARC

Install software and the agent of this product on the control domain of OVM for SPARC.
Refer to the following.

- "2.2.1 Preparations"
- "2.2.4 Installation [Solaris] [Solaris Zones] [OVM for SPARC]"

2. Register the server of OVM for SPARC

Register the server of OVM for SPARC.

Refer to "5.9 When Using Fujitsu M10/SPARC Enterprise" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Create a global zone on the guest domain of OVM for SPARC

Refer to Oracle manuals.

4. Install software on the guest domain of OVM for SPARC

Install software and the agent of this product on the control domain of OVM for SPARC.
Refer to the following.

- "2.2.1 Preparations"

- ["2.2.4 Installation \[Solaris\] \[Solaris Zones\] \[OVM for SPARC\]"](#)
- Refer to "E.6.2 Preparations for Servers" in the "Design Guide CE".

5. Register the guest domain as a resource

When the guest domain is registered as VM host, non-global zone made on the guest domain is displayed as VM guest. After it is confirmed that OS of the guest domain starts, it registers as VM host.

Refer to "5.9.3 Registering Guest Domains on Oracle VM for SPARC" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

6. Registering Resources in Resource Pools

Register the guest domain of OVM for SPARC in the VM pool.

For details, refer to "14.1 VM Host Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

7. Register network resources

Register network resources in the network pool.

For details, refer to "14.3 Network Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8. Register storage resources

The storage resource is registered in the storage pool.

Necessary when performing migration of the non-global zone.

For details, refer to "14.5 Storage Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

9. Linking to an L-Server

By linking the non-global zone on the guest domain of OVM for SPARC and an L-Server, it is possible to managed the non-global zone on the guest domain of OVM for SPARC as a virtual L-Server, and import it to an L-Platform.

For details, refer to "7.2.3 Importing to L-Platform" in the "Operation Guide CE".

There are cautionary notes regarding operation of this product when the guest domain of OVM for SPARC is registered as a VM host. Refer to "[8.8.8 Advisory Notes for OVM for SPARC Usage](#)".

8.8 OVM for SPARC

This section explains the settings used when using OVM for SPARC as server virtualization software.

- When Creating a Virtual L-Server

Configure the settings referring to the information in "[8.8.1 Creating Definition Files](#)" or the following sections.

- When Associating L-Servers with Configured Virtual Machines

Refer to "18.4.3 For Virtual Machines" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- Importing to L-Platforms

Refer to "7.2.3 Importing to L-Platform" in the "Operation Guide CE".



Point

.....

When Solaris Zones are constructed on the guest domain, and the guest domain is registered as a VM host, virtual L-Servers linked with the guest domain cannot be imported into the L-Platform.

.....

8.8.1 Creating Definition Files

This section explains how to create definition files.

For definition files common to virtual L-Servers, refer to "[8.1 Definition Files Commonly Shared when Creating Virtual L-Servers](#)".

Configure the definition files for enabling Solaris Zones so that VM hosts are registered based on whether the Logical Domains Manager daemon is enabled or disabled.

For details, refer to "[8.7.1 Creating Definition Files](#)".

Definition File of Whether to Save the Configuration Information

Defines whether to save the configuration information of VM guests automatically when changes are made to them. The scope of this definition file includes all VM hosts.

Automatic saving of the configuration information is triggered by the following operations:

- When performing the following operations using Resource Orchestrator:
 - Power operations of VM guests/virtual L-Servers (power on/power off/forced power off/reboot/reboot (forced))
 - Migration between servers on VM guests/virtual L-Servers
 - Creating and Deleting Virtual L-Servers
 - Modification of virtual L-Server specifications (the number of CPUs, memory size)
 - Attachment/detachment of disks to and from a virtual L-Server
- When performing the following operations for a guest domain on the control domain:
 - Creation/removal of guest domains
 - Binding/unbinding of resources
 - Stopping/starting of a guest domain
 - Modification of the number of CPUs and memory size
 - Addition/deletion of virtual disks
 - Migration of a guest domain

Storage Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvmr/customize_data



Information

The sample definition file (sparc_vm.rcxprop.sample) is stored in the location above.

When using the sample as the definition file, delete the ".sample" included in the file name after changing the content.

Definition File Name

sparc_vm.rcxprop

Character Code

UTF-8

Line Break Code

[Windows Manager]

CR/LF

[Linux Manager]

LF

Definition File Format

In the definition file, an item to define is entered on each line. Each line must be entered in the following format.

<i>Key = Value</i>

When adding comments, start the line with a number sign ("#").

Definition File Items

Specify the following items:

Key	Description
OVM_AUTO_SAVE_CONFIG	Use this key to specify whether to save the configuration information of VM guests automatically. <ul style="list-style-type: none">- If "true" is specified The configuration information of VM guests will be saved automatically.- If "false" is specified The configuration information of VM guests will not be saved automatically.



Example

When saving the configuration information of VM guests automatically

```
OVM_AUTO_SAVE_CONFIG=true
```



Note

- When more than two lines are written, the configurations described in the last line are valid.
- Blank spaces and tabs directly before and after an equal sign ("=") are ignored.
- Describe the definitions carefully, as entry is case-sensitive.
- When it corresponds to the following conditions, the operation becomes the same as the case when "true" is specified.
 - When the definition is omitted
 - When a value other than true/false is specified
- If you edit and save a UTF-8 text file using Windows Notepad, the Byte Order Mark (BOM) is stored in the first three bytes of the file, and the information specified on the first line of the file will not be analyzed correctly. When using Notepad, specify the information from the second line.
- The definition file configurations are reflected without restarting the manager in Resource Orchestrator.

Definition of connection information of the installation server

Define the following required information in order to connect with the installation server of Solaris 11.

Use the UTF-8 character code for definition files.

- URL which shows the location of an installation server

Indicate the URL for the wanboot-cgi program on an installation server in the definition file.

The URL for the wanboot-cgi program is defined as a parameter called "root_server" of the following configuration file on the installation server.

- File Name

```
/etc/netboot/wanboot.conf
```

- The parameter name defined for the URL

```
root_server
```

Storage Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvmr/customize_data



Information

The sample definition file (ovm_sparc_install_server.rcxprop.sample) is stored in the location above.

When using the sample as the definition file, delete the ".sample" included in the file name after changing the content.

Definition File Name

ovm_sparc_install_server.rcxprop

Character Code

UTF-8

Line Break Code

[Windows Manager]

CR/LF

[Linux Manager]

LF

Definition File Format


In the definition file, an item to define is entered on each line. Each line must be entered in the following format.

<i>Key = Value</i>

When adding comments, start the line with a number sign ("#").

Definition File Items

Specify the following items:

Key	Description
INSTALL_SERVER	Specify the URL which shows the location of the installation server.  Example http://192.168.11.12:5555/cgi-bin/wanboot-cgi



Note

- When the same key is defined in more than two lines, the configuration in the last line is valid.
- Blank spaces and tabs directly before and after an equal sign ("=") are ignored.
- Describe the definitions carefully, as entry is case-sensitive.
- When a definition is omitted, error message number 67136 is output.
- If you edit and save a UTF-8 text file using Windows Notepad, the Byte Order Mark (BOM) is stored in the first three bytes of the file, and the information specified on the first line of the file will not be analyzed correctly. When using Notepad, specify the information from the second line.
- The definition file configurations are reflected without restarting the manager in Resource Orchestrator.

Automatic release cancellation of the resource at the time of L-Server deletion

When deletion of L-Server is performed with this product and the guest domain for deletion is in a bound state, this product releases resources automatically (unbind) and deletes the guest domain in the bound state.

When changing a setup so that a guest domain that is in a bound state may not be deleted, indicate the definition in the following definition files.

Storage Location of the Definition File

[Windows Manager]
Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]
 /etc/opt/FJSVrcvnr/customize_data

Information

The sample definition file (sparc_vm.rcxprop.sample) is stored in the location above.
 When using the sample as the definition file, delete the ".sample" included in the file name after changing the content.

Definition File Name

sparc_vm.rcxprop

Character Code

UTF-8

Line Break Code

[Windows Manager]
 CR/LF

[Linux Manager]
 LF

Definition File Format

In the definition file, an item to define is entered on each line. Each line must be entered in the following format.

<i>Key = Value</i>

When adding comments, start the line with a number sign ("#").

Definition File Items

Specify the following items:

Key	Description
OVM_FORCE_DELETION	Define whether to change the value of auto-boot? into "false" at the time of execution of migration. - If "true" is specified Change the value of auto-boot? to "false". - If "false" is specified Do not change the value of auto-boot? to "false".

Note

- When more than two lines are written, the configurations described in the last line are valid.

- Blank spaces and tabs directly before and after an equal sign ("=") are ignored.
- Describe the definitions carefully, as entry is case-sensitive.
- When it corresponds to the following conditions, the operation becomes the same as the case when "true" is specified.
 - When the definition is omitted
 - When a value other than true/false is specified
- If you edit and save a UTF-8 text file using Windows Notepad, the Byte Order Mark (BOM) is stored in the first three bytes of the file, and the information specified on the first line of the file will not be analyzed correctly. When using Notepad, specify the information from the second line.
- The definition file configurations are reflected without restarting the manager in Resource Orchestrator.

Validation of the auto-boot? change function on migration

When performing VM guest or migration of L-Server from this product, you are advised to saving configuration information automatically by setting the value of auto-boot? to "false" in advance.

When the value of auto-boot? is set as "false" and configuration information is saved automatically on migration, include the definition for validating the function in the following definition files.

By indicating the definition for validating a function, the following processes are automatically performed on migration.

1. Change the value of auto-boot? into "false" before execution of migration, and save the configuration information.
2. Return the value of auto-boot? to the original value (true) after execution of migration.

Storage Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvmr/customize_data



Information

The sample definition file (sparc_vm.rcxprop.sample) is stored in the location above.

When using the sample as the definition file, delete the ".sample" included in the file name after changing the content.

Definition File Name

sparc_vm.rcxprop

Character Code

UTF-8

Line Break Code

[Windows Manager]

CR/LF

[Linux Manager]

LF

Definition File Format

In the definition file, an item to define is entered on each line. Each line must be entered in the following format.

<i>Key = Value</i>

When adding comments, start the line with a number sign ("#").

Definition File Items

Specify the following items:

Key	Description
OVM_SAFE_MIGRATION	Define whether to change the value of auto-boot? to "false" on execution of migration. <ul style="list-style-type: none">- If "true" is specified Change the value of auto-boot? to "false".- If "false" is specified Do not change the value of auto-boot? to "false".

Note

- When more than two lines are written, the configurations described in the last line are valid.
- Blank spaces and tabs directly before and after an equal sign ("=") are ignored.
- Describe the definitions carefully, as entry is case-sensitive.
- In the following cases, the same operation as when "false" is specified will be performed:
 - When the definition is omitted
 - When a value other than true/false is specified
- If you edit and save a UTF-8 text file using Windows Notepad, the Byte Order Mark (BOM) is stored in the first three bytes of the file, and the information specified on the first line of the file will not be analyzed correctly. When using Notepad, specify the information from the second line.
- The definition file configurations are reflected without restarting the manager in Resource Orchestrator.

Operation mode definition file for when simultaneously creating multiple L-Servers with a Solaris 11 image specified

When creation of multiple L-Servers with a Solaris 11 image specified is performed by using this product, an error may occur.

It is possible to carry out serial execution of the creation process so that an error does not occur, by indicating the operation for each L-Server in this definition file.

If necessary, edit the definition to change operation mode of the L-Server.

For example, when large numbers of L-Servers need to be created, such as during initial installations, etc., it is recommended to specify "true" for this definition.

Storage Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvmr/customize_data

Information

The sample definition file (sparc_vm.rcxprop.sample) is stored in the location above.

When using the sample as the definition file, delete the ".sample" included in the file name after changing the content.

Definition File Name

sparc_vm.rcxprop

Character Code

UTF-8

Line Break Code

[Windows Manager]
CR/LF

[Linux Manager]
LF

Definition File Format

In the definition file, an item to define is entered on each line. Each line must be entered in the following format.

```
Key = Value
```

When adding comments, start the line with a number sign ("#").

Definition File Items

Specify the following items:

Key	Description
OVM_SOL11_SERIAL_CREATION	<p>Define the operation to be performed when creating multiple L-Servers with a Solaris 11 image specified.</p> <ul style="list-style-type: none"> - If "true" is specified Carry out serial execution of the L-Server creation process. - If "false" is specified When an error occurs in L-Server creation, it will end abnormally.

Note

- When more than two lines are written, the configurations described in the last line are valid.
- Blank spaces and tabs directly before and after an equal sign ("=") are ignored.
- Describe the definitions carefully, as entry is case-sensitive.
- In the following cases, the same operation as when "false" is specified will be performed:
 - When the definition is omitted
 - When a value other than true/false is specified
- If you edit and save a UTF-8 text file using Windows Notepad, the Byte Order Mark (BOM) is stored in the first three bytes of the file, and the information specified on the first line of the file will not be analyzed correctly. When using Notepad, specify the information from the second line.
- The definition file configurations are reflected without restarting the manager in Resource Orchestrator.

8.8.2 Registering Resources with Resource Orchestrator

This section explains how to register resources with Resource Orchestrator.

Use the following procedure to register resources:

Register Managed Servers

Refer to "5.9 When Using Fujitsu M10/SPARC Enterprise" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Register server management software

Register BMC BladeLogic Server Automation as server management software. Perform the necessary preparations before registration.

For details on preparations, refer to ["H.1 Coordination with BMC BladeLogic Server Automation"](#).

For details on how to register server management software, refer to ["5.12 Registering BMC BladeLogic Server Automation"](#) in the ["User's Guide for Infrastructure Administrators \(Resource Management\) CE"](#).

8.8.3 Registering Resources in Resource Pools

This section explains the registration of resources to resource pools.

Use the following procedure to register a resource to a resource pool:

1. Register VM host resources
 - a. 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.
 - b. Select the VM host to register.
 - c. Click the [OK] button.

For details, refer to ["14.1 VM Host Resources"](#) in the ["User's Guide for Infrastructure Administrators \(Resource Management\) CE"](#).

2. Register disk resources

Register the raw devices or partitions used by VM guests as disk resources.

When migrating VM guests for virtual L-Servers, register the raw devices or the partitions shared between multiple VM hosts as disk resources defined to be shared.

Perform the following procedure:

- a. Create a storage pool (admin server)

To use a storage pool other than default one, create the storage pool.

For details on how to create a storage pool, refer to ["20.2 Creating"](#) in the ["User's Guide for Infrastructure Administrators \(Resource Management\) CE"](#).

- b. Execute the rcxvmdiskagt command (managed servers)

Execute the rcxvmdiskagt command on each managed server. The rcxvmdiskagt command displays the raw device or partition information recognized by the VM host. In addition, this command performs redirection and outputs the execution results to a file with the extension ".xml".

Execute this command on all managed servers where disk resources are to be registered.

For details on the rcvmdiskagt command, refer to ["5.25 rcxvmdiskagt"](#) in the ["Reference Guide \(Command/XML\) CE"](#).

```
# /opt/FJSVrcvat/bin/rcxvmdiskagt -ip IP address of the managed server -vmtyp ovm-sparc > rcxvmdiskagt
command execution result XML file <RETURN>
```

Example

Output Example of the rcxvmdiskagt Command

```
>rcxvmdiskagt -ip 192.168.23.153 <RETURN>

<?xml version="1.0" encoding="utf-8"?>
<VmHost ip="192.168.23.153">
  <Disks>
    <Disk name="*" path="vol0@primary-vds0" size="10.0"/>
    <Disk name="*" path="vol1@primary-vds0" size="20.0"/>
    <Disk name="*" path="vol2@primary-vds0" size="30.0"/>
    <Disk name="*" path="vol3@primary-vds0" size="40.0"/>
```

```
<Disk name="*" path="vol4@primary-vds0" size="50.0"/>
</Disks>
</VmHost>
```

c. Delete unnecessary Disk elements (managed servers)

Delete the <Disk> elements for the following items, from the file that was output in step b.

- raw devices or partitions not used by the VM guests
- raw devices or partitions which are to be used by the VM host but are not mounted
- LVM disks

Example

Example of an XML file with <Disk> Elements Deleted

```
>rcxvmdiskagt -ip 192.168.23.153 <RETURN>

<?xml version="1.0" encoding="utf-8"?>
<VmHost ip="192.168.23.153">
  <Disks>
    <Disk name="*" path="vol0@primary-vds0" size="10.0"/>
    <Disk name="*" path="vol1@primary-vds0" size="20.0"/>
    <Disk name="*" path="vol2@primary-vds0" size="30.0"/>
  </Disks>
</VmHost>
```

d. Create an XML file storage directory (admin server)

Create a directory for storing the XML file created in step b and step c on the admin server.

e. Store XML files (admin server)

Store the XML file created in step b and step c in the directory created in step d.

f. Execute the rcxvmdisk command (admin server)

Execute the rcxvmdisk command on the admin server. The rcxvmdisk command displays part of the disk resource configuration information for virtual L-Servers in XML format. In addition, this command performs redirection and outputs the execution results to a file with the extension "xml".

For details on the rcxvmdisk command, refer to "5.24 rcxvmdisk" in the "Reference Guide (Command/XML) CE".

For details on the XML file, refer to "15.4.4 Disk Resources [OVM for SPARC]" in the "Reference Guide (Command/XML) CE".

```
# /opt/FJSVrcvmr/bin/rcxvmdisk -dir Storage directory for XML files of command execution results >
XML_file_of_disk_resource_configuration_information_for_virtual_L-Servers <RETURN>
```

Example

Execution Example of the Following Case:

Storage directory for XML files of rcxvmdiskagt command execution results: /root/rcxvmdiskagt_dir

XML file of disk resource configuration information for virtual L-Servers: /root/rcxvmdiskagt_dir/rcxvmdisk_Storage_Pool_1.xml

```
# /opt/FJSVrcvmr/bin/rcxvmdisk -dir /root/rcxvmdiskagt_dir > /root/rcxvmdisk_Storage_Pool_1.xml
<RETURN>
```

Example XML file of disk resource configuration information for virtual L-Servers

```
<?xml version="1.0" encoding="utf-8"?>
<Storage>
  <Pool name="*" />
  <VmHosts>
    <VmHost ip="192.168.23.153">
      <Disks>
        <Disk name="*" path="vol0@primary-vds0" size="10.0"/>
        <Disk name="*" path="vol1@primary-vds0" size="20.0"/>
        <Disk name="*" path="vol2@primary-vds0" size="30.0"/>
      </Disks>
    </VmHost>
  </VmHosts>
</Storage>
```

g. Specify the storage pool name

For the *name* attribute of the <Pool> element in the XML file of disk resource configuration information for virtual L-Servers which was created in step f, specify the name of the storage pool in which disk resources for virtual L-Servers are to be registered. For the *name* attribute of each <Disk> element, specify the disk resource name.

 **Example**

Example of the XML file of disk resource configuration information for virtual L-Servers when registering disk resources based on the following information:

XML file name of disk resource configuration information for virtual L-Servers: rcxvmdisk_Storage_Pool_1.xml
Storage pool name: Storage_Pool_1

Virtual Disk Service Information	Disk Resource Name
vol0@primary-vds0	disk_resource_10gb
vol1@primary-vds0	disk_resource_20gb
vol2@primary-vds0	disk_resource_30gb

XML file of disk resource configuration information for virtual L-Servers

```
<?xml version="1.0" encoding="utf-8"?>
<Storage>
  <Pool name="Storage_Pool_1" />
  <VmHosts>
    <VmHost ip="192.168.23.153">
      <Disks>
        <Disk name="disk_resource_10gb" path="vol0@primary-vds0" size="10.0"/>
        <Disk name="disk_resource_20gb" path="vol1@primary-vds0" size="20.0"/>
        <Disk name="disk_resource_30gb" path="vol2@primary-vds0" size="30.0"/>
      </Disks>
    </VmHost>
  </VmHosts>
</Storage>
```

h. Create and register disk resources in a storage pool (admin server)

Specify the XML file of disk resource configuration information for virtual L-Servers that was created in step g, then execute the rcxadm disk command. Disk resources for virtual L-Servers are created and registered in the storage pool.

```
# /opt/FJSVrcvmr/bin/rcxadm disk register -file
XML_file_of_disk_resource_configuration_information_for_virtual_L-Servers <RETURN>
```

Example

Execution Example of the Following Case:

XML file of disk resource configuration information for virtual L-Servers: /root/rcxvmdiskagt_dir/rcxvmdisk_Storage_Pool_1.xml

```
# /opt/FJSVrcvmr/bin/rcxadm disk register -file /root/rcxvmdiskagt_dir/rcxvmdisk_Storage_Pool_1.xml
<RETURN>
```

3. Register network resources

- a. In the ROR console orchestration tree, right-click the target network pool, and select [Create Resource] from the popup menu. The [Create a network resource] dialog is displayed.
- b. Enter the items necessary for network resources.

For details, refer to "14.3 Network Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Point

In order to connect to an installation server, an IP address of the admin LAN is needed for creation of an L-Server an image specified. Therefore, create a network resource for the admin LAN of the VM host in the pool within the access scope of the user.

4. Register virtual image resources

Register the virtual image resources used when creating virtual L-Servers in the resource pool.

It is necessary to create a BladeLogic system package and register it with Resource Orchestrator.

a. Template configuration

Specify the data store instance name constructed in "E.7.2 Preparations for Servers" in the "Design Guide CE" as "DATA_STORE" of the "Local Properties" of the system package stored in the following location.

```
Depot/ROR/Solaris/vm/ovm/template
```

b. Create the BladeLogic system package

From the console of BladeLogic, create the BladeLogic system package in the following folder.

```
Depot/ROR/Solaris/vm/ovm
```

The name of the system package must start with an alphabetic character (upper or lower case), and can contain up to 32 alphanumeric characters or underscores ("_").

For details, contact Fujitsu technical staff.

Point

A default system package is created under the following folder at the time of registration of server management software. Copy the system package and use it.

```
Depot/ROR/Solaris/vm/ovm/template
```

The minimum parameters required for operation are set in these system packages. Modify the parameters depending on your environment.

Correct the following parameters according to the environment.

If correction of other parameters is necessary, contact Fujitsu technical staff.

In the case of Solaris 11

- [Computer Settings]
 - All the items
- [Network]
 - Name service type
- [Finish Script/Agent Install]
 - Installing RSCD agents
 - Pushing ACL
 - Executing batch job after installation
 - Forced batch job after installation
 - Application server for BMI callback

In the case of Solaris 10

- [Disk partition]
 - All the items
- [Computer Settings]
 - All the items
- [Network]
 - Name service type
- [Package Specifications]
 - All the items
- [Rules File Script]
 - All the items
- [Begin Script]
 - All the items
- [Finish Script/Agent Install]
 - Installing RSCD agents
 - Pushing ACL
 - Executing batch job after installation
 - Forced batch job after installation
 - Application server for BMI callback

-
- c. Register the BladeLogic system package with Resource Orchestrator

Refer to "17.5.1 Collecting and Registering" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- d. Register the virtual image resource in the resource pool

For details, refer to "14.7.1 Virtual Image Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8.8.4 Manual Network Configuration

ROR provides the function for connection with virtual NICs, for virtual switches created on OVM for SPARC.

Manually perform virtual switch settings on OVM for SPARC in advance.

Use a different VLAN ID for each virtual switch on OVM for SPARC to connect the virtual switches created on OVM for SPARC with virtual NICs.

Point

When a virtual L-Server connected to the following network resources is created, the VLAN ID of the network resource is set for the pvid of the virtual NIC.

- A virtual NIC connected to a public LAN network resource
- A virtual NIC connected to the admin LAN network resource of a subnet other than the admin LAN subnet used by the ROR manager for control domain management

Configure the virtual switch so that the L-Server can communicate using the virtual NIC with the pvid configured.

It is necessary to configure the following settings beforehand.

1. Create Virtual Switches on OVM for SPARC

The virtual switch must be created on the VM host, in order to connect the L-Server to the network.

Create a virtual switch with the same name (including upper and lower case characters) for all VM hosts comprising the cluster.

This enables migration of VM guests between VM hosts.

When configuring a virtual switch on OVM for SPARC and server virtualization software other than OVM for SPARC is being used with the same manager, set a different name from the one used by the virtual switch, virtual network, and virtual bridge on the other virtualization software.

For details on how to create virtual switches on OVM for SPARC, refer to the OVM for SPARC manual.

2. Configure a Virtual Switch VLAN on OVM for SPARC

Configure a vid for each virtual switch to enable the L-Server to perform bidirectional communication using the tagged VLAN via virtual switches. It is not necessary to configure vid for the virtual switches only used for communication between Resource Orchestrator and the control domain.

3. Configure Virtual Switch Communication on OVM for SPARC

Right-click the LAN switch blade in the server resource tree, and select [Modify]-[Network Settings] from the popup menu.

Configure LAN switch blades to enable communication using the tagged VLAN between virtual switches created on OVM for SPARC using the same name.

The ROR console can be used for VLAN configuration of LAN switch blade external ports.

For details, refer to "5.4.4 Configuring VLANs on LAN Switch Blades" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

4. Define the Virtual Switch Created on OVM for SPARC and the VLAN ID

Define the virtual switch created on OVM for SPARC and the VLAN ID in the virtual network definition file for Resource Orchestrator.

For details on definition file format, refer to "[File Format for Virtual Network Definitions](#)".

5. Create Network Resources

- From the GUI:

Create network resources using the VLAN IDs specified in steps 2 and 3. In the [Create a network resource] dialog, check the [Use configured virtual switches/port profile.] checkbox.

- From the Command-line:

- a. Create the XML file that defines network resources.

Define the VLAN ID specified in steps 2 and 3 in the XML file.

In this case, specify auto="false" in the Network element.

- b. To create the network resource, execute the `rcxadm network create` command specifying the XML file created in step a.

The network resources are created.

For details on the `rcxadm network` command, refer to "3.9 `rcxadm network`" in the "Reference Guide (Command/XML) CE".

For details on the Network element, refer to "15.6 Network Resources" in the "Reference Guide (Command/XML) CE".

File Format for Virtual Network Definitions

Location of the Definition File

[Windows Manager]

`Installation_folder\SVROR\Manager\etc\customize_data`

[Linux Manager]

`/etc/opt/FJSVrcvmt/customize_data`

Definition File Name

`vnetwork_ovmforsparc.rcxprop`

Definition File Format

Describe the virtual network definition file in one line as below:

```
"Name of the virtual switch service created in OVM for SPARC"=VLAN ID
```

For the VLAN ID, a value from 1 to 4094 can be specified.



Example

```
"primary-vsw0"=10
```

Blank spaces before and after equal signs ("=") are ignored.

Describe the virtual switch service name correctly, as the entry is case-sensitive.

Save files using the UTF-8 character code.

When the same VLAN ID is included in a line with a different virtual switch service name, the first occurrence in the file is valid and the lines after it are ignored.

An error occurs during L-Server creation if the definition of the VLAN ID of the network resource connected to the NIC cannot be found.

8.8.5 Creating L-Server Templates

This section explains how to create an L-Server template.

L-Server templates can be created using the following methods.

- Using the Wizard GUI

L-Server templates can be created using the wizard GUI in the wizard format.

For details on the GUI in the wizard format, refer to "15.1 Operations Using the Wizard GUI" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- Manually

Use the following procedure to create an L-Server template:

1. Export an L-Server template

The sample L-Server templates provided with Resource Orchestrator can be exported.

For details on how to export L-Server templates, refer to "15.2.1 Export" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Edit an L-Server Template

The L-Server template output in step 1 can be edited with an editor, etc.

For details on the L-Server templates for virtual L-Servers, refer to "15.2.2 Virtual L-Server Templates" in the "Reference Guide (Command/XML) CE".

3. Import an L-Server Template

For details on how to import L-Server templates, refer to "15.2.3 Import" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8.8.6 Creating L-Servers

This section explains the creation of L-Servers.

Use the following procedure to create L-Servers:

- Create an L-Server using an L-Server template
 - When there are no cloning images, or when not using already registered cloning images
 1. Create an L-Server, referring to "16.1 Creation Using an L-Server Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

When creating the L-Server, select [None] for images.
 2. Manually install the OS in the guest domain created in step 1.

For manual OS installation, refer to the OVM for SPARC manual.
 - When using an existing cloning image

Create an L-Server, referring to "16.1 Creation Using an L-Server Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE". In this case, specify the cloning image that you want to use as an image.
- Create an L-Server specifying individual specifications

Refer to "16.3 Creation of Virtual L-Servers Using Parameters" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

For details on the [OS] tab settings, refer to "8.8.7 [OS] Tab Configuration".

Point

- When the OS type of the cloning image specified during L-Server creation is "Solaris 11", the number of the IP addresses which can be set is one, and the IP address of admin LAN is set.

When the admin LAN is not specified for the NIC of the L-Server, the admin LAN IP address must be deleted by the user after creation of the L-Server.

In addition, the public LAN IP address must be configured by the user after creation of the L-Server.

Moreover, after creating the L-Server, the user needs to set IP address of public LAN. For details, refer to "[Operations after creating an L-Server](#)".

When the OS type of the image is "Solaris 10", the IP address is set to all NICs.
 - When using the following functions, perform set up manually after creating the L-Server.
 - Setting of the dependency to the guest domain (master/slave)
 - CPU Power Management
 - CPU Dynamic Resource Management

When using the CPU Dynamic Resource Management function it is necessary to allocate CPU for each thread.
-

Operations after creating an L-Server

1. Deletion of the IP address of the admin LAN

This operation is required when an L-Server fulfilling the following conditions is created.

- A Solaris 11 cloning image is specified for the image to be deployed to the L-Server
- One or more NICs are set for the L-Server
- The admin LAN is not included in the connection destination of the NIC

To deploy the cloning image to the L-Server that fulfills the above conditions, an IP address from the network resources of the admin LAN is temporarily allocated to the guest domain. This IP address remains on the OS, after the L-Server is created. Therefore, it is necessary to delete the admin LAN IP address which remains on the OS using the following procedure.

- a. Check the subnet address set for the network resource of the admin LAN.
- b. Check the IP interface name which was checked in step a. and to which the IP address of admin LAN subnet is set using the following command.

```
# ipadm show-addr <RETURN>
```

- c. Delete the IP address set for the IP interface checked in step b. using the following command.

```
# ipadm delete-addr netX/v4 <RETURN>
```

- d. Delete the IP interface checked in step b. using the following command.

```
# ipadm delete-ip netX <RETURN>
```

2. Set the IP addresses of the public LAN and admin LAN.

This operation is required, when creating an L-Server with a Solaris 11 cloning image specified.

This is necessary when two or more NICs of the L-Server are specified for the admin LAN.

The IP addresses of the public LAN and admin LAN are not reflected on the OSs of L-Servers which have Solaris 11 cloning images specified.

Therefore, after checking the IP addresses of the public LAN and admin LAN allocated for each NIC of the L-Server, set them on the OS.

In addition, the number attached to the end of the network interface name on the OS is the same as the index number of the NIC of the L-Server.



Example

When the Index is the NIC of 1

The network interface name on the OS is set to net1.

3. Set up the default gateway of the public LAN and the admin LAN.

This operation is required when it corresponds to the following conditions.

- When an L-Server with an image specified is created
- When the default gateway has been set as a network resource of the public LAN

This operation is required, when all the following conditions are satisfied.

- When two or more network resources of the admin LAN are specified for NICs of the L-Server
- When configuring a default gateway for the network resource of the admin LAN

However, the admin LAN network resource must be one other than the last one specified.

Connect to the console of a guest domain and set up a default gateway using the following procedure.

- a. Check the address of the default gateway set as the network resource specified during L-Server creation.

Check the address of the default gateway set for the applicable network resource.

- b. Set up a default gateway.

Set the address of the default gateway checked by a. from the OS.

Refer to the manual of Solaris for the setting method.

4. Check the output destination of the system log of the guest domain.

When creating an L-Server with a cloning image specified, check the output destination of the system log using the following procedures, and change the destination if necessary.

When the following conditions are met, the admin LAN IP address used temporarily when creating the L-Server is set for the output destination of the system log. In that case, ensure the output destination of the system log is changed.

- A Solaris 10 cloning image is specified
- The admin LAN IP address for the NIC is not specified

- a. Connect to the console of the guest domain, and check the output destination of the system log.

Refer to the following file and confirm the IP address specified for loghost, which is the output destination of the system log.

`/etc/inet/hosts`

- b. Changing the output place of a system log

When the output location of a system log needs to be changed, edit the file indicated in step a. and specify another IP address as loghost.

Since the definition of the admin LAN IP address used temporarily during L-Server creation remains when the IP address of admin LAN is not specified when creating the L-Server creation, delete it if necessary.

In that case, since it is necessary to change the host name of the system, refer to the Solaris manual and change the host name of the system.

Additionally, other than the file indicated in step a., there is a TCP/IP composition file (*) in which the definition for the admin LAN IP addresses used temporarily will remain. If necessary, delete the definitions in those files.

* Note: The definition remains in the following files. For details, refer to the manual of Solaris.

- `/etc/inet/ipnodes`
- `/etc/inet/netmasks`

- c. Reboot the OS

Reboot the OS and check that the system log is output to the server set as the output location for system logs.

5. Settings for sharing disks

This setting is required when sharing a disk between L-Servers (guest domains).

- a. Register a disk in a virtual disk service.
- b. Register the disk registered in step a. to a storage pool.

Disk resources can be registered by executing the `rcxadm disk register` command.

- c. Add a virtual disk to a guest domain.


8.8.7 [OS] Tab Configuration

Enter the parameters to set for the OS when creating the L-Server.

For OVM for SPARC, only the following parameters are reflected.

Do not specify the value, as the value will not be set for the items for which entry is not required.

Table 8.31 List of Settings

Item	Solaris		Description
	Necessity of Entry	Values When Omitted	
Host name	Possible	L-Server Name	<p>Enter the host name or computer name.</p> <p>Enter a character string containing up to 21 alphanumeric characters and hyphens ("-"). Hyphens ("-") cannot be specified for the first or last characters.</p> <p>If this parameter is not specified, the L-Server name is converted and set as indicated above.</p> <p>If underscores ("_") or periods (".") are used in an L-Server name, they will be replaced with hyphens ("-"), because these characters cannot be used for host names or computer names.</p> <ul style="list-style-type: none"> - When a Solaris 10 image is specified <p>When creating multiple NICs in a guest domain, this product sets the 2nd and latter NICs in the following format.</p> <p>Specified host name-suffix (01-)</p> <p>In addition, the host name set in the system becomes the host name set in the NIC connected to the admin LAN.</p> <p>When a NIC connected to the admin LAN is not created during L-Server creation, the host name set for the admin LAN NIC that is used temporarily during L-Server creation is set as the host name of the system.</p> <p> Example</p> <p>.....</p> <p>When a 3rd NIC linked to the admin LAN is added</p> <p>Host name-03 specified becomes the host name of the system.</p> <p>.....</p> <ul style="list-style-type: none"> - When a Solaris 11 image is specified <p>The specified value is set as a host name.</p>
Administrator password	Possible	-(*1, *2)	<p>Set the administrator password for the L-Server.</p> <p>Enter the password using between 1 and 255 alphanumeric characters or symbols.</p> <p>This product uses the DES system for the cipher system of passwords. The maximum number of characters which can be enciphered by a DES system is eight.</p> <p>When a character string of nine or more characters is specified as an administrator password, the first eight characters are set as the password, and anything after the ninth character is ignored. Refer to the manual or support information of Solaris for details of the DES system.</p>

*1: When the value is specified in the OS property definition file, its values are configured.

*2: When the administrator password is omitted, operation differs based on the OS of the specified image.

- When a Solaris 10 image is specified

The error message of message number 67390 is output and the process ends abnormally.

Do not omit the administrator password when you specify a Solaris 10 image.

- When a Solaris 11 image is specified

Although creation of the L-Server ended normally, it will be in the state where log in to the OS in multiuser mode is not possible. In order to make login possible in multiuser mode, change the administrator password using the following procedures.

1. On the control domain, change the value of auto-boot?, which is an environment variable of OBP, to "false".

```
# ldm set-variable auto-boot?=false guest domain's name <RETURN>
```

2. Connect to the console of the guest domain and from OBP mode, start the OS in single user mode.

For the method of starting the OS in single user mode, refer to the manual of Solaris.

3. Log in to the OS and change the password of the root account.

For the method of changing the password, refer to the manual of Solaris.

4. On the control domain, change the value of auto-boot?, which is an environment variable of OBP, to "true".

```
# ldm set-variable auto-boot?=true guest domain's name <RETURN>
```



Information

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.

For details, refer to "[8.1.7 OS Property Definition File](#)".

8.8.8 Advisory Notes for OVM for SPARC Usage

This section explains advisory notes for when using OVM for SPARC.

OS Startup Configuration while Starting Domains

When starting an OS while starting up an L-Server, specify "true" for the auto-boot? variable of the guest domain. In addition, when an L-Server is created using this product, the following values are set for the auto-boot? variable.

- When an L-Server with an image specified is created
"true" is set for the auto-boot? variable.
- When an L-Server with no image specified is created
"false" is set for the auto-boot? variable.

Connection with the console of the guest domain during L-Server creation

If it is connected with the console of a guest domain during L-Server creation, L-Server creation may fail. Therefore, do not connect with the console of a guest domain during L-Server creation.

IP address specified during L-Server creation

In order to connect to an installation server, an IP address of the admin LAN is needed for creation of an L-Server an image specified. Therefore, if an IP address of the admin LAN is not specified when creating the L-Server, a NIC for connection with the admin LAN is temporarily added to the L-Server, and an IP address from the network resources of the admin LAN is set for the guest domain. The temporarily added NIC for connection to the admin LAN is automatically deleted after creation of the L-Server.

When the default gateway is configured for the admin LAN network resource and an admin LAN IP address is temporarily configured, a default gateway is also set.

Do not specify multiple default gateways when creating an L-Server, considering that an IP address of the admin LAN default gateway is configured.

- About operation when a Solaris 11 image is specified

When an L-Server is created with a Solaris 11 image specified, the number of the IP addresses set for the guest domain is one. This is because the number of IP addresses which can be set during OS installation is one, due to the specifications of Solaris 11.

Since the IP address of the admin LAN is essential when creating an L-Server with an image specified, the IP address set for the guest domain becomes the IP address for the admin LAN.

Therefore, even if the public LAN IP address is specified during L-Server creation, the public LAN IP address is not set for the guest domain.

Also, when the admin LAN IP address is not specified during L-Server creation, the IP address of the admin LAN network resource that is used temporarily is set for the guest domain. The setting of this IP address remains on the OS after creation of the L-Server. Therefore, it is necessary to perform the following operations on the OS of a guest domain after L-Server creation.

- Delete the setting of the admin LAN IP address used temporarily
- Set the admin LAN IP address specified when creating the L-Server

In addition, please refer to "8.8.6 Creating L-Servers" of "Operations after creating an L-Server" for the above-mentioned operation.

Display of CPU Performance and the Number of CPUs for L-Servers

The number of CPUs for L-Servers are calculated using the number of CPU threads configured for the domain, and is displayed per core. The CPU performance of CPUs for L-Servers is calculated using the CPU performance and the number of CPU threads configured for the VM host.

The calculation formula is as below.

- Number of CPUs = number of threads / number of threads per core (round-up any decimal values)
- CPU performance = (number of threads * physical CPU performance) / (number of threads per core * number of CPUs)



Example

When creating an L-Server to which 2 cores (16 threads) are allocated on a VM host with a 2.8 GHz CPU, 1 core, and 8 threads

Number of CPUs = $16 / 8 = 2$

CPU performance = $(16 * 2.8) / (8 * 2) = 2.8$ (GHz)

When creating an L-Server to which 12 threads are allocated on a VM host with a 2.8 GHz CPU, 1 core, and 8 threads

Number of CPUs = $12 / 8 = 1.5 \div 2$

CPU performance = $(12 * 2.8) / (8 * 2) = 2.1$ (GHz)

CPU Capacity and Memory Capacity when Settings are Configured for Conversion Using Reservation Values

When the settings are configured to calculate using the reservation values, the same CPU capacity and memory capacity as used by a virtual machine are configured as the values for conversion using a maximum value.

Max. Number of Possible L-Servers View

In OVM for SPARC, CPU performance is the VM host's CPU performance. Therefore, the CPU performance of the L-Server template is disregarded. The number of possible L-Servers is calculated based on "the VM host's CPU performance multiplied by the number of CPUs" and memory size.

Creating an L-Server

This product only supports creation of guest domains.

When creating the I/O domain and the service domain, do so on the control domain.

Also, setting of a global zone is not performed for the created guest domain. When using a guest domain as a global zone, perform settings for the global zone on the OS of the guest domain after creating the L-Server.

Display of Disk Information

The identifier information (ID number) is displayed for the device path.

L-Server Power Operations

When functions are not supported by OVM for SPARC, stopping and rebooting of L-Servers cannot be performed.

Depending on the statuses of virtual machines, either operate virtual machines directly, or perform a forced stop or a forced reboot.

When executing power operations of VM guests in this product, binding and unbinding of resources is also executed.

- When starting a VM guest

Binding of resources is executed.

- When stopping a VM guest

Unbinding of resources is executed.

- When restarting a VM guest

Binding/unbinding of resources is not executed.

When two or more virtual L-Servers are sharing a specific disk on a VM host, when one of the virtual L-Server has been started, the other L-Server which is sharing the disk cannot be started.

I/O Domain

In Resource Orchestrator, I/O domains are detected as VM guests.

An I/O domain may affect other guest domains when performing power operations.

It is recommended to perform management without linking an I/O domain with an L-Server.

This is to avoid performing incorrect operations due to confusion of the I/O domain with another guest domain, as a result of the I/O domain being managed as an L-Server or an L-Platform.

Number of VM Host CPUs

The number of cores that are recognized by the control domain is displayed for the number of CPUs of the VM host.

Adding Disks to L-Servers

When adding disks to L-Servers, the disk name of guest domains are set using the following rule.

vdisk <i>N</i>

N is the disk number (0-63) which was specified when adding the disk.

Migration Operations

When performing migration of virtual L-Servers between servers, disk resources must be linked with all disks detected by the L-servers. The candidates for the migration target are the resources which meet all of the following conditions:

- VM hosts which share the disk resources already allocated to an L-Server

- VM hosts which have the same spare server settings for the VM host

When migrating an L-Server to the VM host using one of the following methods, the L-Server after migration may be unlinked from the disk resources or the disk information may not be updated.

- Migration between servers from the server tree of the ROR console
- Migration between servers using a command with the destination VM host specified

As a product specification of OVM for SPARC, no check of whether a disk allocated to a guest domain is shared between source VM host and the target VM host is performed.

Therefore, check the following items to confirm sharing settings of disks.

- All disks allocated to the guest domain are shared with the target control domain
- The disk service and volume name are the same in the source control domain and target control domain

When executing migration of a guest domain with unshared disks, migration may be successful, but operation is not guaranteed.

After migration, it is necessary to execute the "ldm add-sconfig" command on the control domain to save VM guest configuration information on the service processor. This means the VM host configuration is retained even after a reboot.

In this product, VM guest configuration information is saved when migration of a VM guest is detected. When disabling automatic saving of configuration information of this product, disable the definition in the definition file indicated in "[Definition File of Whether to Save the Configuration Information](#)".

When a VM host fails during migration, VM guests may be started twice.

In order to prevent this, when the value of VM guest's auto-boot? variable is set as "true", please change the value of auto-boot? using the following procedures.

1. Before performing migration, change the value of auto-boot? to "false" and save configuration information.
2. After execution of migration, return the value of auto-boot? to the original value (true).

In addition, when all of the following conditions are satisfied, it is possible to perform step 1 and step 2 above automatically by including the definition in the file mentioned in "[Validation of the auto-boot? change function on migration](#)".

- The auto-save function of configuration information is enabled (*1)
- "true" is configured for the value of auto-boot? of the guest domain (*2)

*1: For details on auto-saving of auto configuration, refer to "[Definition File of Whether to Save the Configuration Information](#)".

*2: Use the following ldm command to check the auto-boot? value which is configured for the guest domain.

```
# ldm list-variable auto-boot? Guest domain name <RETURN>
```

As the result of command execution, true is configured for auto-boot? when "auto-boot?=true" is displayed.

When auto-execution of the process in steps 1 and 2 described above fails, the migration process of servers, the message number 67375 or the message number 67385 is output and migration fails.

When an error occurs, as the auto-boot? value may not be returned to the original value, check the auto-boot? value referring to the corrective actions of the error message.

As a product specification of OVM for SPARC, during execution of migration other operations cannot be performed for guest domains. So, if operations for other VM guests or L-Servers are performed during migration, those operations may fail.

When [Automatic] is specified, the L-Server does not migrate to the VM host where the L-Server (guest domain) which is sharing the disk allocated to the L-Server is located.

When the following VM host is specified as the migration point for a powered on L-Server, the operation is dependent on the specifications of OVM for SPARC.

- A VM host in which another powered on L-Server (guest domain) which is sharing the disk exists

When the following VM host is specified as the migration target and cold migration of a powered on L-Server is performed, the guest domain will fail to start after being moved to the VM host of the migration target.

- A VM host in which another powered on L-Server (guest domain) which is sharing the disk exists

CPU Performance Values of L-Servers

Resource Orchestrator calculates the CPU performance values of virtual L-Servers based on the CPU performance value of the VM host. Therefore, even when the number of CPUs of a virtual L-Server is the same, virtual L-Server's CPU performance value may change due to the VM Host's CPU performance value.

Deletion of L-Servers

When a VM guest who assigned to an L-Server is registered with this product as a VM host, the L-Server cannot be deleted.

When deleting an L-Server registered as a VM host, delete the L-Server after using the following procedures to cancel the VM host's registration.

1. When a Solaris Zone L-Server exists in a VM host, delete or release the relationship with the L-Server.
2. Delete the disk resource relationship with the VM host from the storage pool.
3. Delete unnecessary network resources from the network pool.
4. Release registration of unnecessary cloning images from the image pool.
5. Carry out registration release of the VM host from the VM pool.
6. Cancel the VM host's registration from the server tree.
7. Delete the L-Server from the orchestration tree.

Linking of a Guest Domain with Virtual L-Servers

When Solaris Zones are constructed on the guest domain, and the guest domain is registered as a VM host, virtual L-Servers linked with the guest domain cannot be imported into the L-Platform.

In addition, the virtual L-Servers that configured a Solaris Zone on a guest domain must be managed by the administrator in charge of the entire system (a supervisor or a dual-role administrator).

When the following operations are performed for a virtual L-Server created on a Solaris Zone in a guest domain, the non-global zone will also be affected, so check the scope of effect before performing the operations.

- Power operations
- Moving an L-Server between Servers (Migration)
- Modifying L-Server specifications
- Detaching a Disk

Users are advised to exclude the virtual L-Servers which configured a Solaris Zone on a guest domain from the targets of batch power control.

When using batch power control in an environment where a Solaris Zone is configured on a guest domain, set the startup priority of the virtual L-Servers which configure the Solaris Zone on the guest domain as higher than that of the virtual L-Servers configured on that Solaris Zone.

As power control uses the function of the VM management software, if power control fails, perform power operations on each L-Server.

When modifying virtual L-Server specifications, assign more resources to the guest domain than the resources of all the non-global zones created on the Solaris Zone.

When fewer resources than the resources of all of the non-global zones constructed on the Solaris Zone are assigned, the following phenomena may occur.

- It becomes impossible to start the non-global zone

- The performance of the non-global zone deteriorates

Saving of VM Guest Configuration Information

When the following operations are performed on VM guests or L-Servers using this product, it is necessary to save configuration information on a service processor.

- Power Operations (ON/OFF/OFF(Forced)/Reboot/Reboot(Forced))

When using the function for auto-saving of VM guest configuration information, VM guest configuration information is maintained even after reboot/force reboot is executed.

The reason for this is that auto-save of configuration information is executed when the statuses of VM guests or L-Servers change.

- Migration
- Creating and Deleting Virtual L-Servers
- Modification of virtual L-Server specifications (the number of CPUs, memory size)
- Adding / removing disks of virtual L-Servers

In Resource Orchestrator, configuration information is automatically saved when the operations above are performed.

Configuration information is also automatically saved when the following operations for guest domains are performed from the control domain.

- Creation/removal of guest domains
- Binding/unbinding of resources
- Stopping/starting of a guest domain
- Modification of the number of CPUs and memory size
- Addition/deletion of virtual disks
- Migration of a guest domain

When saving VM guest configurations manually, set the definition value in the definition file indicated in "[8.8.1 Creating Definition Files](#)" to false, and execute the "ldm add-spconfig" command in the control domain.

When using the function for auto-saving of VM guest configurations, be careful of the following points.

- Since auto-save of configuration information is performed when change is detected in the periodic update of servers, there is a time lag between completion of the operation and saving of composition information.

Also, when changing of the state or configuration of a guest domain is directly performed on a VM host, auto-save of the configuration information is carried out when change is detected in the periodic update of servers.

However, there will be a time lag when configuration information is saved. When directly operating the guest domain on a VM host, it is recommended to manually save the configuration information, after canceling auto-save of configuration information.

- When a VM guest/L-Server which has carried out migration is detected, saving of configuration information is performed on the source and destination VM hosts

In the auto-saving of configuration, this product overwrites the newest configuration information to the configuration with the [current] state. However, overwrite the configuration information with the [next poweron] status, when there is no configuration information with the [current] status.

- When factory-default is chosen as configuration information for updating, this product does not save configuration information (when factory-default is in [current] or the [next poweron] state).
- With this product, since the newest configuration is saved temporarily, this product creates the composition information using the name config_tmp. Therefore, do not create configuration information named config_tmp.

- In Fujitsu M10s, a maximum of eight sets of configuration information can be saved, including factory-default.
In Resource Orchestrator, as the configuration information, config_tmp, is temporarily created, only seven sets of configuration information, including the factory-default, can be created.
- Single quotes (') cannot be used in configuration names. This product does not save configurations when a single quote (') is contained in the name of the configuration information used as the candidate for updating.
- Due to the specifications of OVM for SPARC, this product cannot save configuration during execution of migration. Therefore, when migration is performed continuously, the configuration information is not saved until the final migration is completed.
- If saving of configuration information and operation of a VM host of configuration are performed simultaneously, saving of the configuration information may fail.

In such cases Message number 41127 is displayed in the event log, when this occurs, save the configuration information again. For details on how to restore configurations, refer to "3.1.1 411XX Series" in "Messages".

When executing power operations of VM hosts, it is recommended to execute power operations after canceling automatic collection of configuration information and manually saving configuration information.

CPU Dynamic Resource Management

When the CPU values of virtual L-Servers are modified in Resource Orchestrator, CPUs are allocated per core.

Therefore, the function of CPU Dynamic Resource Management becomes unable to be used (*).

When using CPU Dynamic Resource Management, it is necessary to allocate CPUs per thread for the guest domain in the control domain.

If the calculation of usage charges is enabled, the usage charge for CPUs will be calculated based on the number of CPUs changed dynamically by CPU Dynamic Resource Management.

*Note: The CPU Dynamic Resource Management function dynamically changes the number of CPUs for each thread. When CPUs are allocated per core, it is not possible to change the number of CPUs per thread. This means the CPU Dynamic Resource Management function cannot be used. For details, refer to the manual of OVM for SPARC.

Sharing disks

- During L-Server creation and disk addition, disks used by other L-Servers (guest domains) cannot be specified. When sharing a disk between two or more L-Servers (guest domains), set up the disk to share on the VM host after creating the L-Server.
- When deleting disks from L-Servers, disks shared with other L-Servers (guest domains) cannot be deleted. Delete the disk shared by two or more L-Servers (guest domains) from the VM host.
- L-Servers with disks shared with other L-Servers (guest domains) cannot be deleted. For guest domains, delete the disk shared with another L-Server (guest domain) from the VM host. Delete the L-Server after checking that the disk has been deleted in the detailed information of the L-Server.

Check the disk information of the L-Server using the GUI.

1. Display the ROR console.
2. Select the L-Server on the orchestration tree.
3. Check that the disk which was being shared is not displayed on the [Disk Information] on the [Resource Details] tab in the main panel.

8.8.9 Overcommit

This section explains the overcommit function for L-Servers.

Overcommit

The OVM for SPARC overcommit function for the CPU and memory is available on Resource Orchestrator.

The OVM for SPARC overcommit function for the CPU and memory allows a guest domain to use more virtual resources than that of the actual CPU and memory of a server.

Resource Orchestrator provides the following functions to utilize the OVM for SPARC overcommit function when creating L-Servers.

- Setting an overcommit attribute for a resource pool

Overcommit attributes can be set for resource pools. If an L-Server template with the overcommit attribute configured is used, an L-Server with the overcommit attribute configured can be created by selecting the resource from the resource pool with overcommit configured.

- Deployment of L-Servers with more resources than those of the server

Creation of an L-Server with more resources than that of the actual CPU or memory installed on a server is possible. Whether the resulting L-Server can be started depends on the resources available on the VM host.

Installation Procedure

1. Create a VM Pool for Overcommit

For details on how to create a VM pool, refer to "Chapter 20 Resource Pool Operations" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".



Refer to the "Point" described in "1. Create a VM Pool for Overcommit" in "Installation Procedure" in "8.2.11 Overcommit".



Refer to the "Note" described in "1. Create a VM Pool for Overcommit" in "Installation Procedure" in "8.2.11 Overcommit".

For details on how to edit the L-Server template, or create and check an L-Server, perform the operations of step 3 and later described in "8.2.11 Overcommit". The values that can be configured in the L-Server template or the VM specific information definition files as described in the reference differ depending on the VM types. In OVM for SPARC, the values can only be specified when configuring overcommit in the L-Server template.

8.9 Citrix XenServer

This section explains how to configure Citrix XenServer as server virtualization software.

8.9.1 Creating Definition Files

This section explains how to create definition files.

For definition files common to virtual L-Servers, refer to "8.1 Definition Files Commonly Shared when Creating Virtual L-Servers".

This section explains the definition files specific to Citrix-Xen.

For the managers and guest OSs that support the customization function, refer to "8.9.12 Customization Function of Guest OS".

Guest OS Customization Definition File

When the customization function of a guest OS is used, the following definition files are set.

Location of the Definition File

[Windows Manager]
Installation_folder\SVROR\Manager\etc\customize_data

Definition File Name

os_customize_citrixxen.rcxprop

Definition File Format

Describe each line of the definition file in the following format:

<i>Key = Value</i>

When the same key is stated in multiple lines, the definition in the line described last is valid.

Definition File Items

Specify the following items:

Key	Value	Description
The IP address of the admin LAN of the pool master name or the resource pool name of Citrix XenServer	The name of the storage repository name for storing VCD	Describe the name of the storage repository for storing VCD. Specify when using customization of guest OSs.

Note

- Describe the XenServer pool master on CitrixXen in one line.
- When the key corresponding to the IP address of the resource pool or the pool master of Citrix XenServer of the object does not exist in the definition file, an error occurs.
 - The key corresponding to the resource pool of Citrix XenServer
 - The key corresponding to the admin LAN IP address of the pool master
- Use the UTF-8 character code for this file.
- When a description starts with "#", the string is regarded as a comment line.
- When both of the following are defined in a definition file, the line in which the resource pool name is defined is used.
 - The Citrix XenServer resource pool name
 - The admin LAN IP address of a pool master belonging to the above resource pool
- When there are two or more lines of the following definition, the latter line will be used.
 - The same resource pool name
 - The IP address of the pool master
- Equal signs ("="), underscores ("_"), and single quotes (') cannot be used for the resource pool name or the storage repository name.

Customizable OS type definition file

When using the customization function of guest OS, define a customizable OS type in the following definition files.

Location of the Definition File

[Windows Manager]
Installation_folder\SVROR\Manager\etc\customize_data

Definition File Name

customizable_os_type_citrixxen.rcxprop

Definition File Format

Describe each line of the definition file in the following format:

OS Type

- Describe the OS type of the VM guest of XenServer for OS Type.
- When a description starts with "#", the string is regarded as a comment line.
- Empty lines are ignored.
- Use the UTF-8 character code for files.
- Everything from the start of a line to the next line feed code is treated as a single OS type.
- When there are two or more lines of the same OS type, the specifications in all lines are used.

Point

Describe the OS type of the template of XenServer in OS type.

OS type can be acquired using the following commands. Refer to the Citrix web site for the relevant product manual.

```
>xe vm-param-get uuid=Template_UUID param-name=os-version param-key=name <RETURN>
```

Citrix Web site

URL: <http://support.citrix.com/product/xens/>

OS Type Conversion Definition File

In Resource Orchestrator, the OS type (Windows/Linux) of L-Servers is determined based on information obtained from VM products. In some cases, OS information cannot be correctly acquired for some VM products. As a result, processes of this product may not be performed correctly.

In detailed information of L-Servers that use Windows OS or Linux OS, when the character string of "Windows" or "Linux" is not included in OS type, edit this definition file to display the correct OS type.

By relating part of the OS type displayed in the detailed information of the L-Server and the correct OS type name in this definition file, the L-Server will be processed as an L-Server of the specified OS type.

For Windows, client OS and server OS are judged from OS type information in ROR. Define the correct OS type including the character string "Server" when the server OS is Windows and OS information is not displayed correctly.

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

Definition File Name

convert_os_type.rcxprop

Definition File Format

Describe each line of the definition file in the following format:

"OS type of detailed information on L-Server"="Correct OS type"

- OS type describes the OS type of the detailed information of the L-Server.
- When a description starts with "#", the string is regarded as a comment line.
- Empty lines are ignored.

- Use the UTF-8 character code for files.
- Only the first line defined is used when there are two or more lines of the same "OS type of detailed information on L-Server".
- Specify the correct OS type using alphanumeric characters.
- The "OS type of detailed information on L-Server" is not case-sensitive.
- The character string in "OS type of detailed information on L-Server" is used to determine if the OS is a guest OS or server OS.

Example Definition File

In the following example, the OS type "Microsoft" displayed in detailed information of an L-Server is converted into the correct OS type, "Microsoft Windows Server 2008 Standard Edition".

```
"Microsoft"="Microsoft Windows Server 2008 Standard Edition"
```

8.9.2 Registering Resources with Resource Orchestrator

This section explains how to register resources with Resource Orchestrator.

Use the following procedure to register resources:

When Using Blade Servers

1. Register VM Hosts as storage management software.

Register one of the VM hosts belonging to the pools on Citrix XenServer. It is not necessary to register all VM hosts that belong to the pools.

When registering VM hosts as storage management software, the storage repositories that were created in advance during storage pre-configuration are automatically registered with Resource Orchestrator as virtual storage resources.

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

For details on the `rcxadm storagemgr` command, refer to "5.17 `rcxadm storagemgr`" in the "Reference Guide (Command/XML) CE".

2. Register Chassis

Refer to "5.4.1 Registering Chassis" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Register Managed Servers (within Chassis)

When registering managed servers, the storage repositories that were created in advance during pre-setup preparations are automatically registered in Resource Orchestrator as virtual storage resources. When the registered managed server is a Pool Master, the templates created in advance are automatically registered as virtual cloning images by Resource Orchestrator.

For details on how to register managed servers, refer to "5.4.2 Registering Blade Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

4. Register LAN switch blades

Refer to "5.4.3 Registering LAN Switch Blades" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

To register a network resource, specify a network pool when creating the network resource.

For details, refer to "Chapter 14 Registering Resources in Resource Pools" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

When Using a Server other than a Blade Server

1. Register VM Hosts as Storage Management Software

Register one of the VM hosts belonging to the pools on Citrix XenServer. It is not necessary to register all VM hosts that belong to the pools.

When registering VM hosts as storage management software, the storage repositories that were created in advance during storage pre-configuration are automatically registered with Resource Orchestrator as virtual storage resources.

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

For details on the `rcxadm storagemgr` command, refer to "5.17 `rcxadm storagemgr`" in the "Reference Guide (Command/XML) CE".

2. Register Managed Servers

When registering managed servers, the storage repositories that were created in advance during pre-setup preparations are automatically registered in Resource Orchestrator as virtual storage resources. When the registered managed server is a Pool Master, the templates created in advance are automatically registered as virtual cloning images by Resource Orchestrator.

For details on how to register managed servers, refer to "5.5.1 Registering Rack Mount or Tower Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Register LAN Switches

Refer to "5.13 Registering LAN Switches (L2 Switches)" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

To register a network resource, specify a network pool when creating the network resource.

For details, refer to "Chapter 14 Registering Resources in Resource Pools" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8.9.3 Registering Resources in Resource Pools

This section explains the registration of resources to resource pools.

Use the following procedure to register a resource to a resource pool:

1. Register VM host resources

- a. 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.

- b. Select the VM host to register.
- c. Click the [OK] button.

For details, refer to "14.1 VM Host Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".



Register all VM hosts in the resource pool on Citrix XenServer as managed servers on Resource Orchestrator. Register such VM hosts in all VM pools.

2. Register storage resources

Register the virtual storage resources used when creating virtual L-Servers in the resource pool.

For details, refer to "14.5 Storage Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

When using Thin Provisioning, configure the settings as follows:

When registering an NFS storage repository as a virtual storage resource registered in a storage pool with Thin Provisioning attributes set, the amount of space of virtual storage is calculated as Thin Provisioning.

For how to set Thin Provisioning attributes for a storage pool, refer to "20.2 Creating" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

For details on the display of available free space of storage pools and the calculation method for free space, refer to "20.6 Viewing" in the "User's Guide for Infrastructure Administrators (Resource Management) CE". Replace "VMware datastore" with "Citrix XenServer storage repository".

Note

When registering a NFS storage repository as a virtual storage resource in a storage pool without Thin Provisioning attributes set, as calculation is performed assuming that the necessary amount of space has been allocated, the amount of available space is less than the actual free space.

When registering a storage repository other than NFS as a virtual storage resource registered in a storage pool with Thin Provisioning attributes set, secure the necessary space, and allocate the disk resources to an L-Server.

3. Registration of network resources
4. Register network device resources
5. Register Address Set Resources

When using Citrix XenServer, it is necessary to register MAC addresses in the address pool. As the management for availability of VM guest MAC addresses is limited (only the uniqueness in resource pools of Citrix XenServer is managed), it is necessary to manage MAC addresses using Resource Orchestrator.

6. Create templates as virtual cloning images for use in Resource Orchestrator

Create a template with an OS installed. Perform the following procedure:

- a. Create a new VM guest
- b. Install an OS on the VM guest created in step a.
- c. Install XenServerTools
- d. Create a template from the created VM guest

7. Register virtual image resources

Register the virtual image resources used when creating virtual L-Servers in the resource pool.

For details, refer to "14.7.1 Virtual Image Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Point

The information for virtual image resources is obtained from Citrix XenServer Pool Masters registered with Resource Orchestrator. If Pool Masters have not been registered, register the Pool Masters as VM hosts. Wait a couple of minutes and then perform the registration operation again.

When the customization function of the VM guest is used, the following procedures are necessary in addition to the above-mentioned procedure.

1. Create the Citrix XenServer storage repository

Create the Windows shared folder registered in the storage repository and the storage repository of Citrix XenServer that becomes the storage location of the VCD medium.

For details, refer to "[Storage Repository of XenServer](#)" of "[8.9.12 Customization Function of Guest OS](#)" for details.

2. Creating definition files to use customization functions

When using the customization function of the guest OS, define a customizable OS type in the following definition files.

- Guest OS Customization Definition File
- Customizable OS type definition file

For details, refer to "[8.9.1 Creating Definition Files](#)".

3. Create an L-Server

Create the L-Server using either of the following methods.

- Linking to the L-Server of a configured virtual machine
 - Creating an L-Server with an image specified
4. Install the customization tool

Install the customization tool on the guest OS of the created L-Server.

For details of the installation procedure, refer to "[8.9.12 Customization Function of Guest OS](#)" of "[Installation and Deletion of the Customization Tool](#)".

5. Collect the cloning image for customization

Collect the cloning image using customization specification.

At this time, confirm the type of the system of the specified guest OS using the following procedure.

- a. Log in to the guest OS.
- b. Confirm the type of the system.

8.9.4 Manual Network Configuration

ROR provides the function for connection with virtual NICs, for the network created on XenServer.

Manually perform network settings on XenServer. Use a different VLAN ID for each network on XenServer to connect the network created on XenServer with virtual NICs. Additionally, the following settings must be performed in advance.

1. Create a XenServer Network

The network must be created on the VM host, in order to connect the L-Server to the network.

Create a network with the same name (the name is case-sensitive) for all VM hosts comprising the cluster. This enables migration of VM guests between VM hosts.

When configuring the XenServer network, if using server virtualization software other than Citrix XenServer on the same manager, configure a different name from the name used for a virtual switch, a virtual network, or a virtual bridge on the other server virtualization software.

For details on how to create a network on XenServer, refer to the Citrix XenServer manual.

2. Configure Network Communication on XenServer

Right-click the LAN switch blade in the server resource tree, and select [Modify]-[Network Settings] from the popup menu.

Configure LAN switch blades to enable communication using the tagged VLAN between networks created on XenServer using the same name.

The ROR console can be used for VLAN configuration of LAN switch blade external ports.

For details, refer to "5.4.4 Configuring VLANs on LAN Switch Blades" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Define the Supported Network Created on XenServer and the VLAN ID

Define the supported network created on XenServer and VLAN IDs in the virtual network definition file for Resource Orchestrator.

For details on definition file format, refer to "[File Format for Virtual Network Definitions](#)".

4. Create Network Resources

- From the GUI:

Create network resources using the VLAN IDs specified in steps 2 to 3. In the [Create a network resource] dialog, check the [Use configured virtual switches/port profile.] checkbox.

- From the Command-line:

- a. Create the XML file that defines network resources. Define the VLAN ID specified in steps 2 and 3 in the XML file. In this case, specify auto="false" in the Network element.
- b. To create the network resource, execute the rxcadm network create command specifying the XML file created in step a.

For details on the rcxadm network command, refer to "3.9 rcxadm network" in the "Reference Guide (Command/XML) CE".

For details on the Network element, refer to "15.6 Network Resources" in the "Reference Guide (Command/XML) CE".

File Format for Virtual Network Definitions

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvnr/customize_data

Definition File Name

vnetwork_citrixxen.rcxprop

Definition File Format

Describe the virtual network definition file in one line as below:

```
"Network Name Created on XenServer"=VLAN ID
```

For the *VLAN ID*, a value from 1 to 4094 can be specified.



Example

```
"MyVMNetwork"=10
```

- Blank spaces before and after equal signs ("=") are ignored.
- Describe the network correctly, as the entry is case-sensitive.
- Save files using the UTF-8 character code.
- When there are multiple lines with the same network name, all specified lines are valid.
- When the same VLAN ID is included in a line with a different network name, the first occurrence in the file is used and the lines after it are ignored.
- An error occurs during L-Server creation if the definition of the VLAN ID of the specified network resource cannot be found.

8.9.5 Create L-Server Templates

This section explains how to create an L-Server template.

L-Server templates can be created using the following methods.

- Using the Wizard GUI

L-Server templates can be created using the wizard GUI in the wizard format.

For details on the GUI in the wizard format, refer to "15.1 Operations Using the Wizard GUI" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- Manually

Use the following procedure to create an L-Server template:

1. Export an L-Server template

The sample L-Server templates provided with Resource Orchestrator can be exported.

Refer to "15.2.1 Export" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Edit an L-Server Template

The L-Server template output in step 1 can be edited with an editor, etc.

For details on the L-Server templates for virtual L-Servers, refer to "15.2.2 Virtual L-Server Templates" in the "Reference Guide (Command/XML) CE".

3. Import an L-Server Template

Refer to "15.2.3 Import" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8.9.6 Creating L-Servers

This section explains the creation of L-Servers.

Use the following procedure to create L-Servers:

- Create an L-Server Using an L-Server Template

Create an L-Server, referring to "16.1 Creation Using an L-Server Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- Create an L-Server Specifying Individual Specifications

Refer to "16.3 Creation of Virtual L-Servers Using Parameters" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".



The following operations for L-Server creation are not supported:

- Creation of a virtual L-Server without a cloning image specified
- Creation of a virtual L-Server with cloning images including data disks specified

8.9.7 Collecting and Registering Cloning Images

This section explains how to collect cloning images.

Use the following procedure to collect cloning images:

After installing an OS, stop the target L-Server.

1. On the ROR console, right-click the target L-Server in the orchestration tree, and select [Cloning]-[Collect] from the popup menu.
2. Click the [OK] button.

A given cloning image (identified by its name attribute) can be managed by image version.

If a cloning image is created using VM management software, it can be used as is.

Refer to "17.5.1 Collecting and Registering" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".



In Resource Orchestrator, use Citrix XenServer templates as virtual image resources. However, templates without disks cannot be used as virtual image resources, which is the same as the templates provided by default.

Install OSs and XenServerTools on templates.

8.9.8 [OS] Tab Configuration

Enter the parameters to set for the OS when creating the L-Server. This setting is only valid if an image for which OS configuration on L-Server deployment is enabled 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.

Do not specify the value, as the value will not be set for the items for which entry is not required.

Table 8.32 List of Settings

Item	Windows		Description
	Necessity of Entry	Values When Omitted	
Host name/Computer name	Possible	<i>L-Server Name</i>	Enter the host name or computer name. Enter a character string beginning with an alphanumeric character and containing up to 15 alphanumeric characters and hyphens ("-"). The string cannot be composed solely of numbers. If this parameter is not specified, the L-Server name is converted and set as indicated above. If underscores ("_") or periods (".") are used in an L-Server name, they will be replaced with hyphens ("-"), because these characters cannot be used for host names or computer names.
Domain name	Possible	WORKGROUP (*)	Enter the workgroup name. Settings for participation in a domain cannot be made. Enter a character string beginning with an alphabetic character and containing up to 15 alphanumeric characters, hyphens ("-"), and periods (".").
DNS search path	Not Required	-	Even if the DNS search path is specified, it is not configured in the guest OS.
Full name	Not Required	-	Even if the full name is specified, it is not configured in the guest OS.
Organization name	Not Required	-	Even if the organization name is specified, it is not configured in the guest OS.
Product key	Mandatory	- (*)	Omission not possible. Ensure that you specify a valid product key.
License mode	Not Required	-	Even if the license mode is specified, it is not configured in the guest OS.
Maximum number of connections	Not Required	-	Even if the maximum number of connections is specified, it is not configured in the guest OS.
Administrator password	Possible	- (*)	Enter the same password as that specified for the local administrator account during L-Server creation. When specifying a new password, the local administrator account will be overwritten. Enter the password using between 1 and 128 alphanumeric characters or symbols.
Hardware clock configuration	Not Required	-	Even if the hardware clock configuration is specified, it is not configured in the guest OS.
Time zone	Possible	<i>The same time zone as the OS of the manager</i>	Specify the time zone of the OS.

* Note: When the value is specified in the OS property definition file, its values are configured.

Information

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.

For details, refer to "[8.1.7 OS Property Definition File](#)".

Information

VM Guest Administrator Account Settings Necessary When Creating an L-Server with an Image Specified

When creating an L-Server with an image specified, it is necessary to enter the "administrator password" as a parameter.

The entered "administrator password" is the one set for the Administrator of the built-in administrator account, but on some localized editions of Windows the account name may differ. In addition, when the client OS is Windows 7 or Windows Vista, on standard installations the built-in administrator account is disabled, and the user account created during installation becomes the administrator account.

When an L-Server is created with a cloning image that was collected from a localized edition of Windows or a client OS specified, it is necessary to either configure an administrator account for the administrator and set a password, or change the name of the administrator account with the "Administrator password" so that it fits the description given in the definition file below.

Note that when using a definition file, it is not possible to define different administrator ID settings for different versions of images.

Location of the Definition File

[Windows Manager]
Installation_folder\SVROR\Manager\etc\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. Search the definition file of each user group, from the start, for the administrator name corresponding to the image. When there is no corresponding definition, search in the system's common definition file.

Modification of the definition file is soon reflected, and it becomes valid for the creation of L-Servers from that point.

- For User Groups
image_admin_citrixxen_user_group_name.rcxprop
- Common on System
image_admin_citrixxen.rcxprop

Definition File Format

In the definition file, describe the image name and account name for which the administrator password has been configured on a single line.

```
Image_name = "Administrator_account_name"
```

The *Administrator_account_name* is displayed enclosed in double quotes (").

Blank spaces and tabs other than those in the *Administrator_account_name* are ignored.

It is possible to use an asterisk ("*") as a wildcard in image names. By specifying an asterisk ("*") it is possible to create substitute strings for strings of indefinite length.

When creating an L-Server from an image, the corresponding image name is searched for from the start of the definition file, and the specified "Administrator password" will be set for the specified administrator account name.

It is necessary to create the definition files using the following line break code and character codes:

- Line Break Code
CR+LF(0x0d0a)

- Character Code
Shift-JIS in a Japanese environment, UTF-8 in other environments



Example

An example definition file is indicated below.

- Image names and administrator account names are set in pairs.

```
FR_WIN2003_001 = "Administrator"  
EN_WIN7_001 = "root"  
EN_WIN7_002 = "admin"
```

- For image names that start with "FR_WIN", use "Administrator" as the name of the administrator account.

```
FR_WIN* = "Administrator"
```

- Use "Administrator" as the name of the administrator account for all images. When an image name is specified using only a wildcard, the definition after that line will be ignored.

```
* = "Administrator"
```

8.9.9 Linking to an L-Server

This section explains how to link L-Servers.

For details on how to link to an L-Server, refer to "Chapter 18 Linking L-Servers with Configured Physical Servers or Virtual Machines" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8.9.10 Advisory Notes for Citrix XenServer Usage

This section explains advisory notes for when using Citrix XenServer.

Resource Pools on Citrix XenServer

Register all VM hosts in the resource pool on Citrix XenServer as managed servers on Resource Orchestrator. Register such VM hosts in all VM pools.

Templates Used as Virtual Image Resources

In Resource Orchestrator, use Citrix XenServer templates as virtual image resources. However, templates without disks cannot be used as virtual image resources, which is the same as the templates provided by default.

Install OSs and XenServerTools on templates.

Device 2 and 3 of a VM Guest

Devices 2 and 3 of VM guests are not used for disks as they are used for CD/DVD drives. When operating Citrix XenServer directly and connecting to device 2 or 3, they will be detected as unmanaged disks.

When importing the VM guest to a virtual L-Server, disk operations (addition or deletion) cannot be performed for the virtual L-Server.

When creating a virtual L-Server using the customization function of a guest OS, do not use device 2 of the specified cloning image.

When Creating the Image (Template) with a VM Management Product

Do not use a single quotation (') for the image name.

Snapshot

When a Virtual L-Server is powered on, snapshots cannot be used.

Corresponding Terms Related to Memory in Resource Orchestrator and Citrix XenServer

The relationship of the terms related to memory in Resource Orchestrator and Citrix XenServer is as follows:

Virtual L-Server Parameters for Resource Orchestrator	VM Guest Parameters for Citrix XenServer
Maximum memory size	Maximum static memory size (memory-static-max)
Memory size	Maximum dynamic memory size (memory-dynamic-max)
Memory Reserved	Minimum dynamic memory size (memory-dynamic-min)
None	Minimum static memory size (memory-static-min)

Memory Size when Creating an L-Server

When creating an L-Server in Resource Orchestrator, configure the same value as the Citrix XenServer VM guest for the maximum dynamic memory size. Configure 0 for the minimum static memory size. When changing the maximum dynamic memory size, or the minimum static memory size, operate Citrix XenServer directly, and modify the settings.

Maximum Number of CPUs when Creating an L-Server

In Resource Orchestrator, when creating an L-Server, configure the same values for the maximum number of CPUs as the already specified number of CPUs. When changing the maximum number of CPUs, operate Citrix XenServer directly, and modify the settings.

VM Guest Home Server Configurations

When using Citrix XenServer, while VM guests are powered off, they are not managed by a specific VM host. Therefore, in Resource Orchestrator the VM host used to manage powered off VM guests is determined based on the Home Server settings. When Home Server settings are not configured, if a VM guest is powered off, it will not be managed by Resource Orchestrator.

Then, the status of virtual L-Servers related to a VM guest will become unknown, and operations other than deletion cannot be performed. Power on the VM guest using Citrix XenServer, check that the virtual L-Server status returns to normal, and then perform the operation again.

High Availability Functions of Citrix XenServer

When using a resource pool, high-availability should be enabled for that resource pool.

If high-availability is not enabled, and the pool master become unreachable, Resource Orchestrator will not be able to control or get information from the VM hosts and VM guests placed in that resource pool. If VM guest statuses become out-of-date, or operations on VM hosts or VM guests fail, check the status of the pool master. If the pool master is not reachable, resolve any communication problem that may prevent the manager from communicating with it (if necessary, change the pool master to another VM host).

For details, refer to the manual of server virtualization software.

VM Maintenance Mode

With Citrix XenServer, a VM host assigned as a pool master cannot be put into maintenance mode.

To put such a VM host into maintenance mode, the pool master role should first be assigned to a different VM host (within the same resource pool).

Windows Shared Folder Used by the Guest OS Customization Function

Resource Orchestrator operates using the System account. Therefore, when creating a Windows shared folder for servers other than the server on which Resource Orchestrator is installed, ensure the shared folder can be accessed using the System account.

8.9.11 Overcommit

This section explains the overcommit function for L-Servers.

Overcommit

The Citrix-Xen overcommit function for the CPU and memory is available on Resource Orchestrator.

The Citrix-Xen overcommit function for the CPU and memory virtually allows a guest OS to use more resources than that of the actual CPU and memory of a server.

Resource Orchestrator provides the following functions to utilize the Citrix-Xen overcommit function when creating L-Servers.

- Setting an overcommit attribute for a resource pool

Overcommit attributes can be set for resource pools. If an L-Server template with the overcommit attribute configured is used, an L-Server with the overcommit attribute configured can be created by selecting the resource from the resource pool with overcommit configured.

- Deployment of L-Servers with more resources than those of the server

Creation of an L-Server with more resources than that of the actual CPU or memory installed on a server is possible.

Whether the resulting L-Server can be started depends on the resources available on the VM host.

Installation Procedure

1. Create a VM Pool for Overcommit

For details on how to create a VM pool, refer to "Chapter 20 Resource Pool Operations" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".



Point

.....
Refer to the "Point" described in "1. Create a VM Pool for Overcommit" in "Installation Procedure" in "8.2.11 Overcommit".
.....



Note

.....
Refer to the "Note" described in "1. Create a VM Pool for Overcommit" in "Installation Procedure" in "8.2.11 Overcommit".
.....

2. Create a VM Specific Information Definition File

Create a VM specific information definition file. Create a VM specific information definition file when configuring different settings for individual user groups without configuring overcommit settings on the L-Server template.

For VM specific information definition files, refer to "8.1 Definition Files Commonly Shared when Creating Virtual L-Servers".

For details on how to edit the L-Server template, or create and check an L-Server, perform the operations of step 3 and later described in "8.2.11 Overcommit". Since the values that can be configured in the L-Server template or the VM specific information definition files as described in the reference differ depending on the VM types, replace the values with ones for Citrix-Xen.

8.9.12 Customization Function of Guest OS

This section explains the function for customizing guest OSs of Citrix Xen.

Citrix Xen has no function for customizing guest OSs, so the ROR customization function is used when customizing guest OSs. The customization function of the guest OS is provided by using the customization tool installed on the VM guest OS to control Sysprep.

This function can be used by the following ROR managers and guest OSs.

When the customization function is executed on an unsupported ROR manager or guest OS, an error occurs.

Table 8.33 Support Scope for the Customization Function of Guest OS

Target	Support Scope
Manager	Only Windows manager is supported. For details, refer to "Table-[Windows Manager]" in "6.1.2.1 Required Basic Software" in the "Overview".
Guest OS	Microsoft(R) Windows Vista(R) Microsoft(R) Windows(R) 7 Microsoft(R) Windows(R) 8 Microsoft(R) Windows Server(R) 2008 Microsoft(R) Windows Server(R) 2008 R2 Microsoft(R) Windows Server(R) 2012



Note

When the English version of Microsoft Windows Server 2008 is used for the guest OS, the OS name might not be able to be acquired correctly. Using the conversion definition file of the OS type, it is possible to set the correct OS type.

Operation Principle of the Customization Function

The customization function is achieved using the customization tool.

The customization tool is a Windows service that operates on the guest OS. Perform control of the Windows OS Sysprep and the mini setup following the instructions of the virtual CD image (VCD medium) connected to the VM guest.

This VCD medium is created by ROR.

The customization tool is controlled as follows.

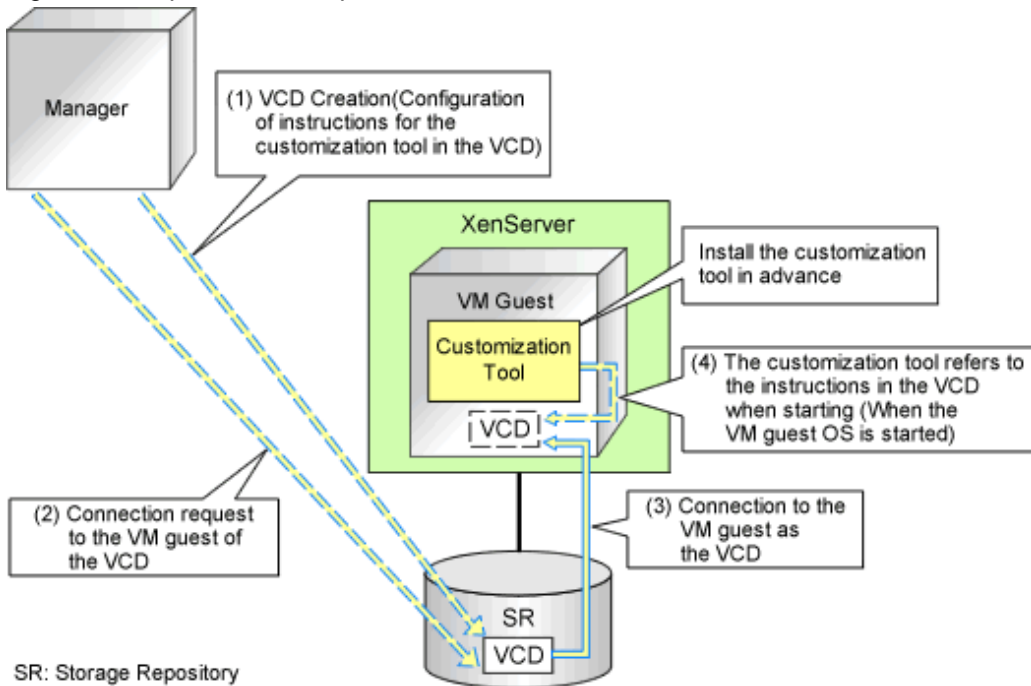
- Control of Sysprep of Windows OS

When the cloning image is gathered, Sysprep is controlled by the VCD media.

- Control of mini setup of Windows OS

Processing related to the mini setup of Windows OS is controlled as customization information is passed through the VCD medium when L-Server of the image specification is made.

Figure 8.15 Operation Principle of the Customization Function



VCD Medium

The VCD medium is automatically created for the storage repository of XenServer by ROR, and connected to the VM guest. Therefore, it is necessary to create the storage repository and the definition file of XenServer beforehand. For details on the definition file, refer to "8.9.1 Creating Definition Files".

Storage Repository of XenServer

This is the storage location of the VCD medium. When the customization function is used, it is necessary to create it beforehand.

Create the storage repository noting the following points.

- Create a storage repository for the resource pool on Citrix XenServer or the pool master.
- Specify the type of storage repository in ISO format, and the storage location as a Windows shared folder.
- Create one shared folder for each storage repository.
- Create the shared folder in an environment that the server on which the ROR manager is installed can access.
- Configure the access authority of the shared folder to grant reading/writing (Read/Write) authority to the account of Resource Orchestrator.
- Refer to the Citrix web site for the relevant product manual for the creation method.

Citrix Web site

<http://support.citrix.com/product/xens/>

Service Name of the Customization Tool

When the customization tool is installed, the service is registered in the guest OS with the following name.

Resource Orchestrator windows guest customize tool

Installation and Deletion of the Customization Tool

This section explains the procedures for installing and uninstalling the customization tool.

- Install the customization tool

1. Copy the customization tool onto a suitable folder on the guest.

Copy Tool_Storage_Folder of the ROR manager onto Folder_Name_At_Copy_Destination on the guest of each folder. The Tool_Storage_Folder is the following.

[Windows Manager]

```
Installation_folder\SVROR\Manager\opt\FJSVrcxmr\sys\winguestcustomizetool
```

The folder name becomes c:\temp\winguestcustomizetool when the copy destination is assumed to be C:\temp.

2. Start the command prompt using local administrator rights.
3. Change Current to the installation folder.

```
>cd Folder_Name_At_Copy_Destination <RETURN>
```

4. Install the customization tool.

```
>winguesttool.exe -install <RETURN>
```

5. After the installation is complete, delete Folder_Name_At_Copy_Destination.

```
>rmdir /s Folder_Name_At_Copy_Destination  
<RETURN>
```

- Uninstallation of the customization tool

1. Start the command prompt using local administrator rights.
2. Change Current to the tool storage folder.

```
>cd "%ProgramFiles%\Fujitsu\Resource Orchestrator\WinGuestCustomizeTool" <RETURN>
```

3. Uninstall the customization tool.

```
>winguesttool.exe -remove <RETURN>
```

4. Delete the installation folder of the customization tool.

When uninstallation ends normally, delete the following folders.

```
>rmdir /s "%ProgramFiles%\Fujitsu\Resource Orchestrator\WinGuestCustomizeTool" <RETURN>
```

If no other services or tools have been installed, delete the following folders.

```
>rmdir /s "%ProgramFiles%\Fujitsu\Resource Orchestrator" <RETURN>  
>rmdir /s "%ProgramFiles%\Fujitsu" <RETURN>
```

8.10 OVM for x86 3.x

This section explains how to configure OVM for x86 3.x as server virtualization software.

8.10.1 Creating Definition Files

This section explains how to create definition files.

For definition files common to virtual L-Servers, refer to "[8.1 Definition Files Commonly Shared when Creating Virtual L-Servers](#)".

The definition files specific to OVM for x86 3.x are as follow:

For the managers and guest OSs that support the customization function, refer to "8.10.12 Customization Function of Guest OS".

SSL Port Specification Methods for VM Management Software

Configure the SSL ports for Oracle VM Manager. Use them when starting VM management software from the management console. This setting is required in Oracle VM Manager V3.2.1 or later.

Use the UTF-8 character code for definition files.

Location of the Definition File

[Windows]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux]

/etc/opt/FJSVrcvmt/customize_data

Definition File Name

ovmm.rcxprop

Definition File Format

The definition file is entered in the following format.

Key = Value

Definition File Items

Specify the following items in a definition file. Other key specifications will be ignored.

List of Items

Item	Key	Value	Remarks
Enable/Disable SSL	SSL	" <i>vmm_ip</i> [: <i>port</i>][, <i>vmm_ip</i> [: <i>port</i>]...]" <i>vmm_ip</i> : IP address of VM management software <i>port</i> : Port number of VM management software	If the port number is omitted, the default port number (7002) is set.

Example Definition File

An example definition file is indicated below.

```
# Oracle VM Manager  
ssl = 192.168.2.2:7002,192.168.2.3:7002
```

Guest OS Customization Definition File

When the customization function of a guest OS is used, the following definition files are set.

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

Definition File Name

os_customize_ovmforx86.rcxprop

Definition File Format

Describe each line of the definition file in the following format:

Key = Value

Definition File Items

Specify the following items:

Key	Value	Description
The server pool UUID for OVM for x86	The UUID of the storage repository for storing VCD	Describe the UUID of the storage repository for storing VCD. Specify when using customization of guest OSs.

Obtaining UUIDs

Use the OVM CLI to execute the following commands for obtaining UUIDs. Enter the UUID displayed in the "Id" line of the execution results in this definition file.

Obtained Item	Command for Obtaining
The server pool UUID for OVM for x86	show ServerPool
The UUID of the storage repository for storing VCD	show Repository

Note

- Describe the UUID of the server pool in one line. Describing the UUIDs of different server pools in multiple lines is not possible. [OVM for x86 3.2]
- Describing the UUIDs of different server pools in multiple lines is possible. [OVM for x86 3.3 or later]
- When the key corresponding to the UUID of the server pool for OVM for x86 does not exist in the definition file, an error occurs.
- Use the UTF-8 character code for this file.
- When a description starts with "#", the string is regarded as a comment line.
- When there are multiple instances of the UUID of the same server pool, the last definition will be used.
- For the server pool name, do not use equals signs ("=") or underscores ("_").
- When an environment contains both OVM for x86 3.2 guest OSs and OVM for x86 3.3 guest OSs, describe the settings for OVM for x86 3.2 guest OSs at the start of this definition file.

Customizable OS type definition file

When using the customization function of guest OS, define a customizable OS type in the following definition files.

Location of the Definition File

[Windows Manager]
Installation_folder\SVROR\Manager\etc\customize_data

Definition File Name

customizable_os_type_ovmforx86.rcxprop

Definition File Format

Describe each line of the definition file in the following format:

<i>OS Type</i>

- Describe the OS type of the VM guest of OVM for x86 3.x for OS Type.
- When a description starts with "#", the string is regarded as a comment line.
- Empty lines are ignored.
- Use the UTF-8 character code for files.

- Everything from the start of a line to the next line feed code is treated as a single OS type.
- When there are two or more lines of the same OS type, the specifications in all lines are used.

Point

Describe the OS type of the VM guest of OVM for x86 3.x for OS Type.

Using the OVM CLI, the OS type of the VM guest can be acquired using the following command.

```
OVM>show Vm id=UUID of the VM guest<RETURN>
```

The following item is contained in the value returned from the command line interface.

Operating System

For details, refer to the manual of the relevant product on the Oracle web site.

Oracle Website

```
URL: http://www.oracle.com/index.html
```

8.10.2 Registering Resources with Resource Orchestrator

This section explains how to register resources with Resource Orchestrator.

Use the following procedure to register resources:

When Using Blade Servers

1. Register VM management software

When registering VM management software, the storage repositories that were created in advance during pre-setup preparations, are automatically detected by Resource Orchestrator as virtual storage resources. The templates created in advance are automatically detected as virtual cloning images by Resource Orchestrator.

For details on how to register VM management software, refer to "5.2 Registering VM Management Software" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Register chassis

Refer to "5.4.1 Registering Chassis" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Register Managed Servers (within Chassis)

For details on how to register managed servers, refer to "5.4.2 Registering Blade Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

4. Register LAN switch blades

Refer to "5.4.3 Registering LAN Switch Blades" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

To register a network resource, specify a network pool when creating the network resource.

For details, refer to "Chapter 14 Registering Resources in Resource Pools" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

When Using Rack Mount or Tower Servers

1. Register VM management software

When registering VM management software, the storage repositories that were created in advance during pre-setup preparations, are automatically detected by Resource Orchestrator as virtual storage resources. The templates created in advance are automatically detected as virtual cloning images by Resource Orchestrator.

For details on how to register VM management software, refer to "5.2 Registering VM Management Software" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Register Managed Servers

For details on how to register managed servers, refer to "5.5.1 Registering Rack Mount or Tower Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Register LAN Switches

Refer to "5.13 Registering LAN Switches (L2 Switches)" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

To register a network resource, specify a network pool when creating the network resource.

For details, refer to "Chapter 14 Registering Resources in Resource Pools" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

When Using PRIMEQUEST Servers

1. Register VM management software

When registering VM management software, datastores that are created in advance during pre-setup preparations, are automatically registered in Resource Orchestrator as virtual storage resources.

For details on how to register VM management software, refer to "5.2 Registering VM Management Software" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Register chassis

Refer to "5.8.1 Registering Chassis (For PRIMEQUEST Servers)" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Register Managed Servers (within Chassis)

Refer to "5.8.2 Registering PRIMEQUEST Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8.10.3 Registering Resources in Resource Pools

This section explains the registration of resources to resource pools.

Use the following procedure to register a resource to a resource pool:

1. Register VM host resources

- a. 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.

- b. Select the VM host to register.
- c. Click the [OK] button.

For details, refer to "14.1 VM Host Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Register storage resources

Register the virtual storage resources used when creating virtual L-Servers in the resource pool.

For details, refer to "14.5 Storage Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".



- Register storage repositories in which the image resources used for L-Server creation are stored as virtual storage resources.
- When registering multiple storage repositories accessible from VM hosts in server pools of Oracle VM Manager, it is recommended to register them in the same storage pool. It is recommended to register storage repositories shared with multiple server pools in Oracle VM Manager in the global pool.
- Perform configuration so that the virtual storage registered in the storage pool can be accessed from all VM hosts registered in the tenant.

The provisioning attributes of disk resources which are allocated during L-Server creation are as follows. However, the provisioning attributes are not displayed on the window.

- When automatically creating disk resources from virtual storage resources registered in a storage pool with Thin Provisioning attributes set, set the thin format and allocate the disk resources to a virtual L-Server.
- When automatically creating disk resources from virtual storage resources registered in a storage pool without Thin Provisioning attributes set, set the thick format and allocate the disk resources to a virtual L-Server.

For how to set Thin Provisioning attributes for a storage pool, refer to "20.2 Creating" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Registration of network resources
4. Register network device resources
5. Create templates as virtual cloning images for use in Resource Orchestrator

Create a template with an OS installed. Perform the following procedure:

- a. Create a new VM guest
- b. Install an OS on the VM guest created in step a.
- c. When there is a Paravirtual (PV) Driver, install it
- d. Create a template from the created VM guest

6. Register virtual image resources

Register the virtual image resources used when creating virtual L-Servers in the resource pool.

For details, refer to "14.7.1 Virtual Image Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

When the customization function of the VM guest is used, the following procedures are necessary in addition to the above-mentioned procedure.

1. Create the OVM for x86 3.x storage repository

Create the OVM for x86 3.x storage repository that is the storage destination of the VCD medium.

For details, refer to "[Preparation of the Storage Repository for Storing VCD and Definition Files](#)" in "[8.10.12 Customization Function of Guest OS](#)".

2. Creating definition files to use customization functions

When using the customization function of the guest OS, define a customizable OS type in the following definition files.

- Guest OS Customization Definition File
- Customizable OS type definition file

For details, refer to "[Preparation of the Storage Repository for Storing VCD and Definition Files](#)" in "[8.10.12 Customization Function of Guest OS](#)".

3. Prepare a VCD Storage Server

Prepare an FTP server as temporary storage for the VCD medium created by Resource Orchestrator.

For details, refer to "[Preparation of a VCD Storage Server](#)" in "[8.10.12 Customization Function of Guest OS](#)".

4. Create an L-Server

Create the L-Server using either of the following methods.

- Linking to the L-Server of a configured virtual machine
- Creating an L-Server with an image specified

5. Install the customization tool

Install the customization tool on the guest OS of the created L-Server.

For details of the installation procedure, refer to "[8.10.12 Customization Function of Guest OS](#)" of "[Installation and Deletion of the Customization Tool](#)".

6. Collect the cloning image for customization

Collect the cloning image using customization specification.

At this time, confirm the type of the system of the specified guest OS using the following procedure.

- a. Log in to the guest OS.
- b. Confirm the type of the system.

8.10.4 Manual Network Configuration

ROR provides the function for connection with the virtual NICs, for the virtual machine network created in advance.

Manually perform virtual machine network settings in advance. Use a different VLAN ID for each virtual machine network to connect the virtual machine network with virtual NICs. Additionally, the following settings must be performed in advance.

1. Create a Virtual Machine Network

The network must be created on the VM host, in order to connect the L-Server to the network.

The only characters which can be used for the virtual machine network name are alphanumeric characters (upper and lower case), numbers, and underscores ("_").

Create a network with the same name (the name is case-sensitive) for all VM hosts comprising the cluster. This enables migration of VM guests between VM hosts.

When configuring the virtual machine network, if using server virtualization software other than OVM for x86 3.x on the same manager, configure a different name from those names used for virtual switches, virtual networks, and virtual bridges on the other server virtualization software.

For details on how to create a virtual machine network on XenServer, refer to the OVM for x86 3.x manual.

2. Configure the Virtual Machine Network Communication

Right-click the LAN switch blade in the server resource tree, and select [Modify]-[Network Settings] from the popup menu.

Configure LAN switch blades to enable communication using the tagged VLAN between virtual machine networks using the same name.

The ROR console can be used for VLAN configuration of LAN switch blade external ports.

For details, refer to "[5.4.4 Configuring VLANs on LAN Switch Blades](#)" in the "[User's Guide for Infrastructure Administrators \(Resource Management\) CE](#)".

3. Define the Supported Virtual Machine Network and VLAN ID

Define the supported virtual machine network and VLAN IDs in the virtual network definition file for Resource Orchestrator.

For details on definition file format, refer to "[File Format for Virtual Network Definitions](#)".

4. Create Network Resources

- From the GUI:

Create network resources using the VLAN IDs specified in steps 2 to 3. In the [Create a network resource] dialog, check the [Use configured virtual switches/port profile.] checkbox.

- From the Command-line:

a. Create the XML file that defines network resources. Define the VLAN ID specified in steps 2 and 3 in the XML file. In this case, specify auto="false" in the Network element.

b. To create the network resource, execute the rcxadm network create command specifying the XML file created in step a.

For details on the rcxadm network command, refer to "3.9 rcxadm network" in the "Reference Guide (Command/XML) CE".

For details on the Network element, refer to "15.6 Network Resources" in the "Reference Guide (Command/XML) CE".

File Format for Virtual Network Definitions

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvnr/customize_data

Definition File Name

vnetwork_ovmforx86.rcxprop

Definition File Format

Describe the virtual network definition file in one line as below:

```
"Virtual Machine Network Name Created on OVM for x86"=VLAN ID
```

For the *VLAN ID*, a value from 1 to 4094 can be specified.



Example

```
"MyVMNetwork"=10
```

- Blank spaces before and after equal signs ("=") are ignored.
- Describe the virtual machine network name correctly, as the entry is case-sensitive.
- Save files using the UTF-8 character code.
- When there are multiple lines with the same virtual machine network name, all specified lines are valid.
- When the same VLAN ID is included in a line with a different virtual machine network name, the first occurrence in the file is used and the lines after it are ignored.
- An error occurs during L-Server creation if the definition of the VLAN ID of the specified network resource cannot be found.

8.10.5 Create L-Server Templates

This chapter explains how to create an L-Server template.

L-Server templates can be created using the following methods.

- Using the Wizard GUI

L-Server templates can be created using the wizard GUI in the wizard format.

For details on the GUI in the wizard format, refer to "15.1 Operations Using the Wizard GUI" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- Manually

Use the following procedure to create an L-Server template:

1. Export an L-Server template

The sample L-Server templates provided with Resource Orchestrator can be exported.

Refer to "15.2.1 Export" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Edit an L-Server Template

The L-Server template output in step 1 can be edited with an editor, etc.

For details on the L-Server templates for virtual L-Servers, refer to "15.2.2 Virtual L-Server Templates" in the "Reference Guide (Command/XML) CE".

3. Import an L-Server Template

Refer to "15.2.3 Import" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8.10.6 Creating L-Servers

This section explains the creation of L-Servers.

Use the following procedure to create L-Servers:

- Create an L-Server Using an L-Server Template

Create an L-Server, referring to "16.1 Creation Using an L-Server Template" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- Create an L-Server Specifying Individual Specifications

Refer to "16.3 Creation of Virtual L-Servers Using Parameters" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".



The following operations for L-Server creation are not supported:

- Creation of a virtual L-Server without a cloning image specified
- Creation of a virtual L-Server with cloning images including data disks specified

8.10.7 Collecting and Registering Cloning Images

This section explains how to collect cloning images.

Use the following procedure to collect cloning images:

After installing an OS, stop the target L-Server.

1. On the ROR console, right-click the target L-Server in the orchestration tree, and select [Cloning]-[Collect] from the popup menu.
2. Click the [OK] button.

A given cloning image (identified by its name attribute) can be managed by image version.

If a cloning image is created using VM management software, it can be used as is.

Refer to "17.5.1 Collecting and Registering" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Points to Confirm Before Collecting Images when OS Settings are Enabled during Deployment

- The virtual storage must have at least double the free space of the virtual disk which is allocated to the virtual L-Server that is the target of image collection.
- When the guest OS is Linux, configure the NetworkManager service not to start when the guest OS starts.
- Release slot number 1 of the VM guest.

8.10.8 [OS] Tab Configuration

Enter the parameters to set for the OS when creating the L-Server. This setting is only valid if an image for which OS configuration on L-Server deployment is enabled 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.

Do not specify the value, as the value will not be set for the items for which entry is not required.

Table 8.34 List of Settings

Item	Windows		Linux		Description
	Necessity of Entry	Values When Omitted	Necessity of Entry	Values When Omitted	
Host name/ Computer name	Possible	<i>L-Server Name</i>	Possible	<i>L-Server Name</i>	<p>Enter the host name or computer name.</p> <p>[Windows] Enter a character string beginning with an alphanumeric character and containing up to 15 alphanumeric characters and hyphens ("-"). The string cannot be composed solely of numbers.</p> <p>[Linux] Enter a character string beginning with an alphanumeric character and containing up to 63 alphanumeric characters and hyphens ("-"). The string cannot be composed solely of numbers.</p> <p>If underscores ("_") or periods (".") are used in an L-Server name, they will be replaced with hyphens ("-"), because these characters cannot be used for host names or computer names. If the basic information is not specified, the L-Server name is converted and set as indicated above.</p>
Domain name	Possible	WORKGROUP (*)	Possible	localdomain (*)	<p>[Windows] Enter the workgroup name. Settings for participation in a domain cannot be made. The same workgroup name as the computer name cannot be specified. Enter a character string beginning with an alphabetic character and containing up to 15 alphanumeric characters, hyphens ("-"), and periods ("."). Refer to the Microsoft information about the character strings that can be input for workgroup names.</p> <p>[Linux] Enter the domain name. Enter a character string beginning with an alphabetic</p>

Item	Windows		Linux		Description
	Necessity of Entry	Values When Omitted	Necessity of Entry	Values When Omitted	
					character and containing up to 255 alphanumeric characters, hyphens ("-"), and periods (".").
DNS search path	Not Required	-	Possible	-	Enter a list of domain names to use for DNS searching, using between 1 and 32,767 characters. You can specify the same characters as the domain name. To specify multiple domain names, use a blank space as the separator character.
Full name	Not Required	-	Not Required	-	Even if the full name is specified, it is not configured in the guest OS.
Organization name	Not Required	-	Not Required	-	Even if the organization name is specified, it is not configured in the guest OS.
Product key	Mandatory	- (*)	Not Required	-	Omission not possible. Ensure that you specify a valid product key.
License mode	Not Required	-	Not Required	-	Even if the license mode is specified, it is not configured in the guest OS.
Maximum number of connections	Not Required	-	Not Required	-	Even if the maximum number of connections is specified, it is not configured in the guest OS.
Administrator password	Mandatory	- (*)	Not Required	-	Ensure that the same password as that of the local administrator account of the image specified during L-Server creation is configured. Enter the password using between 1 and 128 alphanumeric characters or symbols.
Hardware clock configuration	Not Required	-	Possible	Local (*)	Specify one of the following: - UTC - Local (LOCAL)
Time zone	Possible	The same time zone as the OS of the manager	Possible	The same time zone as the OS of the manager	Specify the time zone of the OS.

* Note: When the value is specified in the OS property definition file, its values are configured.

Information

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.

For details, refer to ["8.1.7 OS Property Definition File"](#).

8.10.9 Linking to an L-Server

This section explains how to link L-Servers.

For details on how to link to an L-Server, refer to "Chapter 18 Linking L-Servers with Configured Physical Servers or Virtual Machines" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

8.10.10 Advisory Notes for OVM for x86 3.x Usage

This section explains advisory notes for when using OVM for x86 3.x.

Allocation of Physical CPU (pin)

Physical CPUs are not allocated (pin) from Resource Orchestrator. When necessary, operate Oracle VM directly, and configure the settings. When a VM host which starts when powering on an L-Server is changed, it is recommended to configure "Fixed" for the L-Server boot location, as the physical CPU allocation settings will be canceled.

Destination Storage Repository when Creating an L-Server

In Resource Orchestrator, when creating an L-Server using a virtual cloning image, the L-Server is created in the storage repository in which the virtual cloning image is stored.

Destination Storage Repository when Collecting Virtual Cloning Images

In Resource Orchestrator, when collecting virtual cloning images from an L-Server, the virtual cloning images are stored in the same storage repository as the L-Server.

Upgrading of Oracle VMs

In Resource Orchestrator, when managing Oracle VM V2.2 environments, if an Oracle VM server is upgraded to version V3.2.1, it cannot be managed as the same server. After registering the upgraded server as a new server, import and manage the existing VM guest as an L-Server.

Maximum Number of CPUs when Creating an L-Server

In Resource Orchestrator, when creating an L-Server, configure the same values for the maximum number of CPUs as the already specified number of CPUs. When changing the maximum number of CPUs, operate Oracle VM directly, and modify the settings.

Maximum Memory Size when Creating an L-Server

In Resource Orchestrator, when creating an L-Server, configure the same values for the maximum memory size as the already specified memory size. When changing the maximum memory size, operate Oracle VM directly, and modify the settings.

Specification of CPU Performance Values

When a value of less than 10% of the CPU performance of a physical server is specified, it is rounded up to the value of 10%. Therefore, it is recommended to set a value of 1GHz or more.

Device 1 of a VM Guest

In Resource Orchestrator, device 1 of a VM guest is used as a CD-ROM drive. Configure device 2 or devices with later numbers as the data disks.

Name and Number of Detected Virtual Storage Resources

All virtual storage resources connected to VM hosts are detected.

The names of displayed virtual storage resources are the names of storage repositories displayed on Oracle VM Manager.

When VM Guests and Cloning Images Being Created Are Detected [OVM for x86. 3.3 or later]

When creating an L-Server, VM guests in the process of being created may be detected. Similarly, when performing collection of cloning images, cloning images in the process of being created may be detected. Do not perform any operations on the resources in the process of being created, such as registering them to a resource pool.

8.10.11 Overcommit

This section explains the overcommit function for L-Servers.

Overcommit

The OVM for x86 3.x overcommit function for the CPU and memory is available on Resource Orchestrator.

The OVM for x86 3.x overcommit function for the CPU and memory virtually allows a guest OS to use more resources than that of the CPU and memory actually installed on a server.

Resource Orchestrator provides the following functions to utilize the OVM for x86 3.x overcommit function when creating L-Servers.

- Setting an overcommit attribute for a resource pool

Overcommit attributes can be set for resource pools. If an L-Server template with the overcommit attribute configured is used, an L-Server with the overcommit attribute configured can be created by selecting the resource from the resource pool with overcommit configured.

- Deployment of L-Servers with more resources than those of the server

Creation of an L-Server with more resources than that of the actual CPU or memory installed on a server is possible. Whether the resulting L-Server can be started depends on the resources available on the VM host.

Installation Procedure

1. Create a VM Pool for Overcommit

For details on how to create a VM pool, refer to "Chapter 20 Resource Pool Operations" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".



.....
Refer to the "Point" described in "1. Create a VM Pool for Overcommit" in "Installation Procedure" in "8.2.11 Overcommit".
.....



.....
Refer to the "Note" described in "1. Create a VM Pool for Overcommit" in "Installation Procedure" in "8.2.11 Overcommit".
.....

For details on how to edit the L-Server template, or create and check an L-Server, perform the operations of step 3 and later described in "8.2.11 Overcommit". The values that can be configured in the L-Server template or the VM specific information definition files as described in the reference differ depending on the VM types. In OVM for x86 3.x, the values can only be specified when configuring overcommit in the L-Server template.

8.10.12 Customization Function of Guest OS

This section explains the function for customizing of guest OSs of OVM for x86 3.x.

OVM for x86 3.x has no function for customizing guest OSs, so the Resource Orchestrator customization function is used when customizing guest OSs. The guest OS customization function is provided using the customization tool installed on the VM guest OS to control customization processes.

This function can be used by the following ROR managers and guest OSs.

When the customization function is executed on an unsupported ROR manager or guest OS, an error occurs.

Table 8.35 Support Scope for the Customization Function of Guest OS

Target	Support Scope
Manager	Only Windows manager is supported. For details, refer to "Table-[Windows Manager]" in "6.1.2.1 Required Basic Software" in the "Overview".
Windows Guest OS	Microsoft(R) Windows Server(R) 2008 SP2 Microsoft(R) Windows Server(R) 2008 R2 SP1 Microsoft(R) Windows Server(R) 2012 R2
Linux Guest OS	Oracle Linux 5.x (for x86) Oracle Linux 5.x (for Intel64) Oracle Linux 6.x (for x86) Oracle Linux 6.x (for Intel64) Unbreakable Enterprise Kernel is included in the above. When virtual machines are configured using VM templates released by Oracle, check whether the "which" package is included.

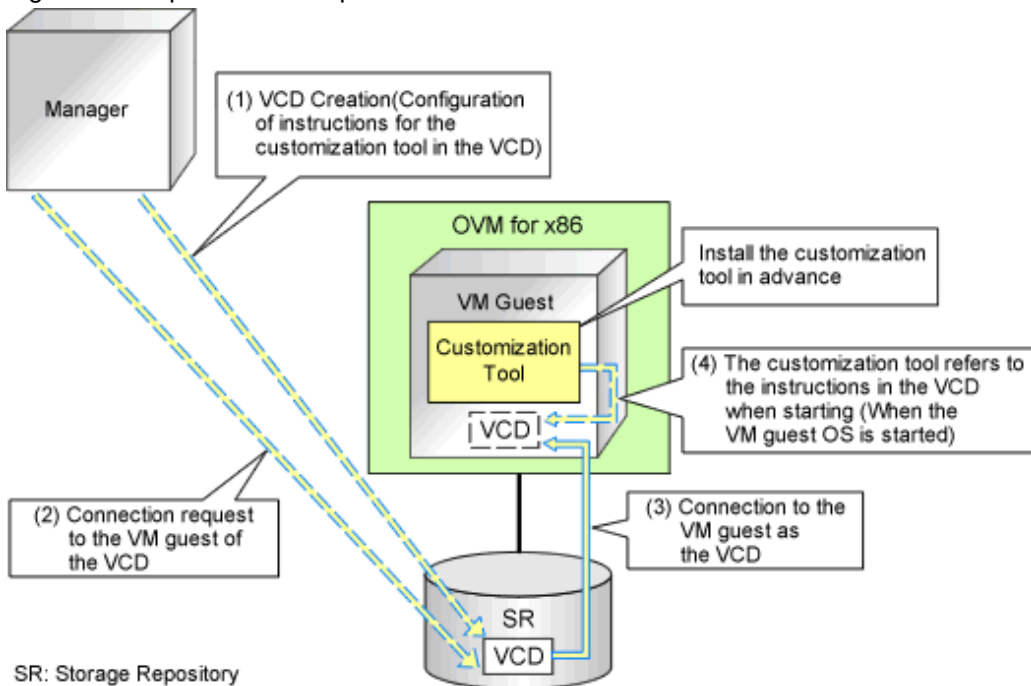
Operation Principle of the Customization Function

The customization function is achieved using the customization tool.

When the guest OS is Windows, the customization tool is a Windows service that operates on the guest OS. Perform control of the Windows OS Sysprep and the mini setup following the instructions of the virtual CD image (VCD medium) connected to the VM guest.

When the guest OS is Linux, the customization tool is a script that operates on the guest OS. Perform initialization of network information and the settings specified for the OS tab on the Linux OS, following the instructions of the virtual CD image file (VCD medium) connected to the VM guest. This VCD medium is created by ROR.

Figure 8.16 Operation Principle of the Customization Function



Preparation for Using the Guest OS Customization Function

The following preparations are necessary:

- Preparation of the Storage Repository for Storing VCD and Definition Files
- Prepare a VCD Storage Server
- Registration of the VCD Storage Server Information with Resource Orchestrator
- Installation of the Customization Tool
- Configuration of "VM Start Policy" for the server pool of Oracle VM Manager

Preparation of the Storage Repository for Storing VCD and Definition Files

- The VCD medium is automatically stored in the storage repository of OVM for x86 3.x by ROR, and connected to the VM guest. Therefore, it is necessary to create the storage repository and the definition file of OVM for x86 3.x beforehand. For details on the definition file, refer to "8.10.1 Creating Definition Files".
- Create the storage repository of OVM for x86 3.x noting the following points.
 - When using OVM for x86 v3.2.1 - v3.2.8, create a storage repository for the server pool on OVM for x86
 - When using OVM for x86 v3.3.1 or later, multiple storage repositories can be created for the server pool on OVM for x86

Refer to the Oracle web site for the relevant product manual for the creation method.

Oracle Website

http://docs.oracle.com/cd/E35328_01/index.html

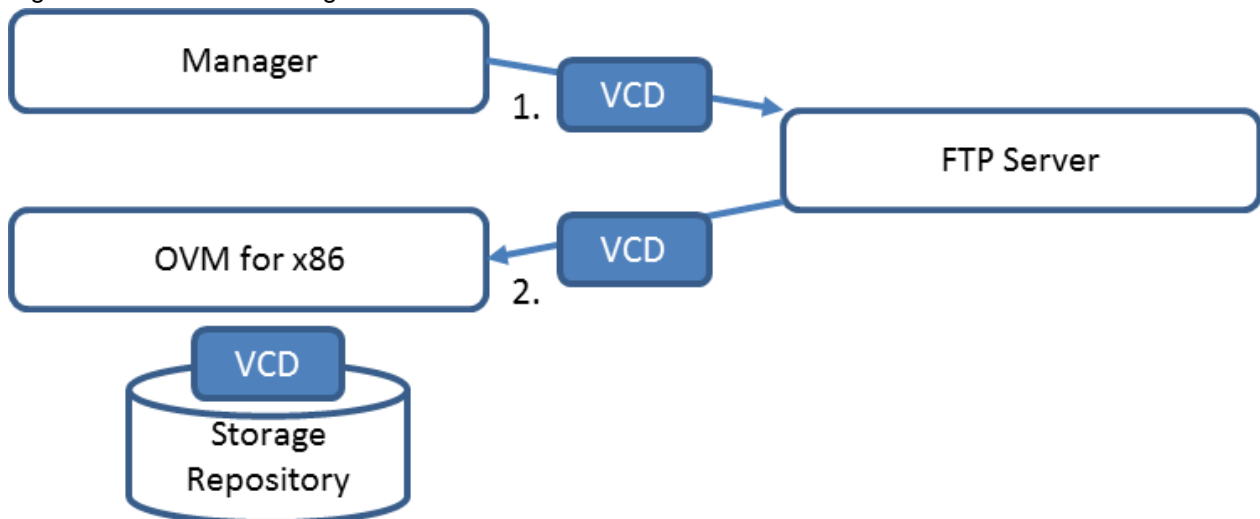
Configuration of "VM Start Policy" for the Server Pool of Oracle VM Manager

For a server pool on which a virtual L-Server is created using the customization function, configure "Start on current server" for "VM Start Policy".

Preparation of a VCD Storage Server

In order to import a VCD medium into a storage repository, an FTP server is necessary as temporary storage for the VCD medium created by Resource Orchestrator.

Figure 8.17 Schematic Diagram



The configuration conditions for the FTP server are as follow:

- The FTP server can connect with Resource Orchestrator

- Passive mode is used for connection between the FTP server and Resource Orchestrator

For other conditions, refer to the following manual provided by Oracle:

http://docs.oracle.com/cd/E35328_01/E35336/html/vmcli-ref-importvirtualcdrom.html

Registration of the VCD Storage Server Information with Resource Orchestrator

Resource Orchestrator temporarily stores the created VCD medium in the FTP server.

Therefore, it is necessary to register the FTP server information with Resource Orchestrator.

For details on how to register the information, refer to "3.18 rcxadm vcdsvct1" in the "Reference Guide (Command/XML) CE".

Installation and Deletion of the Customization Tool

When the Guest OS is Linux

When the customization tool is installed, the following init script is registered in the guest OS:

```
Resource-Orchestrator-Linux guest-customize-tool
```

This section explains the procedures for installing and uninstalling the customization tool.

- Install the customization tool
 - a. Log in to the VM guest using the system administrator account.
 - b. Copy the customization tool onto a suitable directory on the guest.

Copy the tool storage folder on the ROR manager to the copy destination directory on the guest OS. The tool storage folder is in the following location.

[Windows Manager]

Installation_folder\SVROR\Manager\opt\FJSVrcxmr\sys\linguestcustomizetool

When the copy destination is /tmp, its directory path is /tmp/linguestcustomizetool.

- c. Change Current to the copy destination directory where the customization tool is stored.
- d. Install the customization tool.

```
./linguesttool.sh -install <RETURN>
```

- Uninstallation of the customization tool
 - a. Log in to the VM guest using the system administrator account.
 - b. Change Current to the copy destination directory where the customization tool is stored.
 - c. Uninstall the customization tool.

```
./linguesttool.sh -remove <RETURN>
```

When the Guest OS is Windows

When the customization tool is installed, the service is registered in the guest OS with the following name.

```
Resource Orchestrator windows guest customize tool
```

This section explains the procedures for installing and uninstalling the customization tool.

- Install the customization tool

- a. Copy the customization tool onto a suitable folder on the guest.

Copy Tool_Storage_Folder of the ROR manager onto Folder_Name_At_Copy_Destination on the guest of each folder. The Tool_Storage_Folder is the following.

[Windows Manager]

Installation_folder\SVROR\Manager\opt\FJSVrcxmr\sys\winguestcustomizetool

The folder name becomes c:\temp\winguestcustomizetool when the copy destination is assumed to be C:\temp.

- b. Start the command prompt using local administrator rights.
c. Change Current to the installation folder.

```
>cd Folder_Name_At_Copy_Destination
<RETURN>
```

- d. Install the customization tool.

```
>wingesttool.exe -install <RETURN>
```

- e. After the installation is complete, delete Folder_Name_At_Copy_Destination.

```
>rmdir /s Folder_Name_At_Copy_Destination
<RETURN>
```

- Uninstallation of the customization tool

- a. Start the command prompt using local administrator rights.

Change Current to the tool storage folder.

```
>cd "%ProgramFiles%\Fujitsu\Resource Orchestrator\WinGuestCustomizeTool" <RETURN>
```

- b. Uninstall the customization tool.

```
>wingesttool.exe -remove <RETURN>
```

- c. Delete the installation folder of the customization tool.

When uninstallation ends normally, delete the following folders.

```
>rmdir /s "%ProgramFiles%\Fujitsu\Resource Orchestrator\WinGuestCustomizeTool" <RETURN>
```

If no other services or tools have been installed, delete the following folders.

```
>rmdir /s "%ProgramFiles%\Fujitsu\Resource Orchestrator" <RETURN>
>rmdir /s "%ProgramFiles%\Fujitsu" <RETURN>
```

8.11 Advisory Notes for Virtual L-Server Usage

Server Release on Power Off

The function to release servers when they are powered off is a function used for switching over operating L-Servers after preparing L-Servers with more CPUs and memory resources than can be used on the VM host.

This function enables the use of CPUs and memory resources allocated to a single L-Server on other L-Servers, by switching over L-Servers to start/stop according to the time or their status.

When an L-Server is powered off, the amount of resources that are already allocated to a powered on L-Server can be confirmed, as the CPU and memory already allocated to an L-Server are not calculated in the usage amount of the VM pool.

To prepare for resource insufficiency on the VM host on which an L-Server is deployed, configuring [Relocate at startup] in the [Boot Location] means that when the L-Server is started, a search is performed for VM hosts with sufficient CPU and memory resources, and the L-Server is started after it is moved to an appropriate VM host.

When there are no other VM hosts with sufficient CPUs and memory resources, the L-Server is started on the VM host on which it is currently deployed.

When [Boot Location] is [Fixed], and the amount of resources allocated to the L-Server powered on are overcommitted on the VM host, as CPUs and memory resources on the VM host are shared among multiple L-Servers, check the effect on other L-Servers and then start the L-Server.

When starting L-Servers requiring more than the number of physical resources on the VM host, it is recommended to select "false" for [Resource release] in the following environments, as L-Servers operate sharing resources among multiple L-Servers.

- When not using overcommit
- When using virtualization software for which overcommit is not recommended

8.12 Overcommit Settings

This section explains the overcommit settings.

The overcommit function settings for L-Servers depend on the L-Server deployment source.

- The overcommit settings for an L-Server to be deployed from an L-Platform.

Refer to "[9.6 Settings for the Overcommit Function](#)".

- The overcommit settings for an L-Server to be deployed from the orchestration tree.

Refer to "15.1.2.2 Creating a Virtual L-Server Template" and "20.2 Creating" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Chapter 9 Post-Installation Procedures

This chapter explains how to Post-Installation procedures.

9.1 Settings for Sending Email

This section explains how to change settings for sending email.

This product sends the following five types of email:



The setting of five kinds of mails can be set by "Setup wizard" on the ROR console about a host name of the SMTP server, a port number, and a sender's email address. The Mail Sending function enables, and moreover, SMTP server authentication is none if defining it from "Setup wizard".

Refer to "3.1 Setup Wizard" in the "User's Guide for Infrastructure Administrators CE" for information on "Setup Wizard".

- Email sent from the tenant management

When the tenant administrator adds or changes a user, notification to that effect is sent to the tenant administrators, tenant users, and tenant email addresses within that same tenancy.

- Email sent from the [L-Platforms] tab of the ROR console

Email sent from the [L-Platforms] tab notifies the end or failure of processing to the tenant administrators and the tenant users when the tenant users have used the ROR console to perform an application to use L-Platform, an L-Platform modification, or an application to cancel L-Platform.

- Email sent from the usage charge calculator

Email will be enabled if the calculator for charges is used.

A usage charge file is sent to the set email address with the monthly usage charges for each tenant.

- Email sent via the application process

An email will be sent via the application process when changes or requests have been made.

The following notification will be sent for an application to use L-Platform, an L-Platform modification, or an application to cancel L-Platform from the [L-Platforms] tab of the ROR console:

- Notification of acceptance of application, rejection of application, and dismissal of application to the tenant users
- Notification of request for approval and dismissal of application to the tenant administrators
- Notification of request for assessment to the infrastructure administrators

- Email sent from the dashboard

Email can be sent from the dashboard if the dashboard alert function is being used.

A notification is sent to the email address specified in the dashboard email send settings when the resource pool use rate threshold value is exceeded.

9.1.1 Stopping the Manager

Stop the manager before making settings for sending email.

Refer to "2.1 Starting and Stopping Managers" in the "Operation Guide CE" for information on how to stop the manager.

9.1.2 Settings for Email Sent from Tenant Management

Modify the operating environment file so that notification of the tenant administrator adding or changing users is sent to the email addresses of the tenant administrator, tenant users, and the tenants in the same tenancy.

portal.properties settings

Follow the steps below to modify the email settings:

1. Back up the following operating environment file to a work directory.

[Windows Manager]

```
Installation_folder\RCXCTMG\SecurityManagement\conf\portal.properties
```

[Linux Manager]

```
/etc/opt/FJSVctsec/conf/portal.properties
```

2. Open the above operating environment file, and configure the following items:

Setting item	Description
sendmail.smtp	Host name or IP address of the SMTP server
sendmail.smtp.port	Port number of the SMTP server "25" is set during installation.
sendmail.fromAddress	Sender's email address Ensure this value is configured.

Do not change the setting items other than the ones listed above - if you have changed any of them, restore the file that was backed up.

An example is shown below.

```
...  
# sendmail  
sendmail.smtp = smtp.example.com  
sendmail.smtp.port = 25  
sendmail.fromAddress = cloud-master@example.com  
...
```

9.1.3 Settings for Email Sent from the [L-Platforms] Tab

Modify the operating environment file so that users are notified of processes completion or failure by email when tenant administrators and tenant users have used the [L-Platforms] tab of the ROR console for L-Platform subscription, L-Platform modification, or L-Platform cancellation operations.

mail_config.xml settings

Follow the steps below to modify the email settings:

1. Back up the following operating environment file to a work directory.

[Windows Manager]

```
Installation_folder\RCXCFMG\config\mail_config.xml
```

[Linux Manager]

```
/etc/opt/FJSVcfmg/config/mail_config.xml
```

2. Open the above operating environment file, and configure the following items:

Setting item	Description
enable-email	Set true. Set true in order to enable the email sending function.
smtp-host	Host name or IP address of the SMTP server

Setting item	Description
smtp-port	Port number of the SMTP server "25" is set during installation.
from-email	Sender's email address
from-name	Set the sending source name. Set "System Administrator" to match the name of email sent from the tenant administrator.
show-password	Configure the settings according to whether the default password for the deployed server will be displayed in the email. Set to "true" if the password will be displayed, or "false" if not. At the time of installation, this is set to "true". Add the item if it has not been.

Do not change the setting items other than the ones listed above - if you have changed any of them, restore the file that was backed up.

An example is shown below.

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE properties SYSTEM "http://java.sun.com/dtd/properties.dtd">
<properties>
  <entry key="enable-email">true</entry>
  ...
  <entry key="smtp-host">smtp.example.com</entry>
  <entry key="smtp-port">25</entry>
  ...
  <entry key="from-email">cloud-master@example.com</entry>
  <entry key="from-name">system administrator</entry>
  ...
  <entry key="show-password">true</entry>
</properties>
```

9.1.4 Email Sent from the Usage Charge Calculator

Modify the operating environment file so that a usage charge file is sent to the set email address with the monthly usage charges for each tenant.

accounting.properties settings

Follow the steps below to modify the email settings:

1. Back up the following operating environment file to a work directory.

[Windows Manager]

```
Installation_folder\RCXCTMG\Charging\conf\accounting.properties
```

[Linux Manager]

```
/etc/opt/FJSVctchg/conf/accounting.properties
```

2. Open the above operating environment file, and configure the following items:

Setting item	Description
sendmail.smtp	Host name or IP address of the SMTP server
sendmail.smtp.port	Port number of the SMTP server "25" is set during installation.
sendmail.fromAddress	Sender's email address.

Setting item	Description
sendmail.encode	Specify the character encoding for sent emails. For Chinese language environments, ensure that "utf-8" is specified.

Do not change the setting items other than the ones listed above - if you have changed any of them, restore the file that was backed up. If Setting item does not exist, add it.

An example is shown below.

```

...
# Mail Information
sendmail.smtp = smtp.example.com
sendmail.smtp.port = 25
sendmail.fromAddress = cloud-master@example.com
...

```

9.1.5 Starting the Manager

Start the manager in order to enable the email settings set in "9.1.2 Settings for Email Sent from Tenant Management and 9.1.3 Settings for Email Sent from the [L-Platforms] Tab.

Refer to "2.1 Starting and Stopping Managers" in the "Operation Guide CE" for information on how to stop the manager.

9.1.6 Settings for Email Sent via the Application Process

In order to send email via the application process, the information about the mail server and the mail sender information must be registered in the admin server.



Note

- The manager must be running if performing mail settings during the application process. Start the manager if it is not running already. Refer to "2.1 Starting and Stopping Managers" in the "Operation Guide CE" for information on how to start this product.
- When the email settings to be used during the application process have been configured, it is necessary to configure the ROR manager so that it can connect to the configured SMTP server during startup (including automatic startup due to startup of the OS of the admin server). If the manager cannot connect to the SMTP server, startup of the application process function will fail, and the [Request] tab in the ROR console will not be displayed.

Registering the mail server and sender

Login as the system administrator, and register the mail server and the mail sender information to admin server using the procedure shown below.

1. If SMTP server authentication will be used when the mail is sent, then encrypt the password. This procedure is not necessary if SMTP server authentication will not be used when the mail is sent.

[Windows Manager]

```

> Installation_folder\IBPM\client\samples\configuration\EncryptPassword.bat -e "password"
-----ENCRYPTED PASSWORD-----
encrypted_password

```

[Linux Manager]

```

# /opt/FJSVctmg-ibpmf/client/samples/configuration/EncryptPassword.sh -e "password"
-----ENCRYPTED PASSWORD-----
encrypted_password

```

2. Prepare the mail server and mail sender definition files (they can be created in any location).

a. SMTP server settings file (smtpserver.conf)

Set the following items:

Setting item	Description	Default value
SMTPServerHost	Host name or IP address of the SMTP server that will be used to send mail.	localhost
SMTPServerPort	Port number of the SMTP server that will be used to send mail.	25
SMTPUserName	User name that will be used in SMTP server authentication when the mail is sent. Specify a backslash followed by a space (" ") if SMTP server authentication will not be used when the mail is sent.	None
SMTPPassword	Password that will be used in SMTP server authentication when the mail is sent. Specify a backslash followed by a space (" ") if SMTP server authentication will not be used when the mail is sent.	None

Example: showing how to define the settings file so that SMTP server authentication is used when the mail is sent.

```
SMTPServerHost=swrba.mail.server
SMTPServerPort=25
SMTPUserName=swrbamailuser
SMTPPassword=encrypted password
```

Example: SMTP server authentication will not be used when the mail is sent.

```
SMTPServerHost=swrba.mail.server
SMTPServerPort=25
SMTPUserName=\ (*)
SMTPPassword=\ (*)
```

* Note: A space must be specified after the backslash.

b. Mail sender settings file (emailaddress.conf)

Set the following items:

Setting item	Description	Default value
ServerEmailAddresses	Mail sender ('from' address) that will be assigned to the mail in mail address format.	postmaster@example.com

An example is shown below.

```
ServerEmailAddress=swrbamailuser@swrba.mail.server
```

3. Register the mail server information.

[Windows Manager]

```
> Installation_folder\IBPM\server\deployment\bin\importProperties.bat smtpserver.conf [Process Management Database Access Account] [Process Management Database Access Account Password]
```

[Linux Manager]

```
# /opt/FJSVctmg-ibpmf/server/deployment/bin/importProperties.sh mtpserver.conf [Process Management Database Access Account] [Process Management Database Access Account Password]
```

Note

During installation, the Process Management Database Access Account is "rcxctdbbpm", and the Process Management Database Access Account Password is "rcxctdbbpm#1".

4. Register the mail sender information.

[Windows Manager]

```
> Installation_folder\IBPM\server\deployment\bin\importProperties.bat emailaddress.conf  
[Process Management Database Access Account] [Process Management Database Access Account  
Password] Default
```

[Linux Manager]

```
# /opt/FJSVctmg-ibpmf/server/deployment/bin/importProperties.sh emailaddress.conf [Process  
Management Database Access Account] [Process Management Database Access Account Password]
```

The "Default" option must be specified at the end.

Note

During installation, the Process Management Database Access Account is "rcxctdbbpm", and the Process Management Database Access Account Password is "rcxctdbbpm#1".

5. Restart the manager

Restart the manager in order to apply the new settings.

Refer to "2.1 Starting and Stopping Managers" in the "Operation Guide CE" for information on how to restart the manager.

9.1.7 Settings for Email Sent from the Dashboard

If the dashboard alert function is to be used, use the operation management console of Interstage Business Process Manager Analytics to set the mail settings to be used by the dashboard alert function.

Note that the dashboard email send settings must be set if the dashboard alert function is used. Refer to "[B.1.1 Customizing Email Sending Settings](#)" for information on setting dashboard email send settings.

SMTP server information settings

Follow the steps below to modify the email settings:

1. Connect to the operation management console and log in. Refer to "[B.3.1 Access Method](#)" for details.
2. In the left pane, click [IBPM Analytics]-[System]-[Mail].
3. Change the displayed SMTP Server settings to suit the environment. After setting the following items click [Modify]:

Setting item	Description
SMTP Server Address	Host name or IP address of the SMTP server
SMTP Port Number	Port number of the SMTP server "25" is set during installation.
Sender Address	Sender's email address

4. Restart the Analytics server. Refer to "[B.3.4 Restarting the Analytics Server](#)" for details.

Note

- The initial password must be changed. Use the operation management console of Interstage Business Process Manager Analytics to change the password. Refer to "[B.3.3 Changing the Password of the Administrator](#)" for details.

- Do not perform any operations from the operation management console other than changing password settings, changing SMTP server information, and restarting the Interstage Business Process Manager Analytics server.

9.2 Application Process Settings

This section explains how to set application process setting.

9.2.1 Stopping the Manager

Stop the manager before making settings for sending email.

Refer to "2.1 Starting and Stopping Managers" in the "Operation Guide CE" for information on how to stop the manager.

9.2.2 Setting Application Process Settings

This section explains how to modify the application process settings.

To change Application process settings

The procedure for changing the setting whether to use the application process is as follows.



Point

Setting Application process setting can be set by "Setup Wizard" on the ROR console.

The "Setup Wizard" displays as three items the six items that are explained in this section and in "9.2.3 Setting Application Process to be Used". When items are not selected in the Setup Wizard, the corresponding items in this section are set to "false". When items are selected in the Setup Wizard, then the corresponding items in this section are set to "true".

Refer to "3.1 Setup Wizard" in the "User's Guide for Infrastructure Administrators CE" for information on "Setup Wizard".

1. Open the following file.

[Windows Manager]

```
Installation_folder\RCXCTMG\MyPortal\config\custom_config.xml
```

[Linux Manager]

```
/etc/opt/FJSVctmyp/config/custom_config.xml
```

2. Set the following items:

Setting item	Description
enable-create-workflow	Specify "true" if you want to use the application process for L-Platform subscriptions. Specify "false" to not use it. "false" is set during installation.
enable-reconfigure-workflow	Specify "true" if you want to use the application process for L-Platform modifications. Specify "false" to not use it. "false" is set during installation.
enable-return-workflow	Specify "true" if you want to use the application process for L-Platform cancellations. Specify "false" to not use it. "false" is set during installation.
workflow-mode	Specify "1" if you want to use the application process feature. Specify "0" to not use it. "0" is set during installation.

Note

The [Application List] tab of the ROR console is not displayed when display of the [Application List] is not permitted in the role definitions.

An example is shown below.

```
<?xml version="1.0" encoding="UTF-8"?>
<properties>
  ...
  <entry key="workflow-mode">1</entry>
  <entry key="enable-create-workflow">true</entry>
  <entry key="enable-reconfigure-workflow">true</entry>
  <entry key="enable-return-workflow">true</entry>
  ...
</properties>
```

9.2.3 Setting Application Process to be Used

This section explains how to modify the application process to be used.

To change the application process to be used

The modification procedure of the application process to be used is as follows.

Point

Setting Application process to be used can be set by "Setup Wizard" on the ROR console.

The "Setup Wizard" displays as three items the six items that are explained in this section and in "9.2.2 Setting Application Process Settings". In this section, settings can be made for the items corresponding to those that were selected in the Setup Wizard. When items are not selected in the Setup Wizard, then the corresponding items in "9.2.2 Setting Application Process Settings" are set to false, so the corresponding settings in this section will be disabled.

Refer to "3.1 Setup Wizard" in the "User's Guide for Infrastructure Administrators CE" for information on "Setup Wizard".

1. Open the following file.

[Windows Manager]

```
Installation_folder\RCXCTMG\MyPortal\config\application_process.properties
```

[Linux Manager]

```
/etc/opt/FJSVctmyp/config/application_process.properties
```

2. Set the following items:

Setting item	Setting value
ServiceCreate_processName	When applying to use L-Platform, enter "Default" if approval and assessment are to be performed, enter "ApproverOnly" if approval only is to be performed, and enter "JudgeOnly" if assessment only is to be performed. "Default" is set during installation.
ServiceChange_processName	When modifying L-Platform, enter "Default" if approval and assessment are to be performed, enter "ApproverOnly" if approval only is to be performed, and enter "JudgeOnly" if assessment only is to be performed. "Default" is set during installation.
ServiceReturn_processName	When canceling L-Platform, enter "Default" if approval and assessment are to be performed, enter "ApproverOnly" if approval only is to be performed, and enter

Setting item	Setting value
	"JudgeOnly" if assessment only is to be performed. "Default" is set during installation.

An example is shown below:

```

...
ServiceCreate_applicationId=ctmgApplication
ServiceCreate_processName=Default
ServiceChange_applicationId=ctmgApplication
ServiceChange_processName=Default
ServiceReturn_applicationId=ctmgApplication
ServiceReturn_processName=Default
...

```

9.2.4 Starting the Manager

Start the manager in order to enable the email settings set in ["9.2.2 Setting Application Process Settings"](#) and ["9.2.3 Setting Application Process to be Used"](#).

Refer to "2.1 Starting and Stopping Managers" in the "Operation Guide CE" for information on how to stop the manager.

9.2.5 Role Settings for the Display of the Application List Tab

This section explains customizing roles to display the [Application List] of the ROR console.

The [Application List] tab of the ROR console is not displayed when display of the [Application List] is not permitted in the role definitions. The default at installation is not to permit display.

When the procedure in ["9.2.2 Setting Application Process Settings"](#) is performed and the value of workflow-mode is changed to "1", add the permissions to display the [Application List] by customizing the role. Refer to "Chapter 3 Configuring Users and Customizing Roles" in the "User's Guide for Infrastructure Administrators (Resource Management) CE" for information on customizing roles.

Note that when "Enable" is selected for the Application process function in the setup wizard, the permissions to display the [Application List] are simultaneously added to the role definition for the corresponding basic role.

9.3 Customizing the Dashboard

Refer to ["Appendix B Customizing the Dashboard"](#) for information on customizing the dashboard.

9.4 Setting the Host Names for Virtual Servers



Note

Set the method for setting the virtual server host name before commencing operations. This attribute cannot be switched once operations have commenced.

This product sets the host names (computer names) for the virtual servers that are deployed. These names are automatically generated as below:

```

VXXXXXXXXXNNNN
XXXXXXXXXX: Nine arbitrary alphanumeric characters (part of the L-Platform ID)
NNNN: A four-digit serial number starting from 0001

```

The setting method can be changed to make the correspondence between these host names and actual servers more obvious.

The following setting methods can be selected:

Setting method number	Setting method	Description
1	Automatic generation	This is the original function.
2	Server name	The host name is set to the string that the user specifies as the "server name" in the ROR console.
3	Prefix + serial number	The Template Manager specifies a prefix, and the host name is set to a string consisting of this prefix followed by a serial number.
4	Tenant name + serial number	The host name is set to a string consisting of the tenant name for the user followed by a serial number.

9.4.1 Setting Method



Point

Setting the Host Names for Virtual Servers can be set by "Setup Wizard" on the ROR console.

Refer to "3.1 Setup Wizard" in the "User's Guide for Infrastructure Administrators CE" for information on "Setup Wizard".

Use the following procedure to specify the setting method:

1. Open the definition file in a text editor.

The definition file is stored in the following location:

[Windows Manager]

```
Installation_folder\RCXCFMG\config\vsys_config.xml
```

[Linux Manager]

```
/etc/opt/FJSVcfmg/config/vsys_config.xml
```

2. Set the following items in the settings file:

Key name	Setting range	Content
hostname-method	1 to 4	Specify the method for setting host names. If this key is omitted, "1" will be used as the default value. The number specified for this key corresponds to the setting method number in the table.
hostname-header	An arbitrary string with one to eight characters (*)	Specify the prefix to be set as the host name. This key is only valid if "3" is specified for the "hostname-method" key. If this key is omitted, "VM-" will be used as the default value.
hostname-digits	1 to 7	Specify the number of digits for the serial number to be set for the host name. This key is only valid if "3" or "4" is specified for the "hostname-method" key. If this key is omitted, "7" will be used as the default value.
hostname-check	yes/no	This key specifies whether to check for duplicate host names. This key is only valid if "2" is specified for the "hostname-method" key. yes: Returns a deployment error if the same host name exists on the server where the system has been deployed. no: Does not return an error even if the same host name exists. If this key is omitted, "yes" will be used as the default value.

* Note: The characters that can be specified are alphanumeric characters and hyphens ("-"). However, the string cannot consist of only numbers.

A specification example is shown below:

Note

```
<properties version="1.0">
  :
  <entry key="hostname-method">3</entry>
  <entry key="hostname-header">HOST-</entry>
  <entry key="hostname-digits">4</entry>
```

3. Save the file.
4. Restart the manager.
Refer to "2.1 Starting and Stopping Managers" in the "Operation Guide CE" for information on how to Restart the manager.

9.4.2 Setting Form

Automatic generation

The following host name will be automatically generated:

```
VXXXXXXXXXNNNN
XXXXXXXXXX: Nine arbitrary alphanumeric characters (part of the system ID)
NNNN: A four-digit serial number starting from 0001
```

This behavior is the original (default) behavior.

Server name

This method directly sets the host name to the string that the user has set as the "server name" in the Manager View.

The characters that can be specified for the server name are subject to the following restrictions:

Maximum string length	For Windows OS, 15 characters. For OSs other than Windows, 63 characters.
Characters that can be specified	Alphanumeric characters or hyphens ("-"). However, the string cannot consist of only numbers.

A deployment error will occur if a string that does not match these restrictions is specified.

If "yes" has been specified for the "hostname-check" key, a deployment error will occur if you specify a server name that duplicates the name of a server that has already been deployed. (An error will also occur even if the server name duplicates the name of a server belonging to another organization.)

Note

When the host name is to be used in the L-Server name as the method for setting resource name, do not specify names starting with "SUNW" for the names of Solaris Zones servers.

Prefix + serial number

This method sets the host name to a string consisting of the string that the Template Manager has specified for the "hostname-header" key in the definition file, followed by a serial number with the number of digits specified by "hostname-digits".

The serial number starts from 1 and is left padded with zeros.

The serial number that will be set for the next server to be deployed can be checked using the command for displaying a list of serial numbers for host name settings (cfmg_listhostnamecounter).

Refer to "10.6 cfm_g_listhostnamecounter (Display List of Serial Numbers for Host Name Settings)" in the "Reference Guide (Command/XML) CE" for information on this command.

Example

When "VM-" is specified for "hostname-header" and "7" is specified for "hostname-digits"

```
VM-0000001
```

A deployment error will occur if the serial number overflows.

Serial numbers are unique within the entire Admin Server, but are managed separately for each of the strings specified for "hostname-header".

If the serial number has overflowed, either reset the serial number using the command for resetting the serial number for host name settings (cfm_g_resethostnamecounter) or change the value for "hostname-header" to enable systems to be deployed again.

Refer to "10.7 cfm_g_resethostnamecounter (Reset Serial Numbers for Host Name Settings)" in the "Reference Guide (Command/XML) CE" for details

Note

- When Solaris Zones are being used and when the host name is to be used in the L-Server name as the method for setting resource name, do not prefix starting with "SUNW" for the special string.
- Specify the prefix using eight or fewer alphanumeric characters and hyphens. Prefixes consisting solely of numbers are not allowed.

Tenant name + serial number

This method sets the host name to a string consisting of the tenant name for the user that made the deployment request, followed by a serial number with the number of digits specified for "hostname-digits".

The serial number starts from 1 and is left padded with zeros.

The serial number that will be set for the next server to be deployed can be checked using the command for displaying a list of serial numbers for host name settings (cfm_g_listhostnamecounter).

Refer to "10.6 cfm_g_listhostnamecounter (Display List of Serial Numbers for Host Name Settings)" in the "Reference Guide (Command/XML) CE" for information on this command.

Example

When "DIV" is specified for the tenant name and "7" is specified for "hostname-digits"

```
DIV0000001
```

A deployment error will occur if the serial number overflows.

Serial numbers are managed separately for each organization ID.

If the serial number has overflowed, reset the serial number using the command for resetting the serial number for host name settings (cfm_g_resethostnamecounter) to enable systems to be deployed again.

Refer to "10.7 cfm_g_resethostnamecounter (Reset Serial Numbers for Host Name Settings)" in the "Reference Guide (Command/XML) CE" for information on this command.

Note

- Specify the prefix using eight or fewer alphanumeric characters and hyphens. Prefixes consisting solely of numbers are not allowed.

- The "tenant name + serial number" item is displayed in the "Setting method for host name" in the "Setup Wizard" only when "tenant name + serial number" is set here. "tenant name + serial number" is not displayed if another setting is set. Use this setting to change from another setting to "tenant name + serial number".

9.5 Setting the Method for Setting Resource Names

Point

Setting the method for setting resource names allows the names of virtual servers created using L-PlatformSubscription (L-Server names) to be made to match any of the following. Performing this setting allows servers to be identified easily:

- Server ID
- Host name
- Server name

Note

Set the method for setting the resource names before commencing operations. This method cannot be switched once operations have commenced.

In this product, the method for setting resource names for the L-Platform to be deployed can be selected from a number of methods.

The target resources are as follows:

- Folder
- L-Server

The following methods for setting resource names can be selected for these resources:

Folder name

Setting method number	String set as the folder name
1	L-Platform ID (the default method)
2	Tenant name + serial number
3	Tenant name + L-Platform name
4	L-Platform name

L-Server name

Setting method number	String set as the L-Server name
1	Server ID (the default method)
2	Host name
3	Server name

9.5.1 Setting Method

Point

Setting the Method for Setting Resource Names can be set by "Setup Wizard" on the ROR console.

For details of "Setup Wizard", refer to "3.1 Setup Wizard" in the "User's Guide for Infrastructure Administrators CE".

Use the following procedure to specify the setting method:

1. Open the definition file in a text editor.

The definition file is stored in the following location:

[Windows Manager]

```
Installation_folder\RCXCFMG\config\vsys_config.xml
```

[Linux Manager]

```
/etc/opt/FJSVcfmg/config/vsys_config.xml
```

2. Set the following items in the settings file:

Key name	Setting range	Content
folder-name-method	1 to 4	Specify the method for setting folder names. If this key is omitted, "1" will be used as the default value. The numbers correspond to the setting method numbers in the table in "Folder name".
lserver-name-method	1 to 3	Specify the method for setting L-Server names. If this key is omitted, "1" will be used as the default value. The numbers correspond to the setting method numbers in the table in "L-Server name".

A specification example is shown below:

Example

```
<properties version="1.0">
  :
  <entry key="folder-name-method">2</entry>
  <entry key="lserver-name-method">2</entry>
```

3. Save the file.
4. Restart the manager.
Refer to "2.1 Starting and Stopping Managers" in the "Operation Guide CE" for information on how to Restart the manager.

9.5.2 Setting Form

Folder name

The L-Platform deployed by ROR console are in a 1:1 correspondence with folders.

By changing the method for setting folder names, the L-Platform or tenant deployed by ROR console can be made to correspond to folders more easily.

L-Platform ID

This method sets the L-Platform ID as the name of the folder corresponding to the L-Platform to be deployed.

The L-Platform ID will be a string with 9 digits of random alphanumeric characters added to the first 8 characters of the tenant name.

Example

The result will be the following kind of string:

```
sosiki1-WCJFRUH6L
```

This setting is the default setting for ROR console. It is recommended that this setting method be used in operational situations where there is no need to have the L-Platform deployed by this product correspond to r folders.

Tenant name + serial number

The folder name corresponding to the L-Platform deployed will be the first eight letters of the tenant name and a four-digit serial number.

Example

The result will be the following kind of string:

```
sosikil-0001
```

This string is not displayed in the [L-Platforms] tab for ROR console, and so in order to maintain correspondence between the L-Platform deployed by this product and folders it is necessary to look up the system name and other information that have been set in the comment field for the folder.

It is recommended that this setting method be used when the correspondence between folders and each organization needs only to be maintained for operational purposes.

Note

Do not use this setting method in environments where a cumulative total of 10,000 or more systems are expected to be deployed within a single tenant.

If a cumulative total of 10,000 or more systems are deployed, the deployment will be executed normally, but a serial number with five or more digits will be added to the folder name.

Tenant name + L-Platform name

This method sets the tenant name followed by the L-Platform name specified with the [L-Platforms] tab of the ROR console as the name of the folder corresponding to the L-Platform to be deployed.

Example

The result will be the following kind of string:

```
sosikil-system1
```

Because the L-Platform name specified by the user is included within the folder name as shown above, it is easier to find the system within the ROR console than the "L-Platform ID".

However, with this setting method, the string specified for the L-Platform name must consist of no more than 23 characters (alphanumeric characters, underscores and hyphens).

L-Platform name

The L-Platform name specified in the [Subscription] page of the [L-Platforms] tab will be the name of the folder of the deployed L-Platform. As the folder name will use the L-Platform name specified by the user, it will be easier to find the L-Platform in the [Resources] tab of the ROR console than the "L-Platform ID".

To use this setting, however, ensure that the L-Platform name starts with an alphanumeric, and uses up to 32 characters consisting of alphanumerics, underscores, and hyphens.

It is recommended that this setting method be used if there is no operational requirement to specify Japanese text for system names.

L-Server name

The servers deployed by this product correspond to the L-Servers.

By changing the method for setting L-Server names, the servers deployed by ROR console can be made to correspond to L-Servers more easily.

Server ID

This method sets the server ID as the name of the L-Server that corresponds to the server to be deployed. The server ID is a string where a four-digit serial number has been added to the L-Platform ID.



Example

The result will be the following kind of string:

```
sosiki1-WCJFRUH6L-S-0001
```

The server ID is not displayed in the [L-Platforms] tab of the ROR console, and so in order to maintain correspondence between L-Servers and the servers deployed by ROR console it is necessary to check the IP address and so on.

This setting method is the default setting for this product. It is recommended that this setting method be used in operational situations such as when there is no need to have the servers deployed by ROR console correspond to L-Servers.

Host name

This method sets the host name (computer name) as the name of the L-Server that corresponds to the server to be deployed.

The host name can be looked up in the operation window for the server virtualization software (such as VMware) and in guest operating systems. For this reason, it is recommended that this setting method be used when it is necessary to maintain server correspondence between this product and the server virtualization software.



Note

If this setting is performed using server virtualization software other than VMware or a virtual server, it is not possible to change the host name of a server when that server is active.

Alternatively, if the "server name"(Setting Method:2) has been set in "9.4 Setting the Host Names for Virtual Servers", the server name will not be able to be changed using L-Platform configuration modification when the server is active.

Server name

This method sets the server name specified with the [L-Platforms] tab of the ROR console as the name of the L-Server that corresponds to the server to be deployed.

It is recommended that this setting method be used in situations such as when there is a need to have the servers deployed by this product correspond to L-Servers.

However, with this setting method, the string specified for the server name must consist of no more than 64 characters (alphanumeric characters, underscores and hyphens) that start with an alphanumeric character.



Note

- Do not specify names starting with "SUNW" for Solaris Zones server names.
- If this setting is performed using server virtualization software other than VMware or a virtual server, it is not possible to change the server name when that server is active.

9.6 Settings for the Overcommit Function

When the overcommit function is enabled, it is possible to configure the following settings for the CPU and memory.

For details on the overcommit function, refer to the "Overcommit" section for each VM management software in "[Chapter 8 Configuration when Creating Virtual L-Servers](#)".

Item name	Content	server virtualization software			
		VMware	Hyper-V	RHEL-KVM	Solaris Zones
CPU Performance	Specify CPU performance of the virtual server.	Y	Y	Y	Y
CPU Reserved	Specify the reserved CPU performance for the virtual server.	Y	Y	N	N
[VMware] CPU Shares [Hyper-V] CPU Weight	Specify the relative allotment ratio for determining the allotment of memory size when multiple virtual machines are competing for memory resources.	Y	Y	N	N
Memory size	Specify the memory size of the virtual server.	Y	Y	Y	Y
[VMware] Memory Reserved [Hyper-V] Memory RAM	Specify the reserved memory size for the virtual server.	N	N	N	N
[VMware] Memory Shares [Hyper-V] Memory Weight	Specify the relative allotment ratio for determining the allotment of memory size when multiple virtual machines are competing for memory resources.	N	N	N	N

Y: Can specify.

N: Cannot specify.

Note

- Settings for the overcommit function are required for all L-Server templates except the physical server used by this product. However, if the overcommit function is enabled, even a deployment (by selecting an L-Server template that has not been set up for the overcommit function) will be executed as if it had been set up for the function.
- For virtual servers where the overcommit function has been enabled, resources will be consumed when the virtual server starts. For this reason, if the settings for reserved CPU performance and reserved memory capacity are less than minimum requirements for the operating system to start, the virtual server may fail to start due to insufficient resources.
- Be sure to specify whether to enable or disable the overcommit function before operations commence. This attribute cannot be switched once operations have commenced.

Point

Refer to the following for more information about the overcommit function:

- Refer to "Chapter 15 L-Server Template Operations" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".
- Refer to "20.2 Creating" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".
- Refer to "8.7.1 Display Function Settings for Estimated Price" in the "Operation Guide CE".
- Refer to "8.7.4 Usage Charge Calculator Settings" in the "Operation Guide CE".
- Refer to "8.8 System Condition Server List Settings" in the "Operation Guide CE".

How to Use the Overcommit Function

To use the overcommit function, perform the following procedure:

1. Register an L-Server Template.

Refer to "Chapter 15 L-Server Template Operations" in the "User's Guide for Infrastructure Administrators (Resource Management) CE" for information on how to create and register L-Server Templates.

2. Set a definition file.

Point

Settings for the Overcommit Function can be set by "Setup Wizard" on the ROR console.

Refer to "3.1 Setup Wizard" in the "User's Guide for Infrastructure Administrators CE" for information on "Setup Wizard".

- a. Open the definition file for this product in a text editor.

Set the following items in the settings file:

[Windows Manager]

[vsys_config.xml]

```
Installation_folder\RCXCFMG\config\vsys_config.xml
```

[managerview_config.xml]

```
Installation_folder\RCXCTMG\MyPortal\config\managerview_config.xml
```

[Linux Manager]

[vsys_config.xml]

```
/etc/opt/FJSVcfmg/config/vsys_config.xml
```

[managerview_config.xml]

```
/etc/opt/FJSVctmyp/config/managerview_config.xml
```

- b. Add the following key and value:

[vsys_config.xml]

Key name	Content
over-commit	no : Disables the overcommit function (the default value). yes : Enables the overcommit function.

A specification example is shown below:

Example

```
<properties version="1.0">
  :
  <entry key="over-commit">yes</entry>
```

[managerview_config.xml]

Key name	Content
enable-overcommit	false: Disables the overcommit function (the default value). true: Enables the overcommit function.

- c. Save the file.
- d. Restart the manager.

Refer to "2.1 Starting and Stopping Managers" in the "Operation Guide CE" for information on how to Restart the manager.

3. Set up VM pools.

If the overcommit function is enabled, set up all the VM pools that will be used to deploy L-Platforms to use the overcommit function.

Refer to "Chapter 20 Resource Pool Operations" in the "User's Guide for Infrastructure Administrators (Resource Management) CE" for information on setting up VM pools

9.7 Editing the Environment Setup File for the L-Platform API

This section explains how to modify the environment settings necessary for using L-Platform APIs.

Use the environment setting files to change the following settings:

- Protocol for communicating with L-Platform API
- Command output results character code

Use the following procedure to edit the environment setup file:

1. Edit the environment setup file for the L-Platform APIs:

[command_config.xml]

[Windows Manager]

```
Installation_folder\RCXCFMG\config\command_config.xml
```

[Linux Manager]

```
/etc/opt/FJSVcfmg/config/command_config.xml
```

2. Specify the following values:

```
l_platform-api-protocol:<Protocol for communicating with L-Platform API> (*1)
output-char-set :<Command output results character code> (*2)
```

*1: https is set by default. Set a new value if the default value needs to be changed.

*2: When the value is not specified, the default character code of the system will be output.

The specifiable character code is "UTF-8".

A specification example is shown below:

Example

```
<entry key="l_platform-api-protocol">https</entry>
<entry key="output-char-set">UTF-8</entry>
```

9.8 Settings when RHEL5-Xen is Used

When RHEL5-Xen is used as server virtualization software, it is necessary to set the default value of MAC address to allocate to virtual servers.

Follow the procedure below to use RHEL5-Xen.

1. Use the editor to open the settings file.

The settings file is stored in the following location:

[Windows Manager]

```
Installation_folder\RCXCFMG\config\vsys_config.xml
```

[Linux Manager]

```
/etc/opt/FJSVcfmg/config/vsys_config.xml
```

2. Set the following items in the settings file:

Key name	Content
default-macaddress	One of the names of the MAC address set resources that have been registered with the resource management

3. Save the file.
4. Restart the manager.

Refer to "2.1 Starting and Stopping Managers" in the "Operation Guide CE" for information on how to Restart the manager.



Note

When RHEL5-Xen is used as server virtualization software, this setting is necessary. If it is omitted, L-Platform subscription applications will result in an error and L-Platforms cannot be created.

9.9 System Disk Settings for Physical L-Servers

The following explanation describes how to modify settings when using an existing disk as the system disk for the physical L-Server deployed from the [L-Platforms] tab of the ROR console.



Point

System Disk Settings for Physical L-Servers can be set by "Setup Wizard" on the ROR console. Refer to "3.1 Setup Wizard" in the "User's Guide for Infrastructure Administrators CE" for information on "Setup Wizard".



Note

Set whether to use an existing disk before commencing operations. This cannot be changed once operations have commenced.

Usage Method

Implement the following procedures when using an existing disk as the physical L-Server system disk:

1. Use the editor to open the settings file.

The settings file is stored in the following location:

[Windows Manager]

```
Installation_folder\RCXCFMG\config\vsys_config.xml
```

[Linux Manager]

```
/etc/opt/FJSVcfmg/config/vsys_config.xml
```

2. Set the following items in the settings file:

Key name	Content
existing-disk-mode	no: Does not use existing disk (This is the default value) yes: Uses existing disk

A specification example is shown below:

Example

```
<properties version="1.0">
  :
  <entry key="existing-disk-mode">yes</entry>
```

3. Save the file.
4. Restart the manager.

Refer to "2.1 Starting and Stopping Managers" in the "Operation Guide CE" for information on how to Restart the manager.

9.10 Setting for the Restarting Managers

By default, the manager services restart at 3:45 am everyday for stable system operation.

The settings for restarting can be changed depending on the authority level.

Refer to "Restarting Managers" of the "Appendix A Notes on Operating ServerView Resource Orchestrator" in the "Operation Guide CE" for information on how to restart the manager.

9.11 Changing Multiple Operations of Managers

When executing multiple operations simultaneously, the upper limit is set for the number of simultaneous operations.

The upper limit of the number of simultaneous operations can be changed depending on the usage environment.

Refer to "Changing Multiple Operations of Managers" of the "Appendix A Notes on Operating ServerView Resource Orchestrator" in the "Operation Guide CE" for information on how to change multiple operations of managers.

9.12 Editing the License Agreement

This section explains how to edit the license agreement that is displayed in the [L-Platforms] tab of the ROR console.

There are three license agreements as follows:

- License agreement when subscribing to the L-Platform
- License agreement when reconfiguring the L-Platform
- License agreement when canceling the L-Platform

Storage locations

Edit the following files to edit the license agreements:

[Windows Manager]

License agreement when subscribing to the L-Platform	<i>Installation_folder</i> \RCXCTMG\MyPortal\config\license\create\default
License agreement when reconfiguring the L-Platform	<i>Installation_folder</i> \RCXCTMG\MyPortal\config\license\reconfigure\default
License agreement when canceling the L-Platform	<i>Installation_folder</i> \RCXCTMG\MyPortal\config\license\return\default

[Linux Manager]

License agreement when subscribing to the L-Platform	/etc/opt/FJSVctmnp/config/license/create/default
--	--

L License agreement when reconfiguring the L-Platform	/etc/opt/FJSVctmvp/config/license/reconfigure/default
License agreement when canceling the L-Platform	/etc/opt/FJSVctmvp/config/license/return/default

Note

- The agreements window is not displayed if the file does not exist. Do not delete the file.
- After editing the license agreement, back up the file.

Settings

Write the license agreement in the file.

- In this file, use the UTF-8 for the character code and the LF for the line break code.
- The agreements window may be slow in displaying when there are more than 10,000 characters.
- The initial values for the files show the storage locations and entry examples. Edit the file as required.
The following are the initial values for the license agreement when subscribing to the L-Platform:

```
To install and operate, edit the following file.
[Windows]
Installation_folder\RCXCTMG\MyPortal\config\license\create\default

[Linux]
/etc/opt/FJSVctmvp/config/license/create/default

[Description example]
L-Platform subscription license agreement
...
```

Example of settings

The following is an example of the license agreement when subscribing to the L-Platform:

```
L-Platform subscription license agreement
The following actions involving the use of the L-Platform are not permitted.
  To use this L-Platform for personal use
  To use this L-Platform under false identity
```

9.13 Editing the User Agreement when Registering a User

This section explains how to edit the user agreement that is displayed in the Register User window when a new tenant user is to perform a registration procedure.

To edit the user agreement, edit the following HTML file:

If the user agreement has been edited, collect a backup of the HTML file after the edit.

[Windows Manager]

```
Installation_folder\IAPS\ahs\servers\RCXCT-ext\htdocs\sopdocs\pub\html\en
\cRegApply_agreement.forUse_en.html
```

[Linux Manager]

```
/var/opt/FJSVctmg-isas/ahs/servers/RCXCT-ext\htdocs/sopdocs/pub/html/en/
cRegApply_agreement.forUse_en.html
```


9.14 Editing the Home Messages

For details on how to edit the information displayed at the bottom of the Home window on the ROR console, refer to "3.2 Editing the Home Messages" in the "User's Guide for Infrastructure Administrators CE".

Chapter 10 Saving Environment Settings

This chapter explains how to save environment settings.

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

The configuration of a Resource Orchestrator setup can be saved to guard against unexpected problems. Use the admin server backup function and troubleshooting data collection command to save settings.

This troubleshooting data can be used in conjunction with the data later collected when a problem occurs for a more effective investigation, and should therefore be stored with caution.



See

- For details on admin server backup, refer to "10.1 Backup and Restoration of Admin Servers" in the "Operation Guide CE".
- For collecting troubleshooting data, refer to "1.3 Collecting Troubleshooting Data (Cloud Edition)".

Chapter 11 Uninstallation

This chapter explains the uninstallation of FUJITSU Software ServerView Resource Orchestrator.

The uninstallation of managers, agents, and the HBA address rename setup service is performed in the following order:

1. Uninstall the manager

Refer to "[11.1 Manager Uninstallation](#)".

2. Agent Uninstallation

Refer to "[11.2 Agent Uninstallation](#)".

3. HBA address rename setup service Uninstallation

For uninstallation, refer to "[11.3 HBA address rename Setup Service Uninstallation](#)".

When uninstalling a Resource Orchestrator manager, specify Resource Orchestrator using "Uninstall (middleware)" first, and uninstall the manager.

"Uninstall (middleware)" is a common tool for Fujitsu middleware products.

The Resource Orchestrator Manager is compatible with "Uninstall (middleware)".

When a Resource Orchestrator Manager is installed, "Uninstall (middleware)" is installed first, and then "Uninstall (middleware)" will control the installation and uninstallation of Fujitsu middleware products. If "Uninstall (middleware)" has already been installed, the installation is not performed.

For the uninstallation of Uninstall (middleware), refer to "[11.4 Uninstallation of "Uninstall \(Middleware\)""](#)".

11.1 Manager Uninstallation

The uninstallation of managers is explained in the following sections.

The procedure for manager uninstallation is given below.

- Preparations

Refer to "[11.1.1 Preparations](#)".

- Uninstallation

Refer to "[11.1.2 Uninstallation \[Windows Manager\]](#)" or "[11.1.3 Uninstallation \[Linux Manager\]](#)".

11.1.1 Preparations

This section explains the preparations and checks required before commencing uninstallation.

Pre-uninstallation Advisory Notes

- Checking physical L-Server system images and cloning images

The L-Server generated by this product and system and cloning images collected by this product are deleted.

When the image file storage directory has been changed, system images and cloning images which were collected using Resource Orchestrator remain in the image file storage directory.

- Checking HBA address rename

When using HBA address rename, the manager sets the WWN for the HBA of each managed server.

When uninstalling a manager be sure to do so in the following order:

1. Delete servers (*)
2. Uninstall the manager

* Note: For the server deletion method, refer to "9.2 Deleting Managed Servers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Note

When using HBA address rename, if the manager is uninstalled without servers being deleted, the WWNs of the servers are not reset to the factory default values.

Ensure uninstallation of managers is performed only after servers are deleted.

When operating without resetting the WWN, if the same WWN is setup on another server, data may be damaged if the volume is accessed at the same time.

- Definition Files

All definition files created for using Resource Orchestrator will be deleted.

If the definition files are necessary, before uninstalling Resource Orchestrator back up (copy) the folder below to another folder.

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvmr/customize_data

- Checking the cloning images used when not coordinating with BladeLogic [Solaris Zones]

Cloning images created when using Resource Orchestrator are deleted, while uninstalling Resource Orchestrator.

If the definition files are necessary, before uninstalling Resource Orchestrator back up (copy) the folder below to another folder.

[Windows Manager]

Installation_folder\SVROR\Manager\etc\vm_image

[Linux Manager]

/etc/opt/FJSVrcvmr/vm_image

- Security files used for issuing Navisphere CLI

All security files for Navisphere created for using EMC storage will be deleted.

If the security files are necessary, before uninstalling Resource Orchestrator back them up (copy them).

11.1.2 Uninstallation [Windows Manager]

The procedure for manager uninstallation is given below.

Before uninstalling this product, check that the preparations given in "11.1.1 Preparations" have been performed.

1. Log on to Windows as the administrator.

Log on to the system from which the manager is to be uninstalled. Log on using the Administrator account.

2. Start the uninstaller. Select [Start]-[All Programs]-[Fujitsu]-[Uninstall (middleware)] from the Windows menu. Click the product name then [Remove], and the uninstallation window will open.

The services of Resource Orchestrator are automatically stopped and deleted.

3. The start-up account created during installation is not automatically deleted. If the account is not necessary, delete it. However, do not delete the account if it is also used for other purposes.

Information

Deletion Methods for Windows User Accounts

Open "Computer Management" from "Administrative Tools" on the Windows Control Panel, then select [Local Users and Groups]-[Users] on the [Computer Management] window.

Right-click the user account to be deleted, and then select [Delete] from the displayed menu.

Note

- During uninstallation, certificates are backed up to the following folders. When reinstalling a manager and using the same certificates, copy the backed up certificates to the appropriate folders below.

- *Installation_folder*\SVROR\back\site\certificate
- *Installation_folder*\SVROR\back\domain\certificate

If the certificates backed up on uninstallation are not necessary, delete them manually.

- Any patches that have been applied to Resource Orchestrator will be deleted during uninstallation.
- If a manager is uninstalled and then reinstalled without agents being deleted, it will not be able to communicate with agents used before uninstallation.

In this case, the certificates to indicate that it is the same manager are necessary.

After installation, manager certificates are stored in the following folder:

- *Installation_folder*\SVROR\Manager\etc\opt\FJSVssmgr\current\certificate
- *Installation_folder*\SVROR\Manager\etc\opt\FJSVrcxdm\certificate

When uninstalling the manager, the certificates are backed up in the following folder. When reinstalling a manager and using the same certificates, copy the backed up certificates to the appropriate folders.

- *Installation_folder*\SVROR\back\site\certificate
- *Installation_folder*\SVROR\back\domain\certificate

If the certificates backed up on uninstallation are not necessary, delete them manually.

- After uninstallation, the installation folder may remain. In that case, manually delete the installation folder.

When the following folder remains, do not delete it as it is used for other software.

- *Installation_folder*\CMDB_DATA

- Deletion may fail due to locked files. Restart the OS and then delete them.
- When an admin LAN subnet has been registered, setting information of the DHCP server modified using Resource Orchestrator will not be initialized after uninstallation. Perform initialization if necessary.
- When an admin LAN subnet has been registered, after uninstallation of Resource Orchestrator, the automatic startup settings of the DHCP server (dhcpd) become "OFF" and the service is stopped.
- When passwords were saved using the rcxlogin command during operation of Resource Orchestrator, those passwords are stored in the following folder for the OS user account by which the command was executed.

Folder_set_for_each_user's_APPDATA_environment_variable\Systemwalker Resource Coordinator\

Delete those manually after uninstalling Resource Orchestrator.

- If the problem cannot be resolved, collect troubleshooting information and contact Fujitsu technical staff.

11.1.3 Uninstallation [Linux Manager]

The procedure for manager uninstallation is given below.

Before uninstalling this product, check that the preparations given in "11.1.1 Preparations" have been performed.

1. Log in to the system as the OS administrator (root).

Log in to the managed server from which Resource Orchestrator will be uninstalled, using root.

2. Launch the uninstallation command (cimanager.sh).

Perform uninstallation according to the uninstaller's interactive instructions.

```
# /opt/FJSVcir/cimanager.sh -c <RETURN>
```

Note

- When the PATH variable has been configured to enable execution of UpdateAdvisor (Middleware) commands from a user-defined location, performing uninstallation will delete any patches that have been applied to Resource Orchestrator so there is no need to return it to the state prior to application.

When the PATH variable has not been configured, unapply patches before performing uninstallation.

- If a manager is uninstalled and then reinstalled without agents being deleted, it will not be able to communicate with agents used before uninstallation.

In this case, the certificates to indicate that it is the same manager are necessary.

After installation, manager certificates are stored in the following directory:

```
/etc/opt/FJSVrcvnr/opt/FJSVssmgr/current/certificate
```

When uninstalling the manager, the certificates are backed up in the following directory.

When reinstalling a manager and using the same certificates, copy the backed up certificates to the above folder.

```
/var/tmp/back/site/certificate
```

If the certificates backed up on uninstallation are not necessary, delete them manually.

- After uninstallation, the installation directories below may remain. In that case, delete any remaining directories and files manually.

- In /opt

FJSVcfmg	FJSVctchg	FJSVctdsb	FJSVctdsb-cmdb
FJSVctdsb-ibpma	FJSVctdsb-sqc	FJSVctmg	FJSVctmg-ibpmf
FJSVctmg-isas	FJSVctmg-pgs	FJSVctmyp	FJSVctope
FJSVctpw	FJSVctsec		

- In /etc/opt

FJSVcfmg	FJSVctchg	FJSVctdsb	FJSVctdsb-cmdb
FJSVctdsb-ibpma	FJSVctdsb-sqc	FJSVctmg	FJSVctmg-ibpmf
FJSVctmg-isas	FJSVctmg-pgs	FJSVctmyp	FJSVctope
FJSVctpw	FJSVctsec		

- In /var/opt

FJSVcfmg	FJSVctchg	FJSVctdsb	FJSVctdsb-ibpma
FJSVctdsb-sqc	FJSVctmg	FJSVctmg-ibpmf	FJSVctmg-isas
FJSVctmg-pgs	FJSVctmyp	FJSVctope	FJSVctpw
FJSVctsec			

Note

When FJSVctdsb-cmdb remains, do not delete it as it is used for other software.

- When passwords were saved using the rcxlogin command during operation of Resource Orchestrator, those passwords are stored in the following directory for the OS user account by which the command was executed.

```
/Directory_set_for_each_user's_HOME_environment_variable/rcx/
```

Delete those manually after uninstalling Resource Orchestrator.

- When an admin LAN subnet has been registered, setting information of the DHCP server modified using Resource Orchestrator will not be initialized after uninstallation. Perform initialization if necessary.
- When an admin LAN subnet has been registered, after uninstallation of Resource Orchestrator, the automatic startup settings of the DHCP server (dhcpd) become "OFF" and the service is stopped.
- If SELinux was configured when Resource Orchestrator was installed, delete the settings for SELinux after uninstalling Resource Orchestrator.

For details on how to delete the settings, refer to "[J.2.1 Manager](#)".

11.1.4 Post-uninstallation Procedure

This section explains the procedures to be taken after manager uninstallation.

If necessary, delete the users registered in the directory service.

11.1.4.1 SMEE Uninstallation [Linux]

When SMEE was not deleted during uninstallation, uninstall it following the procedure below.



Confirm that other products are not using it before performing uninstallation.

The procedure for uninstallation of SMEE is given below.

1. Log in to the system as the superuser (root).
2. Use the rpm command to uninstall the package.

```
# rpm -e FJSVsmee <RETURN>
```

11.1.4.2 Securecrypto Library RunTime Uninstallation [Linux]

When the Securecrypto library runtime was not deleted during uninstallation, uninstall it following the procedure below.



Confirm that other products are not using it before performing uninstallation.

The procedure for uninstallation of Securecrypto Library RunTime is given below.

1. Log in to the system as the superuser.
2. Use the rpm command to uninstall the package.

```
# rpm -e FJSVslcr <RETURN>
```

11.1.4.3 Cautions about SMEE and Securecrypto Library RunTime Uninstallation [Linux]

After SMEE and Securecrypto Library RunTime uninstallation, the following folders will remain. Confirm that other products are not using them, and delete them manually if they are not necessary.

Delete any remaining files and folders contained in these folders as well.

- Directory in /opt

```
FJSVsmee
```

- Directory in /etc/opt

```
FJSVsclr
```

11.1.4.4 Deleting the Registered Certificate of ServerView Operations Manager

This section explains the procedure for deleting the registered certificate.

Delete the registered certificate if you regularly use ServerView Operations Manager.

[Windows Manager]

The CA certificate(keystore) of ServerView Operations Manager is stored in the following location:

- ServerView Operations Manager V6.1 or later

```
ServerView Suite Installation_folder\jboss\standalone\svconf\pki\cacerts
```

- Earlier than ServerView Operations Manager V6.1

```
ServerView Suite Installation_folder\jboss\server\serverview\conf\pki\cacerts
```

An example of deleting the registered certificate is as follows:



Example

```
> RJE Installation_folder\bin\keytool.exe -delete -alias alias -keystore "C:\Program Files (x86)\Fujitsu\ServerView Suite  
\jboss\server\serverview\conf\pki\cacerts"<RETURN>
```

```
Enter destination keystore password: Password for the environment for creating SVOM web server certificates
```

Specify "sslcert", "testcert", or the "Certificate nickname" registered in [3.2 Importing a Certificate to ServerView SSO Authentication Server](#) as the alias.

The default password for the environment for creating SVOM Web server certificates is "changeit".

[Linux Manager]

The CA certificate(keystore) of ServerView Operations Manager is stored in the following location:

- ServerView Operations Manager V6.1 or later

```
/opt/fujitsu/ServerViewSuite/jboss/standalone/svconf/pki/cacerts
```

- Earlier than ServerView Operations Manager V6.1

```
/opt/fujitsu/ServerViewSuite/jboss/server/serverview/conf/pki/cacerts
```

An example of deleting the registered certificate is as follows:



Example

```
# RJE Installation_directory/bin/keytool -delete -alias alias -keystore /opt/fujitsu/ServerViewSuite/jboss/server/  
serverview/conf/pki/cacerts<RETURN>
```

```
Enter destination keystore password: Password for the environment for creating SVOM web server certificates
```

Specify "sslcert", "testcert", or the "Certificate nickname" registered in ["3.2 Importing a Certificate to ServerView SSO Authentication Server"](#) as the alias.

The default password for the environment for creating SVOM Web server certificates is "changeit".

11.2 Agent Uninstallation

The uninstallation of agents is explained in the following sections.

If the agent (Dashboard Function) has been installed, when the agent is uninstalled, the agent (Dashboard Function) is also uninstalled.

11.2.1 Uninstallation [Windows] [Hyper-V]

This section explains the procedure for uninstallation of agents.

1. Log on to Windows as the administrator.

Log on to the system from which the agent is to be uninstalled. Log on using the Administrator account.

2. Delete agents.

Open [Programs and Features] from the Windows Control Panel, and select "ServerView Resource Orchestrator Agent" to delete the agent.

3. The [Confirm Uninstall] dialog will be displayed.

Click the [OK] button.

The services of Resource Orchestrator are automatically stopped and deleted.

4. When uninstallation is completed, the confirmation window will be displayed.

Click the [Finish] button.



Note

- Any patches that have been applied to Resource Orchestrator will be deleted during uninstallation.

However, if the agent (Dashboard Function) is installed, unapply patches before performing uninstallation.

- When uninstallation is stopped due to errors (system errors or processing errors such as system failure) or cancellation by users, resolve the causes of any problems, and then attempt uninstallation again.

If uninstallation fails even when repeated, the executable program used for uninstallation may have become damaged somehow.

In this case, set the first Resource Orchestrator DVD-ROM, open the command prompt, and execute the following command:

```
>"DVD-ROM_drive\DISK1\Agent\Windows\agent\win\setup.exe" /z"UNINSTALL" <RETURN>
```

Open [Programs and Features] from the Windows Control Panel, and if "ServerView Resource Orchestrator Agent" is not displayed, manually delete any remaining folders.

11.2.2 Uninstallation [Linux] [VMware] [Xen] [KVM]

This section explains the procedure for uninstallation of agents.

1. Log in to the system as the OS administrator (root).

Log in to the managed server from which Resource Orchestrator will be uninstalled, using root.

2. Execute the rcxagtuninstall command.

Executing this command performs uninstallation, and automatically deletes the packages of Resource Orchestrator.

```
# /opt/FJSVrcxat/bin/rcxagtuninstall <RETURN>
```

When uninstallation is completed successfully, the following message will be displayed.

```
INFO : ServerView Resource Orchestrator Agent was uninstalled successfully.
```

If uninstallation fails, the following message will be displayed.

```
ERROR : Uninstalling package_name was failed.
```

When the uninstaller of Resource Orchestrator is started, its services are stopped.

3. If uninstallation fails, use the rpm command to remove the packages given in the message, and start the process from step 1 again.

```
# rpm -e package_name <RETURN>
```

Note

- When the PATH variable has been configured to enable execution of UpdateAdvisor (Middleware) commands from a user-defined location, performing uninstallation will delete any patches that have been applied to Resource Orchestrator, so there is no need to return it to the state prior to application.

However, in the following cases, unapply patches before performing uninstallation.

- The PATH variable has not been configured.
- The agent (Dashboard Function) has been installed.
- After uninstallation, the installation directories and files below may remain. In that case, delete any remaining directories and files manually.

- Directory in /opt

FJSVnrmp	FJSVrcxat	FJSVrcxing	FJSVrcxkvm
FJSVssagt	FJSVctdsb-sqc	systemcastwizard	

- Directory in /etc/opt

FJSVnrmp	FJSVrcxat	FJSVssagt	FJSVctdsb-sqc
----------	-----------	-----------	---------------

- Directory in /var/opt

systemcastwizard	FJSVnrmp	FJSVrcxat	FJSVssagt
FJSVctdsb-sqc			

- Files

/boot/clcomp2.dat	/etc/init.d/scwagent	/etc/scwagent.conf
-------------------	----------------------	--------------------

- If SELinux was configured when Resource Orchestrator was installed, delete the settings for SELinux after uninstalling Resource Orchestrator.

For details on how to delete the settings, refer to "[J.2.2 Agent](#)".

11.2.3 Uninstallation [Solaris] [Solaris Zones] [OVM for SPARC]

This section explains the procedure for uninstallation of agents.

1. Log in to the system as the OS administrator (root).

Log in to the managed server from which Resource Orchestrator will be uninstalled, using root.

2. Execute the rcxagtuninstall command.

Executing this command performs uninstallation, and automatically deletes the packages of Resource Orchestrator.

```
# /opt/FJSVrcvat/bin/rcxagtuninstall <RETURN>
```

When uninstallation is completed successfully, the following message will be displayed.

```
INFO : ServerView Resource Orchestrator Agent was uninstalled successfully.
```

If uninstallation fails, the following message will be displayed.

```
ERROR : Uninstalling package_name was failed.
```

When the uninstaller of Resource Orchestrator is started, its services are stopped.

3. If uninstallation fails, use the `pkgrm` command to remove the packages given in the message, and start the process from step 1 again.

```
# pkgrm package_name <RETURN>
```

Note

- When the PATH variable has been configured to enable execution of UpdateAdvisor (Middleware) commands from a user-defined location, performing uninstallation will delete any patches that have been applied to Resource Orchestrator, so there is no need to return it to the state prior to application.

However, in the following cases, unapply patches before performing uninstallation.

- The PATH variable has not been configured.
- The agent (Dashboard Function) has been installed.
- After uninstallation, the installation directories below may remain. In that case, delete any remaining directories and files manually.
 - Directory in /opt

FJSVrcvat	FJSVctdsb-sqc
-----------	---------------

- Directory in /etc/opt

FJSVrcvat	FJSVctdsb-sqc
-----------	---------------

- Directory in /var/opt

FJSVrcvat	FJSVctdsb-sqc
-----------	---------------

11.3 HBA address rename Setup Service Uninstallation

This section explains uninstallation of the HBA address rename setup service.

11.3.1 Uninstallation [Windows]

The procedure for uninstallation of the HBA address rename setup service is given below.

1. Log on to Windows as the administrator.
 - Log on to the system from which the HBA address rename setup service is to be uninstalled. Log on using the Administrator account.
2. Delete the HBA address rename setup service.
 - Open [Programs and Features] from the Windows Control Panel, and select "ServerView Resource Orchestrator HBA address rename setup service" to delete the service.
3. The [Confirm Uninstall] dialog will be displayed.
 - Click the [OK] button.
 - The services of Resource Orchestrator are automatically stopped and deleted.

4. When uninstallation is completed, the confirmation window will be displayed.

Click the [Finish] button.

Note

- Any patches that have been applied to Resource Orchestrator will be deleted during uninstallation.
- When uninstallation is stopped due to errors (system errors or processing errors such as system failure) or cancellation by users, resolve the causes of any problems, and then attempt uninstallation again.

If uninstallation fails even when repeated, the executable program used for uninstallation may have become damaged somehow.

In this case, set the first Resource Orchestrator DVD-ROM, open the command prompt, and execute the following command:

```
>"DVD-ROM_drive\DISK1\HBA\Windows\hbaar\win\setup.exe" /z"UNINSTALL" <RETURN>
```

Open [Programs and Features] from the Windows Control Panel, and if "ServerView Resource Orchestrator HBA address rename setup service" is not displayed, manually delete any remaining folders.

11.3.2 Uninstallation [Linux]

The procedure for uninstallation of the HBA address rename setup service is given below.

1. Log in to the system as the OS administrator (root).
Log in to the managed server from which Resource Orchestrator will be uninstalled, using root.
2. Execute the rcxhbauninstall command.

```
# /opt/FJSVrcvhb/bin/rcxhbauninstall <RETURN>
```

Starting the uninstaller displays the following message which explains that before uninstallation the Resource Orchestrator services will be automatically stopped.

```
Any Resource Orchestrator service that is still running will be stopped and removed.  
Do you want to continue ? [y,n,?,q]
```

To stop the services and uninstall Resource Orchestrator enter "y", to discontinue the uninstallation enter "n".

If "n" or "q" is entered, the uninstallation is discontinued.

If "?" is entered, an explanation of the entry method will be displayed.

3. Enter "y" and the uninstallation will start.

When uninstallation is completed successfully, the following message will be displayed.

```
INFO : ServerView Resource Orchestrator HBA address rename setup service was uninstalled successfully.
```

If uninstallation fails, the following message will be displayed.

```
ERROR : Uninstalling "package_name" was failed
```

4. If uninstallation fails, use the rpm command to remove the packages given in the message, and start the process from step 1 again.

```
# rpm -e package_name <RETURN>
```

Note

- When the PATH variable has been configured to enable execution of UpdateAdvisor (Middleware) commands from a user-defined location, performing uninstallation will delete any patches that have been applied to Resource Orchestrator so there is no need to return

it to the state prior to application.

When the PATH variable has not been configured, unapply patches before performing uninstallation.

- After uninstallation, the installation directories below may remain. In that case, delete any remaining directories and files manually.

- Directory in /opt

FJSVrcvhh	FJSVscw-common	FJSVscw-tftpsv
-----------	----------------	----------------

- Directory in /etc/opt

FJSVrcvhh	FJSVscw-common	FJSVscw-tftpsv
-----------	----------------	----------------

- Directory in /var/opt

FJSVrcvhh	FJSVscw-common	FJSVscw-tftpsv
-----------	----------------	----------------

- If SELinux was configured when Resource Orchestrator was installed, delete the settings for SELinux after uninstalling Resource Orchestrator.

For details on how to delete the settings, refer to "[J.2.3 HBA address rename Setup Service](#)".

11.4 Uninstallation of "Uninstall (Middleware)"

The uninstallation of "Uninstall (middleware)" is explained in this section.



"Uninstall (middleware)" also manages product information on Fujitsu middleware other than Resource Orchestrator. Do not uninstall "Uninstall (middleware)" unless it is necessary for some operational reason.

In the event of accidental uninstallation, reinstall it following the procedure below.

[Windows]

1. Log on to Windows as the administrator.
2. Set the first Resource Orchestrator DVD-ROM.
3. Execute the installation command.

```
>DVD-ROM_drive\DISK1\CIR\cirinst.exe <RETURN>
```

[Linux]

1. Log in to the system as the superuser (root).
2. Set the first Resource Orchestrator DVD-ROM.
3. Execute the following command to mount the DVD-ROM.

If the auto-mounting daemon (autofs) is used for DVD-ROM auto-mounting, the installer fails to start due to its "noexec" mount option.

```
# mount -t iso9660 -r /dev/hdc DVD-ROM_mount_point <RETURN>
# cd DVD-ROM_mount_point <RETURN>
```

4. Execute the installation command.

```
# ./DISK1/CIR/cirinst.sh <RETURN>
```

[Solaris]

1. Log in to the system as the superuser (root).

2. Set the first Resource Orchestrator DVD-ROM.
3. Execute the installation command.

```
# ./DISK1/CIR/cirinst.sh <RETURN>
```

Uninstallation of "Uninstall (Middleware)"

To uninstall "Uninstall (middleware)", follow the procedure below.

1. Start "Uninstall (middleware)" and check that other Fujitsu middleware products do not remain.

The starting method is as follows.

[Windows]

Select [Start]-[All Programs]-[Fujitsu]-[Uninstall (middleware)].

[Linux] [Solaris]

```
# /opt/FJSVcir/cimanager.sh -c <RETURN>
```



If the command path contains a blank space, it will fail to start. Do not specify a directory with a name containing blank spaces.

2. After checking that no Fujitsu middleware product has been installed, execute the following uninstallation command.

[Windows]

```
>%SystemDrive%\FujitsuF4CR\bin\cirremove.exe <RETURN>
```

[Linux] [Solaris]

```
# /opt/FJSVcir/bin/cirremove.sh <RETURN>
```

3. When "This software is a common tool of Fujitsu products. Are you sure you want to remove it? [y/n]:" is displayed, enter "y" to continue. Uninstallation will be completed in seconds.
4. After uninstallation is complete, delete the following directory and contained files.

[Windows]

%SystemDrive%\FujitsuF4CR

%ProgramData%\Fujitsu\FujitsuF4CR(For Windows Server 2008 or Windows Server 2012)

%ALLUSERSPROFILE%\Application Data\Fujitsu\FujitsuF4CR(For Windows Server 2003)

[Linux] [Solaris]

/var/opt/FJSVcir

Appendix A Installing VM Hosts on Physical L-Servers

This appendix explains how to install a VM host on a physical L-Server.

Installation of VM Hosts on physical L-Servers offers the following benefits:

- Simplified configuration of servers, storage, and networks

When installing a physical L-Server on a VM host, the following configurations can be simplified further than when installing a VM host on a physical server.

- Server configuration such as I/O virtualization
- Storage configuration such as LUN masking
- Network configuration such as LAN switch blades

A.1 Installation

This section explains how to install a VM host on a physical L-Server.

1. Preparations for Physical L-Server Creation

For physical L-Server creation, configure the necessary settings.

For details, refer to the following:

- "D.2 Preparations for Servers" in the "Design Guide CE"
- "D.3 Storage Preparations" in the "Design Guide CE"
- "D.4 Network Preparations" in the "Design Guide CE"
- ["Chapter 7 Configuration when Creating Physical L-Servers"](#)

2. Create Resource Folders

Create a resource folder to locate physical L-Servers to install VM hosts on.

For details on how to create a resource folder, refer to "21.2 Creating" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Note

In Basic mode, to prevent accidental deletion, create a resource folder for the physical L-Server on which the VM host will be installed, and configure it so that tenant administrators cannot access it.

For details, refer to "5.1 Restricting Access Using Roles" in the "Design Guide CE".

3. Create physical L-Servers

Create a physical L-Server to install a VM host in the created resource folder.

For details on how to create a physical L-Server, refer to ["7.5 Creating L-Servers"](#).

Note

- Cloning images for a physical L-Server on which a VM host has been installed cannot be collected or deployed.
- Use the NIC for the public LAN of an L-Server with the status "not connected" without connecting network resources.

Point

If using Auto Deploy to create a VM host, perform the following procedures:

- Specify "Do not deploy" for "Image deployment".
- Specify "Network boot (PXE)" for "Boot mode".

4. Install a VM Host

Install a VM host on the created physical L-Server.

When using Auto Deploy to create a VM host, reserve the MAC address of the admin NIC and admin IP address for the physical L-Server on the DHCP server used with Auto Deploy and start the L-Server.

Specify the virtual MAC address configured on VIOM for the MAC address of the admin NIC.

For details, refer to the individual manuals of server virtualization software.

5. Install the agent

Install a Resource Orchestrator agent and ServerView Agents on a VM host.

If using Auto Deploy to create a VM host, this procedure is not necessary.

For details on installing agents, refer to "[2.2 Agent Installation](#)".



When using VMware ESX, install Resource Orchestrator agents and ServerView for VMware agents.

When using VMware ESXi, install ServerView ESXi CIM Provider.

6. Configure a Network for VM Hosts

When performing auto-configuration for virtual switches during virtual L-Server creation, confirm that Resource Orchestrator is configured to support auto-configuration of networks beforehand.

For details, refer to "[8.2.4 Automatic Network Configuration](#)".

7. Register a VM Host

Registers a VM host with VM management software.

For details, refer to the individual manuals of server virtualization software.

8. Register VM management software

Register VM management software in Resource Orchestrator.

For details, refer to "5.2 Registering VM Management Software" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

9. Register the Agent

Register an agent on the physical L-Servers the VM host will be installed on. Execute the following procedure to register agents.

- a. Right-click the target L-Server in the orchestration tree, and select [Register]-[Agent] from the popup menu.
- b. In the displayed [Register Agent] dialog, click [OK].

10. Register Resources to a VM Pool

Register a VM host in a VM pool.

For details, refer to "14.1 VM Host Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

A.2 Changing Configuration

Configuration of VM hosts can be changed the same way as physical L-Servers.

Refer to "17.2 Modifying" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

A.3 Deletion

Execute the following procedure to delete a VM host.

1. Unregister the VM Host

Unregister the VM host from VM pools.

Refer to "19.4 Unregistration" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Stop the VM Host

Stop the VM host.

Refer to "17.1.2 Stopping an L-Server" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Delete Physical L-Servers

Delete the physical L-Server used for installation of the VM host.

Refer to "17.4 Deleting" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

A.4 Advisory Notes for Installation of VM Hosts on Physical L-Servers

This section explains advisory notes when installing a VM host on a physical L-Server.

Collecting and Deploying Cloning Images

Cloning images cannot be collected or deployed.

When Using Auto Deploy to Create a VM Host

Backup and restore functions cannot be used for the created VM host.

When a VM Host is VMware vSphere 4 or Later

When installing a VMware vSphere 4 or later VM host on a physical L-Server, take note of the following points:

- Backup and restore functions cannot be used.
- When using L-Server redundancy, it is not possible to specify the same pool as that of a spare server between L-Servers on which Windows is operating.
- When performing physical server usage change, the same physical servers cannot be switched over between L-Servers on which Windows is operating.
- When switching over operating and standby storage as disks used for datastores, mount the VMFS datastores using the currently used signature on VMware vCenter Server.

When a VM Host is VMware ESXi

Alive Monitoring is not supported.

When Creating Physical Servers with Function Number Expansion Configured

When using the UMC function (function number expansion) for the onboard converged network adapter using the physical L-Server, the server cannot be registered as a VM host.

Appendix B Customizing the Dashboard

The following customization can be performed for the dashboard.

- An alert function for sending notifications via email if the global pool use rate exceeds the threshold value.
- Changing of the schedule for deleting event data displayed in the dashboard
- Changing of the user used for dashboard customization

This appendix explains how to configure the settings above.

B.1 Customizing the Alert Function

The following settings can be customized by changing the alert information:

- Email sending settings

The send destination email address, the email subject, and the text can be set.

- Monitored pools

The resource pools to be monitored can be specified using any of the following specifications as conditions:

- Global pool for a specific resource pool

Specify any of the VM pool (CPU), the VM pool (memory), the storage pool, the network pool, the server pool, or the address pool.

- Global pool having a specific pool name

Specify any pool name.

- Threshold values

The resource pool use rate threshold value can be set.



Note

The items above are the only customizations possible. Customization of charts or other dashboard definitions is not supported, and new definitions cannot be created.

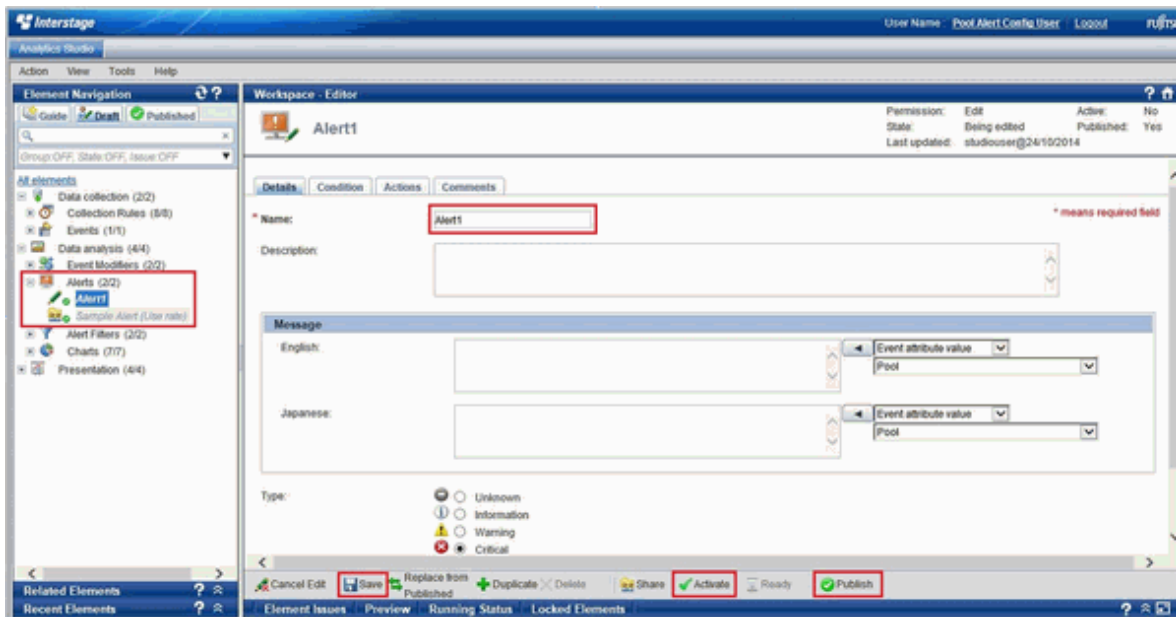


Point

Alert information can be changed by copying and editing the sample alert information provided by this product.

In the sample information, "90%" is set as the threshold value, and "All global pools" is set as the monitored pools.

Perform customization using the following procedure:



When Creating New Alert Information

1. Access Analytics Studio

Log in to Analytics Studio. For details, refer to "[B.3.2 Methods to Access Analytics Studio](#)".

2. Create the alert information definition

Copy the definition file of the sample alert information, and create the alert information definition.

The creation method is as follows.

- a. Open the [Draft] tab on the navigation space, and extract [Alerts] in [Data analysis].
- b. From the displayed list of alert definitions, right-click [Sample Alert (Use rate)], and then select [Duplicate].
- c. Change the alert name from [Copy_Sample Alert (Use rate)] to a suitable name using the displayed [Duplicate - Confirmation] confirmation dialog.

3. Customize the alert information

Select the alert information definition created in step 2, and customize each item on the workspace.

For details on how to perform customization, refer to the following:

- Email sending settings
["B.1.1 Customizing Email Sending Settings"](#)
- Monitored pools
["B.1.2 Customizing Monitored Pools"](#)
- Threshold values
["B.1.3 Customizing Threshold Values"](#)

4. Save the alert information

Click [Save] in the bottom of the workspace, and save the modified alert information definition.

5. Enable the definition file of the alert information

Click [Activate] at the bottom of the workspace, and enable the alert information definition.

6. Start alert operations

Click [Publish] at the bottom of the workspace, and start alert operations.

7. Adding Alert Filters

Add alerts to two alert filters ([Alert], [Alert]). For details on the procedure, refer to "[B.1.4 Adding Alert Filters](#)".

When Modifying Already Configured Alert Information

1. Access Analytics Studio

Log in to Analytics Studio. For details, refer to "[B.3.2 Methods to Access Analytics Studio](#)".

2. Select the alert information

Open the [Draft] tab on the navigation space, extract [Alerts] in [Data analysis], select the alert information to modify, and then click [Edit] at the bottom of the workspace.

3. Customize the alert information

Refer to step 3 in "[When Creating New Alert Information](#)".

4. Save the alert information

Click [Save] in the bottom of the workspace, and save the modified alert information definition.

5. Start alert operations

Refer to step 6 in "[When Creating New Alert Information](#)".



Note

Do not modify the sample alert information.

B.1.1 Customizing Email Sending Settings

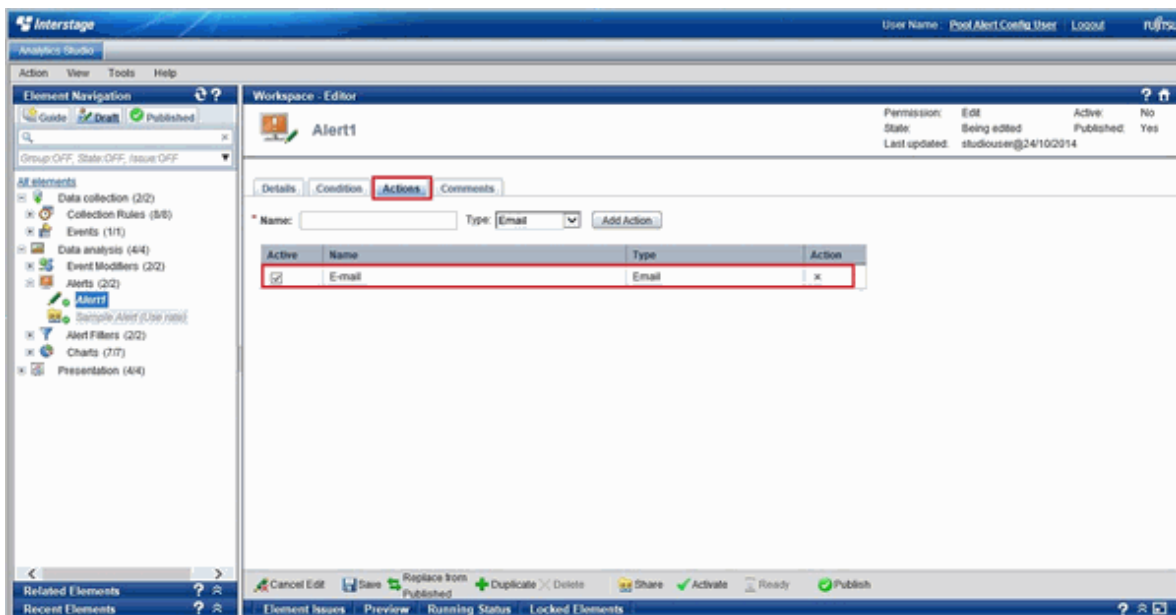


Information

Immediately after dashboard installation, the settings specify that email is not sent. Customize email send settings to send notifications via email.

Email send settings must be set in order to send alert information via email. Refer to "[9.1.7 Settings for Email Sent from the Dashboard](#)" for information on email setting for mail server.

The customization method for email sending settings is as shown below.

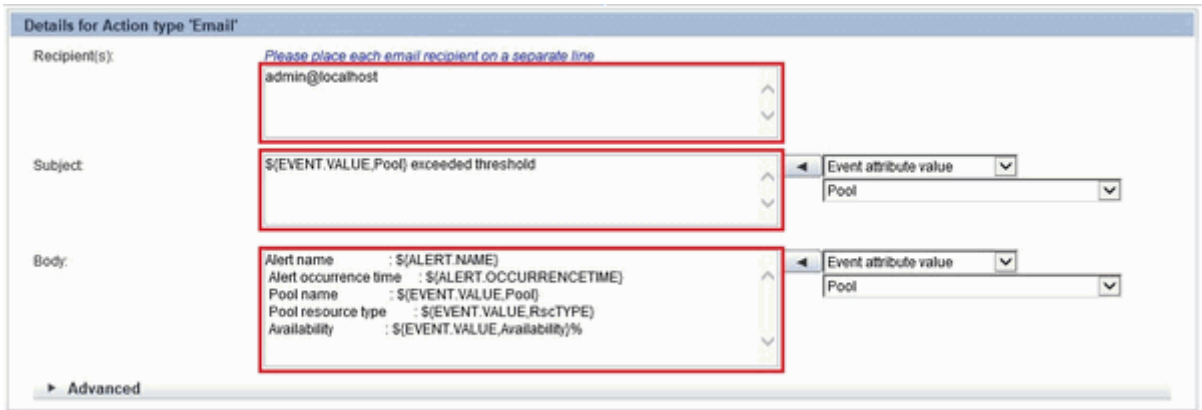


1. Open the [Actions] tab on the workspace, and select [E-mail] from the action list.
2. In [Recipient(s)] in [Details for Action type "E-mail"], specify the email address of the alert email recipient.

Delete the email address "admin@localhost" specified as the default.

An alert email is sent as Bcc (Blind Carbon Copy), so the addresses of other addressees will not be seen by the recipient.

Depending on the settings of the mail server, the "to address" (the recipient) may also be shown as "undisclosed-recipients:".



3. Modify the following items, as necessary:

- [Action List]
 - [Name]: Select [E-mail], and change it to the desired name.
- [Details for Action type "E-mail"]
 - Subject: "\${EVENT.VALUE,Pool} exceeded threshold" as default.
Example: /VMHostPool exceeded threshold
 - Body: the following items can be as default:

Alert name	\${ALERT.NAME}
Alert occurrence date and time	\${ALERT.OCCURRENCETIME}
Pool name	\${EVENT.VALUE,Pool}
resource type	\${EVENT.VALUE,RscTYPE}
global pool use rate	\${EVENT.VALUE,Availability}%

The following alert parameters can be used for the subject and the text.

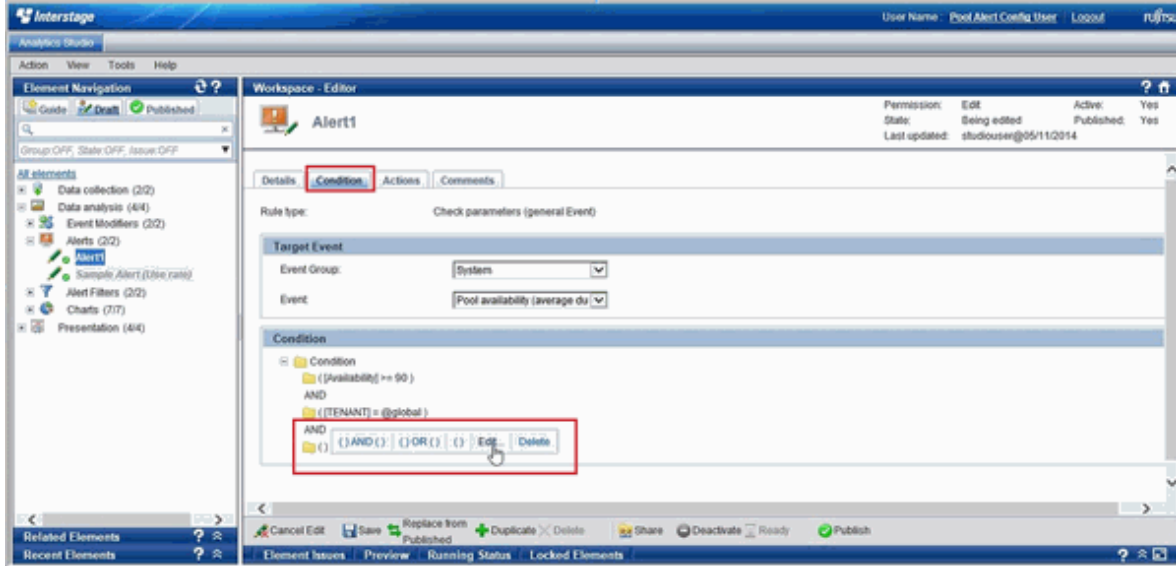
Variable	Description	Example
\${ALERT.NAME}	Alert Rule name	Alert (Use rate) CPU
\${ALERT.OCCURRENCETIME}	time when alerts occurred	October 14, 2011 13:05:45
\${EVENT.VALUE,Pool}	global pool name	/VMHostPool
\${EVENT.VALUE,RscTYPE}	resource type	CPU
\${EVENT.VALUE,Availability}	global pool use rate	35.5%

B.1.2 Customizing Monitored Pools

Note

Do not delete or modify the "@global" condition in the condition tree in "Condition".

The methods to customize monitored pools are as shown below.

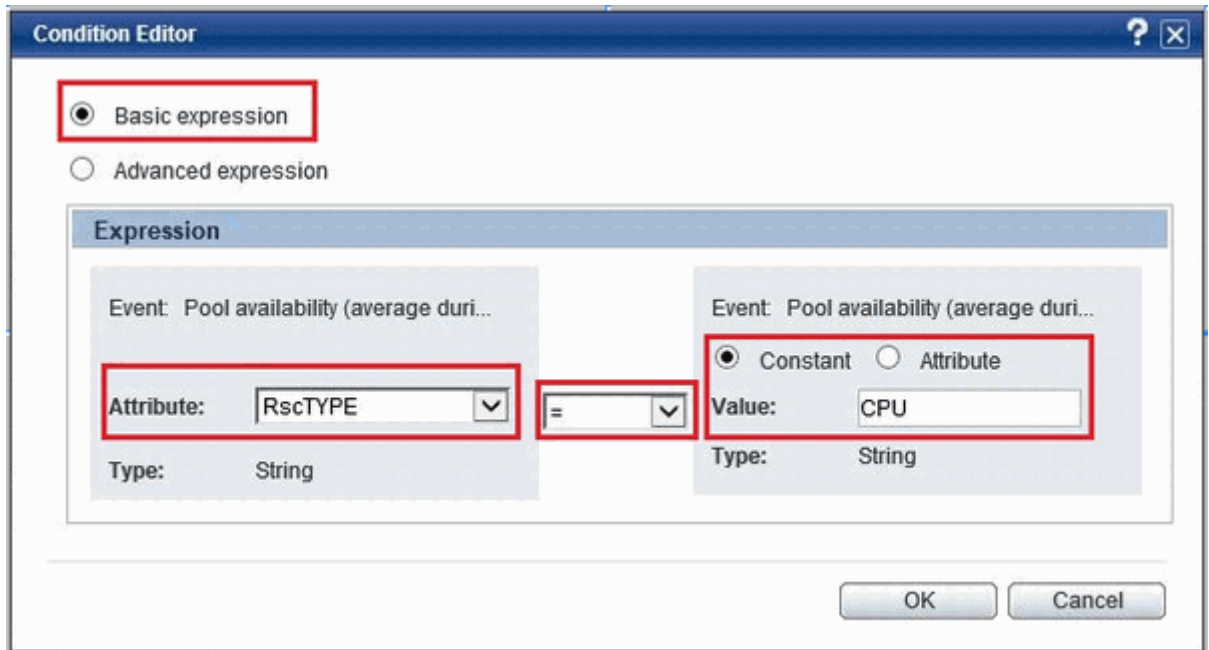


1. Open the [Condition] tab on the workspace.
2. Place the cursor on [Condition] in the condition tree in [Condition], and select [AND()] from the displayed item.
3. Place the cursor on the added ([)], and select [Edit] from the displayed item.
4. Edit the following values in [Condition Editor], and click [OK].
 - If the "Pool for a specific resource pool" alert is set:
 - a. Select the [Basic expression] radio button.
 - b. Select [RscTYPE] from the attributes in [Expression] on the left.
 - c. Select "=" from the drop-down list in [Expression] in the center.
 - d. Select the [Constant] radio button in [Expression] on the right.
 - e. Enter any of the following as resource types for which an alert is being set in [Value] in [Expression] on the right.

For VM pool (CPU)	CPU
For a VM pool (memory)	MEMORY
For a storage pool	STORAGE
For a network pool	NETWORK
For a server pool	SERVERPOOL
For an address pool	ADDRESS

Information

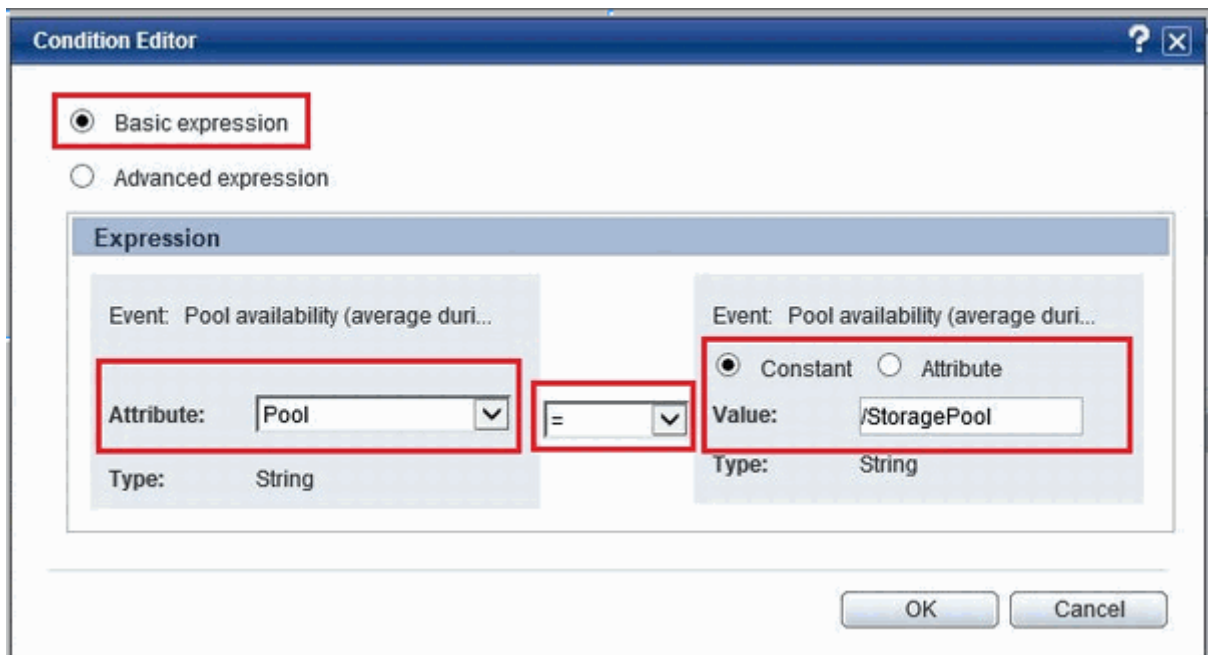
If the "Pool for a specific resource pool" alert is set, the settings with the following conditions are configured.



- If the "Pool having a specific pool name" alert is set:
 - a. Select the [Basic expression] radio button.
 - b. Select [Pool] from the attributes in [Expression] on the left.
 - c. Select "=" from the drop-down list in [Expression] in the center.
 - d. Select the [Constant] radio button in [Expression] on the right.
 - e. Specify the name of the pool for which the alert is being set in [Value] in [Expression] on the right.

Information

If the "Pool having a specific pool name" alert is set, the settings with the following conditions are configured.



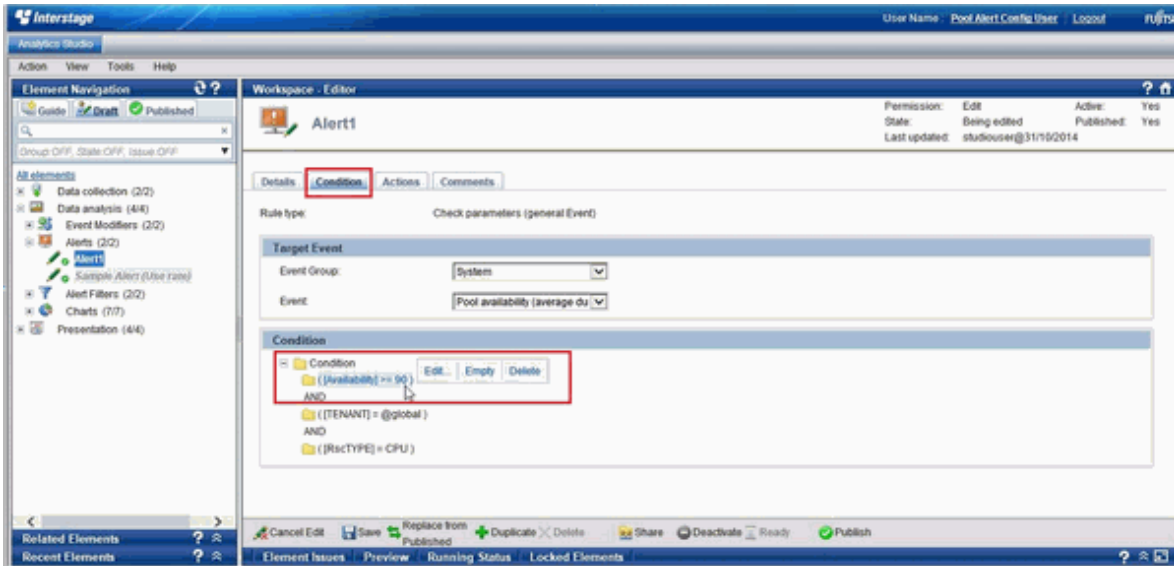
B.1.3 Customizing Threshold Values



Note

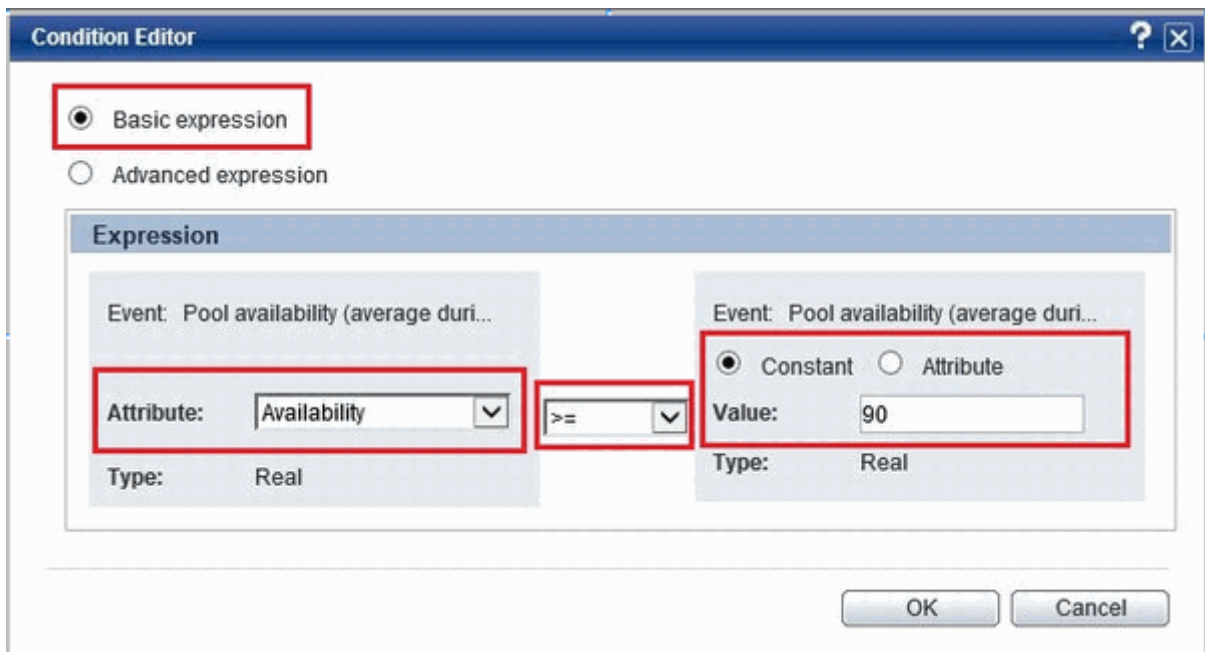
Do not delete or modify the "@global" condition in the condition tree in "Condition".

The method for customizing threshold values is as shown below.



1. Open the [Condition] tab on the workspace.
2. Edit the expression using the condition tree in [Condition].

In the example below, "[Availability] is greater the equal 90" is selected. The availability is the use rate.



3. Edit the following values in the condition editor, and click [OK]. The other values cannot be changed.
 - a. Select the [Basic expression] radio button.
 - b. Enter the value used as the threshold value in the input field in [Expression] on the right.

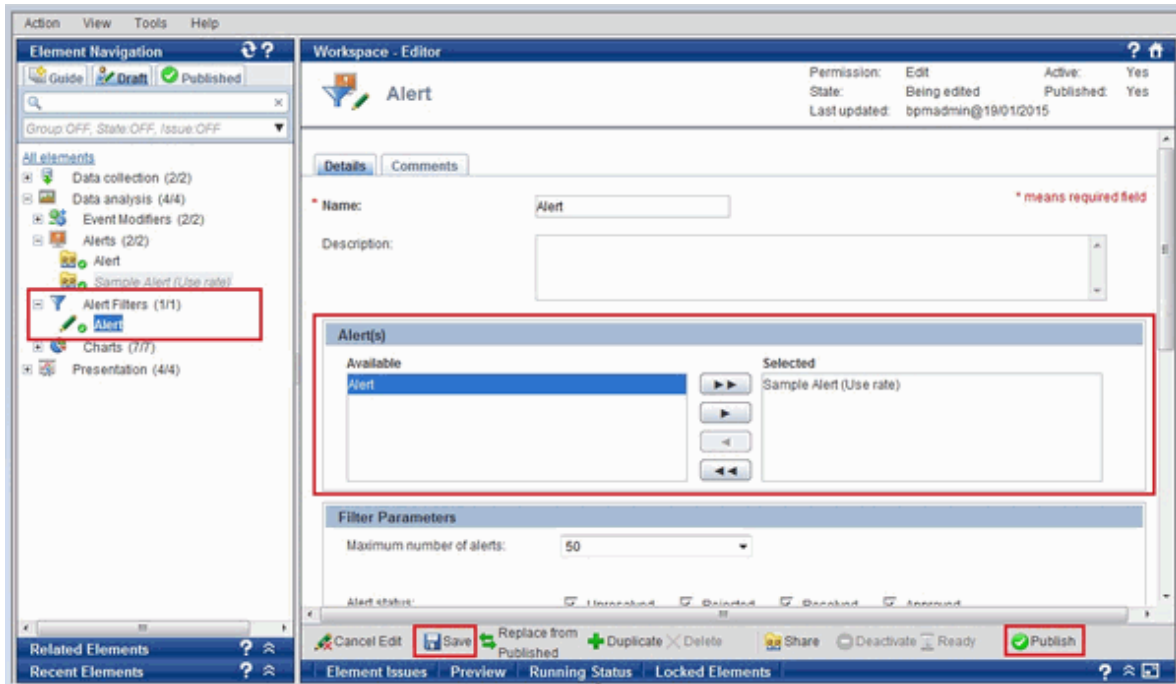
- c. Select ">=" or ">" from the drop-down list in [Expression] on the right.


Information

The threshold value will be set to the daily average of the global pool use rate. Therefore, even if the use rate at a certain time exceeds the threshold value, there may be cases when the alert information is not sent immediately.

B.1.4 Adding Alert Filters

The procedure to add alert filters is as follows.



1. Open the [Draft] tab on the navigation space, extract [Alert Filters] in [Data analysis], select the alert filter to add, and then click the [Edit] button at the bottom of the workspace.
2. Open the [Details] tab on the workspace.
3. Select the alert to add from the [Available] list of [Alerts(s)].
4. Click  to move the alert to the [Selected] list.
5. Click the [Save] button in the bottom of the workspace, and save the definition of the modified alert filter.
6. Click the [Publish] button at the bottom of the workspace, and start the alert filter.

B.2 Changing the Schedule for Deleting Event Data

Data displayed in the dashboard (event data) is collated at specific times. This collated data is then deleted at certain times. If the service is unable to delete the data, because the server is stopped every time it is meant to delete the data, then the data cannot be deleted and unnecessary data will accumulate.

If the service is unable to delete the data, because the server is stopped every time it is meant to delete the data, then the data cannot be deleted and unnecessary data will accumulate.

If this situation occurs, perform the following procedure to change the time to a more appropriate one.

1. Connect to the operation management console and log in. For details, refer to "[B.3.1 Access Method](#)".
2. Click [Analytics System]-[System Settings]-[Data Migration] in the pane on the left, and select CTDSB002 to CTDSB004 on the [Archive Rules] tab to display [Schedule Setting].

3. Modify [Schedule Type] and [Execution Time] to the time to execute.
4. Click [Modify].

Information

The default settings are as shown below:

Data Migration Definition Name	Execution Schedule
CTDSB001	Every day at 3:51 AM
CTDSB002	Every day at 2:51 AM
CTDSB003	Every day at 1:51 AM
CTDSB004	First day of every month at 00:51 AM

Note

Do not change these settings unless there is a particular need.

When modifying the settings, configure different times for deletion of each data migration definition.

B.3 The Interstage Business Process Manager Analytics Management Console

This section explains the Interstage Business Process Manager Analytics management console. In the operation management console, perform only those operations described in this manual.

B.3.1 Access Method

The method for accessing the Interstage Business Process Manager Analytics management console is as shown below.

1. Specify the address from the Web browser in the following format, and start the Interstage Business Process Manager Analytics management console.

```
http://[FQDN of the admin server]:[Port number]/ibpmm/admintool/BPMAAdminTool
```

The default value of the port number is "3502".

Note

In environments where upgrade installation has been performed, the port number from before the upgrade installation (Default value: 80) is inherited.

2. When accessing the address above, in the displayed user authentication window enter the user ID and the password of the administrator user, and then click [Login].

The user ID and the password are as shown below.

User ID	bpmadmin
Password	bpmadmin



.....

The password of the administrator user can be changed.

For details, refer to "[B.3.3 Changing the Password of the Administrator](#)".

.....

B.3.2 Methods to Access Analytics Studio

The methods to access Analytics Studio are as shown below.

1. After logging into the operation management console, click [BPM Analytics] - [System] - [Analytics Studio] in the pane on the left.

B.3.3 Changing the Password of the Administrator

This is the password for logging into the Interstage Business Process Manager Analytics management console.

Manage passwords based on your security policy.

The password at installation is "bpmadmin".

Change the password of the administrator using the following procedure:

1. After logging in to the operation management console, click [Analytics System] in the pane on the left.
2. Click [Set Password] in the pane on the right, enter the three fields ([Current Password], [New Password], and [Confirm Password]), then click [Modify].

B.3.4 Restarting the Analytics Server

Restart the Analytics server using the following procedure:

1. After logging in to the operation management console, click [Analytics System]-[Server Management]-[BPM Analytics Server] in the pane on the left.
2. Click [Stop] in the pane on the right.
3. Confirm that "Status" has changed to "Stopped", and then click "Start".
4. Confirm that "Status" has changed to "Running".

Appendix C Upgrading from Earlier Versions

This appendix explains the upgrade procedures.

C.1 Overview

This section explains an overview of upgrades.

There are the following two types of upgrades:

- Upgrading from earlier versions
- Upgrading from other editions of this version

C.1.1 Upgrading from Earlier Versions

Upgrading from earlier versions indicates how to upgrade the following environments to this version of ROR CE.

- Environments configured using RCVE
- Environments configured using an earlier version of ROR
- Environments configured using an earlier version of ROR VE
- Environments configured using an earlier version of ROR CE

Upgrade Procedure

Perform upgrade using the following procedure:

1. Upgrade the [Manager](#).
2. Upgrade the [Agent](#).
3. Upgrade the [HBA address rename Setup Service](#).
4. Perform the operations for the [Client](#) side.
This operation can be performed after upgrading the manager.



Information

Combinations with agents of earlier versions

The manager of this version can be used in combination with agents without upgrading, as the combinations with agents of earlier versions (*1) are supported.

In this case, the scope of available functions is limited to the one provided by the earlier version of agents.

*1: RCVE V2.1.0 - ROR V3.1.2

Upgradability

Upgradability of the environments to this version of ROR CE is as indicated below.

Product Name	Version	Edition	Upgradability						
			Manager		Agent			HBA address rename Setup Service	
			Windows	Linux	Windows	Linux	Solaris	Windows	Linux
RCVE	V2.1.x	-	No	No	Yes	Yes	Yes	Yes	Yes
	V2.2.0	-	No	No	Yes	Yes	Yes	Yes	Yes
	V2.2.2	-	No	Yes	Yes	Yes	Yes	Yes	Yes

Product Name	Version	Edition	Upgradability						
			Manager		Agent			HBA address rename Setup Service	
			Windows	Linux	Windows	Linux	Solaris	Windows	Linux
ROR	V2.2.0	-	No	No	Yes	Yes	Yes	Yes	Yes
	V2.2.2	-	No	Yes	Yes	Yes	Yes	Yes	Yes
	V2.3.0	-	Yes	-	Yes	-	Yes	Yes	-
	V3.0.0	VE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		CE	Yes	No					
	V3.1.x	VE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CE		Yes	No						

Yes: Upgrade is possible

No: Upgrade is not possible

-: Upgrade is not necessary (an unavailable upgrade pattern)



Note

After upgrading the manager from RCVE V2.2.2 to ROR VE V3.2.0, it is not possible to upgrade from ROR VE V3.2.0 to ROR CE V3.2.0.

C.1.2 Upgrading from Other Editions of This Version

Upgrading from other versions of this version indicates how to upgrade the following environments to this version of ROR CE.

- Environments configured using this version of ROR VE

Upgrade Procedure

Perform upgrade using the following procedure:

1. Upgrade the [Manager](#).
2. To use an agent (Dashboard Function), install the agent (Dashboard Function). Refer to "[2.3 Agent \(Dashboard Function\) Installation](#)".
3. Perform the operations for the [Client](#) side.

Upgradability

Upgradability of the environments to this version of ROR CE is as indicated below.

Edition	Upgradability						
	Manager		Agent			HBA address rename Setup Service	
	Windows	Linux	Windows	Linux	Solaris	Windows	Linux
VE	Yes	Yes	-	-	-	-	-

Yes: Upgrade is possible

No: Upgrade is not possible

-: Upgrade is not necessary (an unavailable upgrade pattern)

C.2 Manager

This section explains the upgrading of managers.

When operating managers in clusters, transfer using upgrade installation cannot be performed. Perform "[Transfer of the Manager Using Re-installation or the Pre-configuration Function](#)".

Point

- When maintaining compatibility with earlier versions, refer to "2.3.1 Maintaining Compatibility with Earlier Versions" in the "Release Notes", and change each setting.

[Windows Manager]

- When upgrading an environment configured using an earlier version of ServerView Resource Coordinator to this version of FUJITSU Software ServerView Resource Orchestrator Cloud Edition, replace the "*Installation_folder*\SVROR\Manager" used in Resource Orchestrator manuals with "*Installation_folder*\Manager".
-

Transferred Data

The following manager data is transferred:

- Resource Orchestrator setting information (Setting information for the environment of the earlier version)
- Certificates
- System images and cloning images (Files in the image file storage folder)

Also, with transfer using upgrade installation the following data is also transferred:

- Port number settings
- Power consumption data
- Batch files and script files for event-related functions

Data which is transferred during upgrade installation, except for system images and cloning images, is created and stored in the following folder.

For system images and cloning images, the installation folder of the earlier version is used.

Ensure that the folder is not deleted until after the upgrade is complete.

After the upgrade is complete, the following folder may remain. In that case, check that Resource Orchestrator is operating correctly and then manually delete the folder.

[Windows Manager]

Drive_name\Program Files (x86)\RCVE-upgradedata

installation_folder\CE-upgrade

installation_folder\CE-upgradedata

[Linux Manager]

/var/opt/RCVE-upgradedata

/var/opt/backupscwdir

Preparations

Perform the following preparations and checks before upgrading:

- Check that the environment is one in which managers of this version can be operated.
For the operational environment, refer to "6.1 Software Environment" and "6.2 Hardware Environment" in the "Overview".
Take particular care regarding the memory capacity.
- To enable recovery in case there is unexpected trouble during the upgrade process, please back up the system.

- When using GLS to perform redundancy of NICs for the admin LAN of managed servers, activate the admin LAN on the primary interface.
- To confirm that the upgrade is complete, if there are registered VM hosts on which there are VM guests, check from the ROR console that all of the VM guests are displayed and record their information before upgrading.
- When server switchover settings have been performed, it is not possible to upgrade when spare servers have been switched to. Restore any such servers before starting the upgrade. For how to restore, refer to the information about Server Switchover in the "Operation Guide VE" of an earlier version.
- If ETERNUS SF Storage Cruiser Manager or ETERNUS SF AdvancedCopy Manager is installed, stop the service or daemon for each of them (the service starts even if a license has not been registered). Refer to the manuals for information on how to stop the services and daemons.
- Stop the BMC BladeLogic Server Automation service if it is in use.

[Windows Manager]

Stop the "BladeLogic Application Server" service in the Services window in Administrative Tools.

[Linux Manager]

Stop the BladeLogic Application Server service by executing the following command:

```
# /etc/init.d/blappserv stop <RETURN>
```

- Check that Software Configuration Manager (Admin Server) is not installed. If it is installed, please contact Fujitsu technical staff.
- When the settings for restarting of managers have been changed, check and record the settings, referring to "Restarting Managers" in "Appendix A Notes on Operating ServerView Resource Orchestrator" in the "Operation Guide CE".

[Windows Manager]

- If linking with Systemwalker Service Quality Coordinator Manager, backup the following license file:

```
Installation_destination_of_Resource_Orchestrator\SQL_DATA\control\license.dat
```

Upgrade using Upgrade Installation

When upgrading to this version, upgrade can be performed using upgrade installation. Perform the upgrade using the following procedure:



Note

- Do not change the hardware settings or configurations of managers, agents, or any other devices until upgrading is completed.
- When performing upgrade installation, do not close the installation window until the installation is complete.
- When performing an upgrade installation, please do not access the installation folder of the earlier version or any of the files and folders inside it using the command prompt, Explorer, or an editor. While it is being accessed, attempts to perform upgrade installation will fail. If upgrade installation fails, stop accessing the files or folders and then perform the upgrade installation again.
- To revert to the status before an upgrade was performed, restore the system that was backed up in the preparation stage.
- Upgrade installation will delete patches that were applied to the earlier version.

[Linux Manager]

When the PATH variable has not been configured to enable execution of UpdateAdvisor (Middleware) commands from a user-defined location, performing upgrade installation will delete any patches that have been applied to the old version, but it will not delete product information or component information. Refer to the UpdateAdvisor (Middleware) manual and delete software and component information from the applied modification checklist.

- When operating managers in clusters, transfer using upgrade installation cannot be performed. Perform transfer using re-installation or the pre-configuration function.

- When the path of the installation folder before the upgrade is 46 characters or longer, transfer using upgrade installation is not possible. Perform transfer using re-installation or the pre-configuration function.
- When the settings for restarting of managers have been changed, reconfigure the settings after the completion of the upgrade installation, based on the information which was recorded during preparation. For details, refer to "Restarting Managers" in "Appendix A Notes on Operating ServerView Resource Orchestrator" in the "Operation Guide CE".
- When performing an upgrade installation, check that port number 80 is not listed in the "services" file. If it is listed, perform the following before starting the upgrade installation.
 - Disable any services in the "services" file that use port 80.

1. Upgrade Installation

[Windows Manager]

Refer to steps 1 to 6 in the installation section in "[2.1.1.6 Installation](#)", and execute the Resource Orchestrator installer.

The Resource Orchestrator setup window will be displayed.

Check the contents of the license agreement, etc. and then click [Next] or enter "y".

The settings to be inherited from the earlier version will be displayed. After checking them, click [Confirm] or enter "y".

Upgrade installation will begin.

[Linux Manager]

Refer to steps 1 to 12 in the installation section in "[2.1.2.6 Installation](#)", and execute the Resource Orchestrator installer.

Check the contents of the license agreement, etc. and then enter "y".

The setting information that will be taken over from the earlier version will be displayed. Please check it and then enter "y".

Upgrade installation will begin.

2. Transfer of Configuration Methods for the Dashboard (System Conditions) [Windows Manager]

Only perform this procedure when performing an upgrade installation in an environment configured using an earlier version of ROR CE.

When the upgrade installation is complete, perform the following procedure before restarting the server.

- a. Delete the "Vnnnn" section from the file names of the two files below, and then copy them to the destination folder. There are files with the same names in the destination folder, so overwrite them.

- Source files:

```
Installation_folder\CE-upgradedata\SQCM\data\sqc_backup\remoteAccountVnnnn.txt
```

```
Installation_folder\CE-upgradedata\SQCM\data\sqc_backup\remoteAgentVnnnn.txt
```

* Note: Vnnnn is a number with 3 - 4 digits. Check in an upgrade installation environment.

- Destination folder:

```
Installation_folder\SQC\sqc_data\control
```

- b. Execute the following command and enable the settings.

```
Installation_folder\SQC\sqcm\bin\sqcSetPolicy.exe
```

3. Register Certificates [Windows Manager]

Only perform this procedure when performing an upgrade installation in an environment configured using an earlier version of ROR CE.

Perform this after the upgrade installation is complete.

- a. Stop the ROR manager.
Execute the following command to stop the manager.

```
Installation_folder\SVROR\Manager\bin\rcxmgrctl stop
```

- b. Change the name of the folder.

Change the name of the following folder, and back it up.

```
Before changing: Installation_folder\IAPS\sme
```

```
After changing: Installation_folder\IAPS\sme_bak
```

- c. Register the certificates from before the upgrade.

Execute the following command to register the certificates from before the upgrade with ROR.

```
Installation_folder\RCXCTMG\Operation\bin\createTestCert.bat FQDN_of_the_admin_server
```

- d. If registration is successful, the following folder will be re-created, so the folder backed up in step b can be deleted.

```
Installation_folder\IAPS\sme
```

4. Restarting after Upgrade Installation is Finished

After upgrade installation is finished, restart the system in order to complete the upgrade.

5. Transfer of Configuration Methods for Overcommit Functions

For ROR V3.1.0 and later, the configuration method for overcommit functions differ from those of earlier versions of Resource Orchestrator. Therefore, the configuration method must be transferred from the earlier version.

When performing upgrade installation of an admin server that is ROR V2.3.0 or V3.0.0, execute the following command to transfer the configuration information.

[Windows Manager]

```
Installation_folder\SVROR\Manager\bin\rcxmigrate_oc
```

[Linux Manager]

```
/opt/FJSVrcvnr/bin/rcxmigrate_oc
```

For details on the `rcxmigrate_oc` command, refer to "5.2 `rcxmigrate_oc`" in the "Reference Guide (Command/XML) CE".



If this step is omitted, overcommit cannot be set for VM pools in "Chapter 20 Resource Pool Operations" in the "User's Guide for Infrastructure Administrators (Resource Management) CE". In that case, edit overcommit definition files as in the case of the earlier versions.

For details, refer to "2.3.1.1 Overcommit Definition Files" in the "Release Notes".

6. Registration of license

When performing upgrade installation from the following products to Cloud Edition, it is necessary to register the license.

- RCVE
- ROR VE

Access the ROR console, and register the license of Cloud Edition.

For the registration of the license, refer to the setting of the license of "[Chapter 4 License Setup and Confirmation](#)".

7. Transfer of L-Server templates of ROR V2.3.0

When performing upgrade installation of an admin server that is ROR V2.3.0, execute the following command to transfer the physical L-Server templates.

- a. Check the physical L-Server templates which need to be transferred.

Templates that have Physical for TYPE and '-' for NICS are the targets of transfer. For details on the `rcxadm` template command, refer to "8.1 `rcxadm` template" in the "Reference Guide (Command/XML) CE".

[Windows Manager]

```
Installation_folder\SVROR\Manager\bin\rcxadm template list
```

[Linux Manager]

/opt/FJSVrcvmr/bin/rcxadm template list

NAME	TYPE	SPEC/MODEL	DISKS
NICS			
----	----	-----	----

sample_large 40.0GB	Virtual	2.0GHz, 2, 4.0GB	40.0GB,
2			
sample_medium 40.0GB	Virtual	2.0GHz, 1, 2.0GB	
1			
sample_physical 40.0GB	Physical	"PRIMERGY BX922 S2"	
-			
sample_small 20.0GB	Virtual	1.0GHz, 1, 1.0GB	
1			

- b. Export the physical L-Server templates which need to be transferred.

The following is an example using the template name `sample_physical`.

You can use an arbitrary file name for `samplefile.xml`.

[Windows Manager]

`Installation_folder\SVROR\Manager\bin\rcxadm template export -name sample_physical -file samplefile.xml`

[Linux Manager]

`/opt/FJSVrcvmr/bin/rcxadm template export -name sample_physical -file samplefile.xml`

- c. Edit the file exported in b. Set a value larger than 1 for NumOfNIC (the following example uses 2). If the NICs tag is not displayed, add the NICs tag.

If a NIC tag and a NICIndex tag are displayed, no corrective action is necessary.

```
<LServerTemplate name='sample_physical' label='sample of
physical template' id='xxxxxx'>
  <ServerType>Physical</ServerType>
  <Model>PRIMERGY BX922 S2</Model>
  <Disks>
    <Disk type='FC'>
      <DiskIndex>0</DiskIndex>
      <DiskSize>40.0</DiskSize>
    </Disk>
  </Disks>
  <NICs>
    <NumOfNIC>2</NumOfNIC>
  </NICs>
  <Policy>
    <Redundancy>None</Redundancy>
  </Policy>
</LServerTemplate>
```



Note

If you edit and save a UTF-8 text file using Windows Notepad, the Byte Order Mark (BOM) is stored in the first three bytes of the file, and the information specified on the first line of the file will not be analyzed correctly. When using Notepad, specify the information from the second line.

- d. Overwrite the template by importing the edited file.

[Windows Manager]

`Installation_folder\SVROR\Manager\bin\rcxadm import -file samplefile.xml -force`

[Linux Manager]

`/opt/FJSVrcvmr/bin/rcxadm import -file samplefile.xml -force`

e. Check that a value larger than 1 is displayed for NICS in the transferred physical L-Server template.

[Windows Manager]

Installation_folder\SVROR\Manager\bin\rcxadm template list

[Linux Manager]

/opt/FJSVrcvmr/bin/rcxadm template list

NAME	TYPE	SPEC/MODEL	DISKS	NICS
----	----	-----	-----	----
sample_large	Virtual	2.0GHz, 2, 4.0GB	40.0GB, 40.0GB	2
sample_medium	Virtual	2.0GHz, 1, 2.0GB	40.0GB	1
sample_physical	Physical	"PRIMERGY BX922 S2"	40.0GB	-
sample_small	Virtual	1.0GHz, 1, 1.0GB	20.0GB	1

8. Usage Charge Calculation Feature Settings

This section describes the usage charge calculation feature settings.

If an upgrade installation is performed, pre-upgrade settings are retained. To use the post-upgrade usage charge calculation feature, configure the following, according to the pre-upgrade version.

Restart the manager for the definition file settings to take effect. Refer to Section "2.1 Starting and Stopping Managers" in the "Operation Guide CE" for information on starting the manager.

Location of the Definition File

[Windows Manager]

Installation_folder\RCXCTMG\Charging\conf

[Linux Manager]

/etc/opt/FJSVctchg/conf/

Definition File Name

accounting.properties

Definition File Format

Describe each line of the definition file in the following format:

```
accounting.calculate.sys.disk=yes
accounting.calculate.snapshot=yes
gui.identifier.server=name
gui.identifier.disk=name
```

Definition File Items

Table C.1 List of Items

Version before upgrade	Item Name	Description
V3.1.0 or V3.1.0A	accounting.calculate.sys.disk	<p>From V3.1.1, it is possible to set billing and tally usage charges at the system disk level, separately from L-Server images. When billing system disks separately from L-Server images, add the following row:</p> <pre>accounting.calculate.sys.disk=yes</pre> <p>Note that in an environment where system disk units are included in L-Server image products, change the settings carefully for product units, paying special attention to the applicable periods for product units and tenant cut-off dates so that there is no double charging for system disks.</p> <p>Refer to Section "15.3.2 Modify Accounting Information" in the "Operation Guide CE" for information on reconfiguring product unit prices.</p>

Version before upgrade	Item Name	Description
V3.1.0 or V3.1.0A	gui.identifier.server	From V3.1.1, the server name specified in the L-Platform management, not the internal ID, can be displayed as the identification information for the virtual or physical server in the [Usage Charge Detail] window. To display the server name, add the following row: gui.identifier.server=name
V3.1.0 or V3.1.0A	gui.identifier.disk	From V3.1.1, the disk name specified in the L-Platform management, not the internal ID, can be displayed as the identification information for the data disk capacity in the [Usage Charge Detail] window. To display the disk name, add the following row: gui.identifier.disk=name
V3.1.1	accounting.calculate.snapshot	From V3.1.2, it is possible to set and tally usage charges at the snapshot level for virtual L-Servers. When billing for snapshots, add the following row: accounting.calculate.snapshot=yes Note that in an environment where snapshot units are included in L-Server image products, change the settings carefully for product units, paying special attention to the applicable periods for product units and tenant cut-off dates so that there is no double charging for snapshots. Refer to "15.3.2 Modify Accounting Information" in the "Operation Guide CE" for information on changing the product unit settings.

9. Backup

When using the backup and restoration function of the admin server, save the resources after completion of the upgrade installation by performing an offline backup. If you choose to backup online, use a base backup.

For details, refer to "10.1 Backup and Restoration of Admin Servers" in the "Operation Guide CE".

Note

- When using backup system images or collecting cloning images without upgrading agents, either reboot managed servers after the manager upgrade is completed, or restart the related services.

For restarting the Related Services, refer to "2.2 Starting and Stopping Agents" in the "Operation Guide CE".

- If linking with Systemwalker Service Quality Coordinator Manager, it is necessary to upgrade the manager and then install Systemwalker Service Quality Coordinator Manager and the operation management client.

For the installation procedure, refer to "[C.7 Installation of Systemwalker Service Quality Coordinator \[Windows Manager\]](#)".

- After the upgrade is complete, check that Resource Orchestrator is operating correctly, and then manually delete the folder that was used to back up the transferred data.

For the folder created to back up the transferred data, refer to "[Transferred Data](#)".

Transfer of the Manager Using Re-installation or the Pre-configuration Function

In the following cases, import system configuration files (import) and export system configuration files (export) using pre-configuration.

- Transfer from RCVE manager to this version of ROR CE
- Transfer of a cluster operated using RCVE manager to this version of ROR CE manager
- Transfer of a cluster operated using ROR VE manager to this version of ROR CE manager
- When the path of the installation folder before transfer is 46 characters or longer

Use the following procedure to perform "Transfer of the Manager Using Re-installation or the Pre-configuration Function".



For pre-configuration, refer to the following manuals:

[RCVE]

- "Chapter 7 Pre-configuration" in the "ServerView Resource Coordinator VE Setup Guide"
- "Appendix D Format of CSV System Configuration Files" in the "ServerView Resource Coordinator VE Setup Guide"

[ROR VE V3.0.0]

- "Chapter 6 Pre-configuration" in the "ServerView Resource Orchestrator Virtual Edition V3.0.0 User's Guide"
- "Appendix A Format of CSV System Configuration Files" in the "ServerView Resource Orchestrator Virtual Edition V3.0.0 User's Guide"

Also, when transferring the manager using the pre-configuration function, perform the following preparations and checks.

- To confirm that transfer using the pre-configuration function is complete, if there are registered VM hosts on which there are VM guests, check from the ROR console that all of the VM guests are displayed, and record their information.
- When server switchover settings have been performed, it is not possible to transfer using the pre-configuration function when spare servers have been switched to. Perform restoration before starting transfer using the pre-configuration function.

For the restoration method, refer to the following manuals:

[RCVE]

- "Chapter 10 Server Switchover" in the "ServerView Resource Coordinator VE Operation Guide"

[ROR VE V3.0.0]

- "Chapter 10 Server Switchover" in the "ServerView Resource Orchestrator Virtual Edition V3.0.0 Operation Guide"
- The following information will not be transferred. Reconfiguration is necessary when performing transfer using the pre-configuration function.

Record the following configuration information from the RC console or the ROR Console.

- User account information
- Registration status of the agent of each managed server, and maintenance mode settings
- Spare server settings
- Agent registration information of OVM for SPARC guest domains
- Power consumption data

When monitoring of power consumption is being performed, collected power consumption data will not be transferred.

When the power consumption data is necessary, export it in CSV format.

For the export method, refer to the following manuals:

[RCVE]

- "13.2 Exporting Power Consumption Data" in the "ServerView Resource Coordinator VE Operation Guide"

[ROR VE V3.0.0]

- "13.2 Exporting Power Consumption Data" in the "ServerView Resource Orchestrator Virtual Edition V3.0.0 Operation Guide"



Note

Do not change the settings of the manager, agents, or any other hardware devices, or their configuration, until transfer using the pre-configuration function is complete.

1. Set Maintenance Mode

From the RC console of the RCVE manager, or the ROR console of ROR VE, place all managed servers into maintenance mode.

2. System Configuration File Export

Use the pre-configuration function to export a system configuration file in CSV format. During the export, do not perform any other operations with Resource Orchestrator.

For the export method, refer to the following manuals:

[RCVE]

- "Chapter 7 Pre-configuration" in the "ServerView Resource Coordinator VE Setup Guide"

[ROR VE V3.0.0]

- "Chapter 6 Pre-configuration" in the "ServerView Resource Orchestrator Virtual Edition V3.0.0 User's Guide"

3. Backup (copy) Assets to Transfer

a. Back up (copy) certificates.

Back up (copy) the following folders and directories:

- RCVE Windows Manager

Installation_folder\Manager\etc\opt\FJSVssmgr\current\certificate

Installation_folder\Manager\etc\opt\FJSVrcxdm\certificate

Installation_folder\Manager\sys\apache\conf\ssl.crt

Installation_folder\Manager\sys\apache\conf\ssl.key

- ROR VE Windows Manager

Installation_folder\SVROR\Manager\etc\opt\FJSVssmgr\current\certificate

Installation_folder\SVROR\Manager\etc\opt\FJSVrcxdm\certificate

Installation_folder\SVROR\Manager\sys\apache\conf\ssl.crt

Installation_folder\SVROR\Manager\sys\apache\conf\ssl.key

- RCVE and ROR VE Linux Manager

/etc/opt/FJSVrcvnr/opt/FJSVssmgr/current/certificate

/etc/opt/FJSVrcvnr/sys/apache/conf/ssl.crt

/etc/opt/FJSVrcvnr/sys/apache/conf/ssl.key

b. Back up (copy) the folder containing the collected system images and cloning images to a location other than the installation folder and the image file storage folder.

When using the default image file storage folder, back up (copy) the following folder or directory:

- RCVE Windows Manager

Installation_folder\ScwPro\depot\Cloneimg

- ROR VE Windows Manager

Installation_folder\SVROR\ScwPro\depot\Cloneimg

- RCVE and ROR VE Linux Manager

/var/opt/FJSVscw-deploysv/depot/CLONEIMG

When using a folder or directory other than the default, back up (copy) the "Cloneimg" folder or "CLONEIMG" directory used.

c. Back up (copy) the following file.

- Port Number Settings

[Windows Manager]

System_drive\WINDOWS\system32\drivers\etc\services

[Linux Manager]

/etc/services

- Batch Files and Script Files for Event-related Functions

RCVE Windows Manager

Installation_folder\Manager\etc\trapop.bat

ROR VE Windows Manager

Installation_folder\SVROR\Manager\etc\trapop.bat

Linux Manager

/etc/opt/FJSVrcvnr/trapop.sh

Note

- When operating managers in clusters, the above folders or directories are stored on the shared disk. Check if files, folders, or directories stored in the above locations are correctly backed up (copied).
The backup (copy) storage target can be set to be stored in a folder or directory on the shared disk other than "RCoordinator" or "SVROR" which are created during setup of the manager cluster service.

- When operating managers in clusters, the backup (copy) of folders or directories should be executed on the primary node.

- Before making a backup (copy) of system images and cloning images, check the available disk space. For the disk space necessary for system images and cloning images, refer to the following manuals:

[RCVE]

- "1.1.2.5 Dynamic Disk Space" in the "ServerView Resource Coordinator VE Installation Guide"

[ROR VE V3.0.0]

- "1.4.2.5 Dynamic Disk Space" in the "ServerView Resource Orchestrator Virtual Edition V3.0.0 Setup Guide"

When there is no storage folder for system images and cloning images, this step is not necessary.

4. Uninstall Earlier Products or Managers of Earlier Versions

Refer to the "ServerView Resource Coordinator VE Installation Guide" or the "ServerView Resource Orchestrator Virtual Edition V3.0.0 Installation Guide", and uninstall the manager.

When operating managers in clusters, refer to the following manuals, delete the cluster service and uninstall the manager.

[RCVE]

- "Appendix B Manager Cluster Operation Settings and Deletion" in the "ServerView Resource Coordinator VE Installation Guide"

[ROR VE V3.0.0]

- "Appendix B Manager Cluster Operation Settings and Deletion" in the "ServerView Resource Orchestrator Virtual Edition V3.0.0 Installation Guide"

Note

- Do not perform "Delete servers" as given in the Preparations in the "ServerView Resource Coordinator VE Installation Guide" or the "ServerView Resource Orchestrator Virtual Edition V3.0.0 Installation Guide".

When managed servers using HBA address rename have been deleted, it is necessary to reboot managed servers after upgrading of the manager is completed.

- User account information is deleted when managers are uninstalled. Refer to step 6 and perform reconfiguration from the ROR console.

5. Installation of Managers of This Version

Install managers of this version.

For installation, refer to "2.1 Manager Installation".

Note

- When installing managers, specify the same admin LAN as used for the RCVE manager on the [Admin LAN Selection] window.
- When the settings for restarting of managers have been changed, reconfigure the settings after the manager is installed, based on the information which was recorded during preparation. For details, refer to "Restarting Managers" in "Appendix A Notes on Operating ServerView Resource Orchestrator" in the "Operation Guide CE".

After installing managers, use the following procedure to restore the certificates and image file storage folder backed up (copied) in step 3.

a. Stop the manager.

For the method for stopping managers, refer to "2.1 Starting and Stopping Managers" in the "Operation Guide CE".

b. Return the image file storage folder backup (copy) to the folder specified during installation.

When using the default image file storage folder, restore to the following folder or directory:

[Windows Manager]

Installation_folder\ScwPro\depot\Cloneimg

[Linux Manager]

/var/opt/FJSVscw-deploysv/depot/CLONEIMG

When using a folder other than the default, restore to the new folder.

When the image file storage folder was not backed up, this step is not necessary.

c. Restore the backed up (copied) certificates to the manager *installation_folder*.

Restore to the following folder or directory:

[Windows Manager]

Installation_folder\SVROR\Manager\etc\opt\FJSVssmgr\current\certificate

Installation_folder\SVROR\Manager\etc\opt\FJSVrcxdm\certificate

Installation_folder\SVROR\Manager\sys\apache\conf\ssl.crt

Installation_folder\SVROR\Manager\sys\apache\conf\ssl.key

[Linux Manager]

/etc/opt/FJSVrcvmr/opt/FJSVssmgr/current/certificate

/etc/opt/FJSVrcvmr/sys/apache/conf/ssl.crt

/etc/opt/FJSVrcvmr/sys/apache/conf/ssl.key

d. Restore the information that was backed up during preparations.

- Port number settings

Change the port numbers based on the information that was backed up during preparations.

For details on how to change port numbers, refer to "6.2 Changing Port Numbers" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

When the port number has not been changed from the default, this step is not necessary.

- Batch files and script files for event-related functions

Restore them by replacing the following file.

[Windows Manager]

Installation_folder\SVROR\Manager\etc\trapop.bat

[Linux]
/etc/opt/FJSVrcvnr/trapop.sh

- e. Start the manager.

For the methods for starting and stopping managers, refer to "2.1 Starting and Stopping Managers" in the "Operation Guide CE".

6. User Account Settings

Using the information recorded during preparations, perform setting of user accounts using the ROR console.

For details on how to configure user accounts, refer to "Chapter 3 Configuring Users and Customizing Roles" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

7. Registration of license

Access the ROR console, and register the license of Cloud Edition.

For the registration of the license, refer to the setting of the license of "[Chapter 4 License Setup and Confirmation](#)".

Use SSL communications when accessing the ROR console from a browser.

When replacing the certificate used for SSL communication from the test certificate created by default with another certificate, refer to "[Chapter 3 SSL Communication Environment Settings for the ROR Console](#)".

8. Edit System Configuration Files

Based on the environment created for the manager, edit the system configuration file (CSV format) exported in 2.

Change the operation column of all resources to "new".

For how to edit system configuration files (CSV format), refer to "Appendix B Format of CSV System Configuration Files" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".



Note

When the spare server information is configured, use the following procedure to delete the spare server information.

- In the "SpareServer" section, set "operation" as a hyphen ("-").

9. Creating an Environment of This Version

Import the system configuration file and create an environment of this version.

Use the following procedure to configure an environment of this version.

- a. Import of the system configuration file

Import the edited system configuration file.

For the import method, refer to "10.2 Importing the System Configuration File" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

- b. Register the Agent

Using the information recorded during preparations, perform agent registration using the ROR console. Perform agent registration with the OS of the managed server booted.

For details on registering agents, refer to "8.2 Installing Software and Registering Agents on VM Hosts" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

After completing agent registration, use the ROR console to check that all VM hosts are displayed. When there are VM hosts (with VM guests) registered, check that all VM guests are displayed.

- c. Spare Server Information Settings

Using the information recorded during preparations, perform registration of spare server information using the ROR console.

For registration of spare server information, refer to "18.2 Settings for Server Switchover" in the "User's Guide VE".

- d. Registration of Labels, Comments, and Contact Information

When label, comment, and contact information has been registered, change the contents of the operation column of the system configuration file (CSV format) that were changed to "new" in 7 back to hyphens ("-"), and change the contents of the operation

column of resources contained in the [Memo] section to "new".

For how to edit system configuration files (CSV format), refer to "Appendix B Format of CSV System Configuration Files" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Import the edited system configuration file.

For the import method, refer to "10.2 Importing the System Configuration File" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

10. Set Maintenance Mode

Using the information recorded during preparation, place the managed servers placed into maintenance mode before the transfer using the pre-configuration function into maintenance mode again.

For maintenance mode settings, refer to "Appendix C Maintenance Mode" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".



Note

When using backup system images or collecting cloning images without upgrading agents, either reboot managed servers after reinstallation of the manager or transfer using the pre-configuration function is completed, or restart the related services.

For restarting the Related Services, refer to "2.2 Starting and Stopping Agents" in the "Operation Guide CE".

C.3 Agent

This section explains the upgrading of agents.

Upgrading of agents is not mandatory even when managers have been upgraded to this version. Perform upgrades if necessary.

If the agent (Dashboard Function) has been installed, ensure it is also upgraded.

Transferred Data

Before upgrading, note that the following agent resources are transferred:

- Definition files of the network parameter auto-configuration function (when the network parameter auto-configuration function is being used)

[Windows] [Hyper-V]

Installation_folder\Agent\etc\event_script folder

Installation_folder\Agent\etc\ipaddr.conf file

Installation_folder\Agent\etc\ipaddr.conf file

[Linux] [VMware] [Xen] [KVM]

/etc/opt/FJSVrcxat/event_script directory

/etc/opt/FJSVnrmp/lan/ipaddr.conf file

/etc/FJSVrcx.conf file

[Solaris]

The command does not have to be executed.

Data and work files which are transferred during upgrade installation are stored in the following folder. Ensure that the folder is not deleted until after the upgrade is complete.

After the upgrade is complete, the following folder may remain. In that case, check that Resource Orchestrator is operating correctly and then manually delete the folder.

[Windows] [Hyper-V]

32-bit (x86) OS

Drive_name\Program Files\RCVE-upgradedata

64-bit (x64) OS

Drive_name\Program Files (x86)\RCVE-upgradedata

[Linux] [VMware] [Xen] [KVM]

/var/opt/RCVE-upgradedata

[Solaris]
/var/opt/RCVE-upgradedata

Preparations

Perform the following preparations and checks before upgrading:

- Check that the environment is one in which agents of this version can be operated.
For the operational environment, refer to "6.1 Software Environment" and "6.2 Hardware Environment" in the "Overview".
- To enable recovery in case there is unexpected trouble during the upgrade process, back up the folders and files listed in "Transferred Data" to a folder other than the agent installation folder.

Upgrade using Upgrade Installation

When performing upgrade installation from V2.1.1 of agents in Windows environments, upgrade installation can be performed using the installer of this version.

Use the following procedure to upgrade agents of earlier versions to agents of this version on all of the managed servers that are being upgraded.

On the managed server on which the agent (Dashboard Function) is installed, the agent (Dashboard Function) is also upgraded when performing upgrade installation of the agent.



- Do not perform any other operations with Resource Orchestrator until the upgrade is completed.
- Perform upgrading of agents after upgrading of managers is completed.
- In the event that upgrade installation fails, please resolve the cause of the failure and perform upgrade installation again. If the problem cannot be resolved and upgrade installation fails again, please contact Fujitsu technical staff.
- When performing an upgrade installation, please do not access the installation folder of the earlier version or any of the files and folders inside it using the command prompt, Explorer, or an editor.
While it is being accessed, attempts to perform upgrade installation will fail.
If upgrade installation fails, stop accessing the files or folders and then perform the upgrade installation again.
- When stopping the upgrade and restoring the earlier version, please re-install the agent of the earlier version and then replace the information that was backed up during the preparations.
When performing restoration and an agent of this version or an earlier version has been installed, please uninstall it.
After restoration, please delete the folder containing the backed up assets.
- Upgrade installation will delete patches that were applied to the earlier version.

[Linux]

When the PATH variable has not been configured to enable execution of UpdateAdvisor (Middleware) commands from a user-defined location, performing upgrade installation will delete any patches that have been applied to the old version, but it will not delete product information or component information. Refer to the UpdateAdvisor (Middleware) manual and delete software and component information from the applied modification checklist.

1. Set Maintenance Mode

When server switchover settings have been performed for managed servers, place them into maintenance mode.
When managed servers are set as spare servers, place the managed servers set as spare servers into maintenance mode.

2. Backing up (copying) of Network Parameter Auto-configuration Function Definition Files

When using the network parameter auto-configuration function during deployment of cloning images, back up (copy) the following folders and files to a location other than the agent installation folder.

[Windows] [Hyper-V]

Installation_folder\Agent\etc\event_script folder

Installation_folder\Agent\etc\ipaddr.conf file
Installation_folder\Agent\etc\ipaddr.conf file

[Linux] [VMware] [Xen] [KVM]
/etc/opt/FJSVrcxat/event_script directory
/etc/opt/FJSVnrmp/lan/ipaddr.conf file
/etc/FJSVrcx.conf file

3. Upgrade Installation

[Windows] [Hyper-V]

Refer to "2.2.2 Installation [Windows] [Hyper-V]", and execute the Resource Orchestrator installer.

The Resource Orchestrator setup window will be displayed. Check the contents of the license agreement, etc. and then click [Yes]. The setting information that will be taken over from the earlier version will be displayed. Please check it and then click [Install]. Upgrade installation will begin.

[Linux] [VMware] [Xen] [KVM]

Refer to "2.2.3 Installation [Linux] [VMware] [Xen] [KVM]", and execute the Resource Orchestrator installer.

Check the contents of the license agreement, etc. and then enter "y".

The setting information that will be taken over from the earlier version will be displayed. Please check it and then enter "y". Upgrade installation will begin.

[Solaris]

Refer to "2.2.4 Installation [Solaris] [Solaris Zones] [OVM for SPARC]", and execute the Resource Orchestrator installer.

Check the contents of the license agreement, etc. and then enter "y". Upgrade installation will begin.



Note

- When upgrade installation is conducted on SUSE Linux Enterprise Server, upgrade installation will be conducted successfully even if the following message is displayed.

insserv: Warning, current runlevel(s) of script 'scwagent' overwrites defaults.

4. Agent (Dashboard Function) Installation

To use an agent (Dashboard Function), install the agent (Dashboard Function).

If the agent (Dashboard Function) has already been installed, this step is not necessary.

[Windows] [Hyper-V]

Refer to "2.3.3 Installation [Windows] [Hyper-V]".

[Linux]

Refer to "2.3.4 Installation [Linux]".

[Solaris] [Solaris Zones]

Refer to "2.3.5 Installation [Solaris] [Solaris Zones]".

5. Restoration of Network Parameter Auto-configuration Function Definition Files

When using the network parameter auto-configuration function during deployment of cloning images, restore the definition files that were backed up (copied) in step 2. When step 2 was not performed, this step is not necessary.

a. Stop agents.

For the method for stopping agents, refer to "2.2 Starting and Stopping Agents" in the "Operation Guide CE".

b. Restore the definition file.

Restore the folders and files backed up (copied) in step 2 to the following locations in the installation folder of this version:

[Windows] [Hyper-V]

Installation_folder\Agent\etc\event_script folder

Installation_folder\Agent\etc\ipaddr.conf file

Installation_folder\Agent\etc\ipaddr.conf file

[Linux] [VMware] [Xen] [KVM]
/etc/opt/FJSVrcxat/event_script directory
/etc/opt/FJSVnrmp/lan/ipaddr.conf file
/etc/FJSVrcx.conf file

c. Start agents.

For the method for starting agents, refer to "2.2 Starting and Stopping Agents" in the "Operation Guide CE".

6. Set up the Agent (Dashboard Function)

When the agent (Dashboard Function) has been installed, set it up.

Execute the following command.

[Windows] [Hyper-V]

```
> Installation_folder\RCXCTDSBA\setup\dsbsetup.bat IP_address <RETURN>
```

Specify the admin LAN IP address of the managed server for *IP_address*. It takes a few minutes to complete the command.

[Linux]

```
# /opt/FJSVctdsb-sqc/setup/dsbsetup.sh IP_address <RETURN>
```

Specify the admin LAN IP address of the managed server for *IP_address*. It takes a few minutes to complete the command.

[Solaris] [Solaris Zones]

The command does not have to be executed.

7. Release Maintenance Mode

Release the maintenance mode of managed servers placed into maintenance mode in step 1.



Note

- After upgrading agents, use the ROR console to check if the upgraded managed servers are being displayed correctly.
- Updating of system images and cloning images is advised after agents have been upgraded.
- After the upgrade is complete, check that Resource Orchestrator is operating correctly, and then manually delete the folder that was used to back up the transferred data.
For the folder created to back up the transferred data, refer to "[Transferred Data](#)".

Transfer of Agents Using Re-installation or the Pre-configuration Function

Use the following procedure to perform transfer from agents of earlier versions to agents on this version on all managed servers for which transfer using the pre-configuration function will be performed.



Note

- Do not perform any other operations with Resource Orchestrator until the transfer using the pre-configuration function is completed.
- Perform transfer of agents after transfer of the manager using the pre-configuration function is completed.
- When using the network parameter auto-configuration function during deployment of cloning images, specify the same installation folder for agents of the earlier version and those of this version.

1. Set Maintenance Mode

- When server switchover settings have been performed for managed servers
Place them into maintenance mode.

- When managed servers are set as spare servers

Place the managed servers set as spare servers into maintenance mode.

2. Backing up (copying) of Network Parameter Auto-configuration Function Definition Files

When using the network parameter auto-configuration function during deployment of cloning images, back up (copy) the following folders and files to a location other than the agent installation folder.

[Windows] [Hyper-V]

Installation_folder\Agent\etc\event_script folder

Installation_folder\Agent\etc\ipaddr.conf file

Installation_folder\Agent\etc\ipaddr.conf file

[Linux] [VMware] [Xen] [KVM]

/etc/opt/FJSVrcxat/event_script directory

/etc/opt/FJSVnrmp/lan/ipaddr.conf file

/etc/FJSVrcx.conf file

3. Uninstall the Agent of the Earlier Version of ROR

Uninstall the agent, referring to the manuals of the earlier version.

4. Install ROR CE Agents

Install ROR CE agents.

For installation, refer to "[2.2 Agent Installation](#)".

5. Agent (Dashboard Function) Installation

To use an agent (Dashboard Function), install the agent (Dashboard Function).

For details of installation, refer to "[2.3 Agent \(Dashboard Function\) Installation](#)".

6. Restoration of Network Parameter Auto-configuration Function Definition Files

When using the network parameter auto-configuration function during deployment of cloning images, restore the definition files that were backed up (copied) in step 2. When step 2 was not performed, this step is not necessary.

a. Stop agents.

For the method for stopping agents, refer to "2.2 Starting and Stopping Agents" in the "Operation Guide CE".

b. Restore the definition file.

Restore the folders and files backed up (copied) in step 2 to the following locations in the installation folder of this version:

[Windows] [Hyper-V]

Installation_folder\Agent\etc\event_script folder

Installation_folder\Agent\etc\ipaddr.conf file

Installation_folder\Agent\etc\ipaddr.conf file

[Linux] [VMware] [Xen] [KVM]

/etc/opt/FJSVrcxat/event_script directory

/etc/opt/FJSVnrmp/lan/ipaddr.conf file

/etc/FJSVrcx.conf file

c. Start agents.

For the method for starting agents, refer to "2.2 Starting and Stopping Agents" in the "Operation Guide CE".

7. Set up the Agent (Dashboard Function)

When the agent (Dashboard Function) has been installed, set it up.

Execute the following command.

[Windows] [Hyper-V]

```
>Installation_folder\RCXCTDSBA\setup\dsbsetup.bat IP_address <RETURN>
```

Specify the admin LAN IP address of the managed server for *IP address*. It takes a few minutes to complete the command.

[Linux]

```
# /opt/FJSVctdsb-sqc/setup/dsbsetup.sh IP_address <RETURN>
```

Specify the admin LAN IP address of the managed server for *IP address*. It takes a few minutes to complete the command.

[Solaris] [Solaris Zones]

The command does not have to be executed.

8. Release Maintenance Mode

Release the maintenance mode of managed servers placed into maintenance mode in 1.



Note

- After transferring agents, use the ROR console to check that the upgraded managed servers are being displayed correctly.
- Updating of system images and cloning images is advised after agents have been transferred.

Upgrading with ServerView Update Manager or ServerView Update Manager Express

Upgrade installation can be performed with ServerView Update Manager or ServerView Update Manager Express when upgrading to this version from RCVE V2.2.2 or later.

Refer to the manual of ServerView Update Manager or ServerView Update Manager Express for the procedure.



Note

- To upgrade with ServerView Update Manager, the server to be upgrade must be managed by ServerView Operations Manager.
- OSs and hardware supported by ServerView Update Manager or ServerView Update Manager Express can be updated.
- For Linux or VMware, the installed ServerView Agents must be at least V5.01.08.
- Do not perform any other operations with Resource Orchestrator until the upgrade is completed.
- Perform upgrading of agents after upgrading of managers is completed.
- In the event that upgrade installation fails, please resolve the cause of the failure and perform upgrade installation again. If the problem cannot be resolved and upgrade installation fails again, please contact Fujitsu technical staff.
- When performing an upgrade installation, please do not access the installation folder of the earlier version or any of the files and folders inside it using the command prompt, Windows Explorer, or an editor. While it is being accessed, attempts to perform upgrade installation will fail.
- If upgrade installation fails, stop accessing the files or folders and then perform the upgrade installation again.
- When stopping the upgrade and restoring the earlier version, please re-install the agent of the earlier version and then replace the information that was backed up during the preparations.

When performing restoration and an agent of this version or an earlier version has been installed, please uninstall it.

After restoration, please delete the folder containing the backed up assets.

- Upgrade installation will delete patches that were applied to the earlier version.

[Linux]

- When the PATH variable has not been configured to enable execution of UpdateAdvisor (Middleware) commands from a user-defined location, performing upgrade installation will delete any patches that have been applied to the old version, but it will not delete product information or component information. Refer to the UpdateAdvisor (Middleware) manual and delete software and component information from the applied modification checklist.
- After upgrading agents, use the ROR console to check that the upgraded managed servers are being displayed correctly.

- Updating of system images and cloning images is advised after agents have been upgraded.

C.4 HBA address rename Setup Service

This section explains upgrading of the HBA address rename setup service.

Transferred Data

There is no HBA address rename setup service data to transfer when upgrading from an earlier version to this version.

Preparations

Perform the following preparations and checks before upgrading:

- Check that the environment is one in which agents of this version can be operated.

For the operational environment, refer to "6.1 Software Environment" and "6.2 Hardware Environment" in the "Overview".

Upgrade using Upgrade Installation

When upgrading to this version from RCVE V2.2.2, upgrade can be performed using upgrade installation. Perform the upgrade using the following procedure:



- Do not perform any other operations with Resource Orchestrator until the upgrade is completed.
- Perform upgrading of the HBA address rename setup service after upgrading of managers is completed.
- In the event that upgrade installation fails, please resolve the cause of the failure and perform upgrade installation again. If the problem cannot be resolved and upgrade installation fails again, please contact Fujitsu technical staff.
- When performing an upgrade installation, please do not access the installation folder of the earlier version or any of the files and folders inside it using the command prompt, Explorer, or an editor.
While it is being accessed, attempts to perform upgrade installation will fail.
If upgrade installation fails, stop accessing the files or folders and then perform the upgrade installation again.
- When stopping the upgrade and restoring the earlier version, please re-install the HBA address rename setup service of the earlier version.
When performing restoration and the HBA address rename setup service of this version or an earlier version has been installed, please uninstall it.
- Upgrade installation will delete patches that were applied to the earlier version.

[Linux]

When the PATH variable has not been configured to enable execution of UpdateAdvisor (Middleware) commands from a user-defined location, performing upgrade installation will delete any patches that have been applied to the old version, but it will not delete product information or component information. Refer to the UpdateAdvisor (Middleware) manual and delete software and component information from the applied modification checklist.

1. Upgrade Installation

[Windows]

Refer to "[2.4.2 Installation \[Windows\]](#)", and execute the Resource Orchestrator installer.

The Resource Orchestrator setup window will be displayed. Check the contents of the license agreement, etc. and then click [Yes].

The setting information that will be taken over from the earlier version will be displayed. Please check it and then click [Install].

Upgrade installation will begin.

[Linux]

Refer to "2.4.3 Installation [Linux]", and execute Resource Orchestrator installer.

The Resource Orchestrator setup window will be displayed. Check the contents of the license agreement, etc. and then enter "y".

A message checking about performing the upgrade installation will be displayed.

To perform upgrade installation, enter "y". Upgrade installation will begin.

2. Display the Resource Orchestrator Setup Completion Window [Windows]

When using the HBA address rename setup service immediately after configuration, check the [Yes, launch it now.] checkbox.

Click [Finish] and close the window. If the checkbox was checked, the HBA address rename setup service will be started after the window is closed.

3. Start the HBA address rename setup Service

[Windows]

When the HBA address rename setup service was not started in step 2, refer to "[Chapter 6 Settings for the HBA address rename Setup Service](#)", and start the HBA address rename setup service.

[Linux]

Refer to "[Chapter 6 Settings for the HBA address rename Setup Service](#)", and start the HBA address rename setup service.

C.5 Client

This section explains the necessary operations for clients after upgrading of managers.

Web browsers are used as clients of this version.

When upgrading managers, it is necessary to clear the Web browser's cache (temporary internet files), before accessing the ROR console.

Use the following procedure to clear the Web browser's cache.

For Internet Explorer

1. Select [Tools]-[Internet Options].

The [Internet Options] dialog is displayed.

2. Select the [General] tab on the [Internet Options] dialog.

3. Select [Delete] in the "Browsing history" area.

The [Delete Browsing History] dialog is displayed.

4. Check the [Temporary Internet files] checkbox in the [Delete Browsing History] dialog and unselect the other checkboxes.

5. Click the [Delete] button.

The Web browser's cache is cleared.

For Firefox

1. Select [Tools]-[Options].

The [Options] dialog is displayed.

2. Select the [Advanced] tab on the [Options] dialog.

3. Select the [Network] tab.

4. In the "Cached Web Content" area, click <Clear Now>.

The Web browser's cache is cleared.

C.6 Transferring Users and Tenants

This section explains the procedure to transfer users and tenants, when upgrading from earlier versions to this version.

The procedure for transfer differs according to the authentication method used for the earlier version. Refer to the following list:

Authentication methods for earlier versions

- Pattern a: Internal authentication in RCVE
- Pattern b: Authentication using Single Sign-On in RCVE
- Pattern c: Internal authentication in ROR V2.3
- Pattern d: Authentication using Single Sign-On or directory service in ROR V2.3

Table C.2 Procedure for Transfer of Users and Tenants from Earlier Versions

Number	Configuration Procedure	Pattern a	Pattern b	Pattern c	Pattern d
1	Upgrade of Resource Orchestrator	Yes	Yes	Yes	Yes
2	Changing Already Registered Directory Service Connection Information	-	Yes	-	Yes
3	Registering CA Certificates of ServerView Operations Manager	-	Yes	-	Yes
4	Moving Information in the Directory Service Used in Earlier Versions	-	Yes	-	Yes
5	Transferring Tenants and Tenant Administrators	-	-	Yes	Yes

Yes: Required, - : Not Required

1. Upgrade of Resource Orchestrator
Refer to "[C.2 Manager](#)".
2. Changing Already Registered Directory Service Connection Information
Refer to "[C.6.1 Changing Already Registered Directory Service Connection Information](#)".
3. Registering CA Certificates of ServerView Operations Manager
Refer to "[C.6.2 Registering CA Certificates of ServerView Operations Manager](#)".
4. Moving Information in the Directory Service Used in Earlier Versions
Refer to "[C.6.3 Moving Information in the Directory Service Used in Earlier Versions](#)".
5. Transferring Tenants and Tenant Administrators
For details, refer to "[C.6.4 Transferring Tenants and Tenant Administrators](#)".

C.6.1 Changing Already Registered Directory Service Connection Information

When performing Single Sign-On, change the directory service connection information used in the earlier version.

1. Stop the manager.
Execute the `rcxadm mgrctl stop` command and stop the manager.
For details on the `rcxadm mgrctl stop` command, refer to "5.14 `rcxadm mgrctl`" in the "Reference Guide (Command/XML) CE".
2. Change the directory service connection information.
Execute the `rcxadm authctl sync` command and change the directory service connection information.
For details on the `rcxadm authctl sync` command, refer to "5.4 `rcxadm authctl`" in the "Reference Guide (Command/XML) CE".

```
>rcxadm authctl sync
```

3. When using OpenDS provided with ServerView Operations Manager V5.3, it is necessary to change the information of the directory server administrator that was changed in step 2.
Execute the `rcxadm authctl modify` command and change the directory service connection information.

Example

```
>rcxadm authctl modify -bind "cn=Directory Manager" -passwd admin
```

Specify the password for directory server administrator as a passwd option. The OpenDS Directory Manager's predefined password is "admin".

4. Start the manager.

Execute the `rcxadm mgrctl start` command and start the manager.

For details on the `rcxadm mgrctl start` command, refer to "5.14 `rcxadm mgrctl`" in the "Reference Guide (Command/XML) CE".

C.6.2 Registering CA Certificates of ServerView Operations Manager

When performing authentication using Single Sign-On, use the following procedure to register CA certificates with Resource Orchestrator.

1. Stop the manager.

Execute the `rcxadm mgrctl stop` command and stop the manager.

For details on the `rcxadm mgrctl stop` command, refer to "5.14 `rcxadm mgrctl`" in the "Reference Guide (Command/XML) CE".

2. Check the content of the CA certificate for updating.

```
>rcxadm authctl diffcert
```

The difference of the CA certificate (keystore) of ServerView Operations Manager and the registered CA certificate (keystore) of Resource Orchestrator is displayed.

When difference is displayed, perform step 3. When difference is not displayed, perform step 5.

Example

[Windows Manager]

```
>C:\Fujitsu\ROR\SVROR\Manager\bin\rcxadm authctl diffcert
svs_cms
ldaphost.fujitsu.com
```

[Linux Manager]

```
# /opt/FJSVrcvnr/bin/rcxadm authctl diffcert
svs_cms
ldaphost.fujitsu.com
```

3. Update the CA certificate.

Execute the following commands.

```
>rcxadm authctl refreshcert -alias alias
```

Specify the alias of the certificate displayed when checking certificates as alias.

When importing two or more certificates to Resource Orchestrator, repeat this procedure for each certificate.

Example

[Windows Manager]

```
>C:\Fujitsu\ROR\SVROR\Manager\bin\rcxadm authctl refreshcert -alias sv_s_cms
```

[Linux Manager]


```
# /opt/FJSVrcvnr/bin/rcxadm authctl refreshcert -alias svv_cms
```

4. Check the difference of the CA certificate.

Perform step 2 again, and check that the updated certificate is not displayed.

5. Start the manager.

Execute the `rcxadm mgrctl start` command and start the manager.

For details on the `rcxadm mgrctl start` command, refer to "5.14 `rcxadm mgrctl`" in the "Reference Guide (Command/XML) CE".

C.6.3 Moving Information in the Directory Service Used in Earlier Versions

If user management has been conducted by the directory service with ROR V2.3, transfer resource data on the directory server to Resource Orchestrator information.

Transfer the following data:

- User group information and group users

It is necessary that user information be registered both on the directory server and as Resource Orchestrator information with the same name. Single Sign-On is used for authentication to log in to Resource Orchestrator. Manage the user passwords using the directory service used for Single Sign-On.

- Role definitions
- Access range and roles

Execute the `rcxadm authctl export` command to move the information. Move the information as an OS administrator. For details on the `rcxadm authctl export` command, refer to "5.4 `rcxadm authctl`" in the "Reference Guide (Command/XML) CE".

C.6.4 Transferring Tenants and Tenant Administrators

The tenant management role cannot operate tenants and L-Servers in tenants that were operated on ROR V2.3.

To enable the tenant management role to operate tenants that were operated with ROR V2.3, use either of the following procedures to transfer the tenant according to the position in which the tenant was created.

Use the multiple roles and operate tenants when the transfer is unnecessary. When one user operates two or more tenants, it is necessary to use the multiple role.

When the tenant is created directly under the orchestration tree

1. Create user groups.

The user group must have the same name as the tenant name, the tenant name must be in the access scope, and `tenant_admin` (tenant administrator) must be set for the role.

Create user groups according to the following procedure.

```
>rcxadm usergroup create -name tenant_name -role tenant_name=tenant_admin
```

Modify user groups according to the following procedures when user groups of the same name as the tenant name already exist.

```
>rcxadm usergroup modify -name tenant_name -role tenant_name=tenant_admin
```

For details on the `rcxadm usergroup` command, refer to "7.2 `rcxadm usergroup`" in the "Reference Guide (Command/XML) CE".

2. Modify tenants.

The tenants which were operated with ROR V2.3 are displayed in the [Tenants] tab of the ROR console. Set the following information using the [Modify Tenant] window.

- Tenant display name
- E-mail address

For details on the [Modify Tenant] window, refer to "11.4 Modifying a Tenant" in the "User's Guide for Infrastructure Administrators CE".

3. Perform the "Common Procedures".

When the tenant is not created directly under the orchestration tree

Transfer the tenant data to the newly created tenant.

Transferred Data of Tenants

- Users (users who operate the tenant as tenant administrators, tenant operators, and tenant monitors)
- Resources in local pools of tenants
- L-Server

Use the following procedure to transfer tenants and tenant administrators.

1. Create tenants.

In the [Tenants] tab of the ROR console, create a Tenant.

2. Move resources.

In the [Resources] tab of ROR console, move the following resources in the old tenant to the new tenant. If the L-Server has been started, move the resources after stopping it.

- Resources in the local pool

Move them to a local pool or a global pool of the newly created tenant.

- L-Server

Move it to the newly created tenant.

3. Perform the "Common Procedures".
4. Delete the old tenant.

Delete the old tenant using the rxcadm tenant delete command.

```
>rcxadm tenant delete -name /OldTenant
```

Common Procedures

1. Modify tenant users.

Allocate appropriate roles to the users operating as tenant administrators, tenant operators, or tenant monitors among users who operated the earlier versions.

Use the following procedure to allocate roles to users.

- a. Output the user information in files in XML format.

```
>rcxadm user list -format xml > myusers.xml
```

For details on the rxcadm user command, refer to "7.1 rxcadm user" in the "Reference Guide (Command/XML) CE".

- b. Edit the XML files.

Delete the information of other users from the XML file, so that only the users operating as tenant administrators, tenant operators, and tenant monitors remain.

Define the tenant administrator roles to allocate.

Add the following information:

- E-mail address
- First name
- Family name

For details on the XML definition of tenant administrators, refer to "15.10.1 Tenant Management Roles and Tenant User Role" in the "Reference Guide (Command/XML) CE".

Example

Example of the XML definition in which the tenant administrator role of "NewTenant" is allocated to the user "john"

```
<?xml version="1.0" encoding="utf-8"?>
<Users>
  <User name="john">
    <Roles>
      <Role name="tenant_admin">
        <Scopes>
          <Scope>NewTenant</Scope>
        </Scopes>
      </Role>
    </Roles>
    <MailAddress>john@mail.example.com</MailAddress>
    <ActualName>
      <FirstName>john</FirstName>
      <LastName>fujitsu</LastName>
    </ActualName>
  </User>
</Users>
```

- c. Allocate the tenant administrator roles to the user by specifying the XML file edited in the rcxadm user command.

```
>rcxadm user modify -file my_tenantadmins.xml
```

2. Import L-Servers to the L-Platform.

Import L-Servers to the L-Platform using the cfmg_importlserver command.

```
>cfmg_importlserver -user john -org NewTenant -lserver /NewTenant/lserverA
```

For details, refer to "7.2.3.2 Importing L-Servers" in the "Operation Guide CE".

C.7 Installation of Systemwalker Service Quality Coordinator [Windows Manager]

This section explains the installation procedure for Systemwalker Service Quality Coordinator Manager and the operation management client.

This operation is not necessary if linking with "Service Quality Coordinator".

C.7.1 Preparations

Prepare the installation medium of Systemwalker Service Quality Coordinator.

If you do not have the installation medium, please contact Fujitsu technical staff.

C.7.2 Installation of Systemwalker Service Quality Coordinator Manager

The installation procedure for Systemwalker Service Quality Coordinator Manager is given below.

1. Install Systemwalker Service Quality Coordinator Manager.

For details, refer to the "Systemwalker Service Quality Coordinator Installation Guide".

2. Restore the license files that have been backed up.

Restore the license files that have been backed up in advance into the following location:

Storage_Location_of_variable_files_for_Systemwalker_Service_Quality_Coordinator_Manager\control

3. Restore the definition files that have been backed up.

When the manager is upgraded, the definition files are automatically backed up.

The backup destination is as follows:

Installation_Location_of_Resource_Orchestrator\CE-upgradedata\SQCM\data\sqc_backup

Each definition file is backed up as:

*Definition_file_name\vnnn.extension or Definition_file_name\vnnn (*1)*

*1: Vnnn indicates the version and level prior to the upgrade.

Restore the definition files that have been backed up using the following procedure:

- a. Delete "Vnnn" from each of the following file names and then copy the resulting files to the restoration destination.

The restoration destination is as follows:

Storage_Location_of_variable_files_for_Systemwalker_Service_Quality_Coordinator_Manager\control

- agentlistVnnn.cfg
- alertconfigVnnn.txt
- cntreconfVnnn.ini
- collectOIDVnnn.txt
- ConfigVnnn
- ecoAgentInfoVnnn.txt
- pdbmanageVnnn.txt
- PolicyVnnn.ini
- remoteAccountVnnn.txt
- remoteAgentVnnn.txt
- saprfcVnnn.ini
- sqcGetSAPalertmonVnnn.ini
- sqcPDBconfVnnn.ini
- sqcSAPmonitornVnnn.conf
- thttpdVnnn.conf
- tsconfigVnnn.txt

- b. If you modified the following files before upgrading, modify the files at the restoration destination referring to the backed up files.

File Name	Restoration Destination
DSAconfiguration.txt (*1)	<i>Storage_Location_of_variable_files_for_Systemwalker_Service_Quality_Coordinator_Manager\control</i>
template.dat	
udataconf.ini	
threshold.bat	<i>Installation_location_of_the_Systemwalker_Service_Quality_Coordinator_Manager\bin</i>

*1: Perform modification referring to the backed up DSAconfig.txt.



Note

Do not restore any files other than those listed above.

4. Restore the storage destination of the performance database (PDB).

When the manager is upgraded, the performance database (PDB) is automatically backed up.

The backup destination is as follows:

```
Installation_Location_of_Resource_Orchestrator\CE-upgradedata\SQCM\data\sqc_backup\PDB
```

The default storage location after the upgrade is as follows:

```
Storage_Location_of_variable_files_for_Systemwalker_Service_Quality_Coordinator_Manager\data
```

Modification is necessary even when restoring to the above default storage location after performing an upgrade because the location of the performance data base (PDB) is changed prior to upgrade.

For details on the procedure, refer to "Performance Database (PDB)/Archive File" in "Changing the Installation Environment" in the "Systemwalker Service Quality Coordinator Installation Guide".

The archive file is not backed up and its restoration is not necessary.

5. In order to perform two-tier operation of Systemwalker Service Quality Coordinator Manager, perform two-tier operation setup.

For details, refer to the "Systemwalker Service Quality Coordinator Installation Guide".

6. Perform two-tier operation setup.

For details, refer to the "Systemwalker Service Quality Coordinator Installation Guide".

7. Start and confirm the services and daemons of Systemwalker Service Quality Coordinator Manager.

For details, refer to the "Systemwalker Service Quality Coordinator Installation Guide".

C.7.3 Installation of the Systemwalker Service Quality Coordinator Operation Management Client

The installation procedure for the Systemwalker Service Quality Coordinator operation management client is given below.

1. Install the Systemwalker Service Quality Coordinator operation management client.

For details, refer to the "Systemwalker Service Quality Coordinator Installation Guide".

2. Restore the files that have been backed up.

When the manager is upgraded, the files are automatically backed up.

The backup destination is as follows:

```
Installation_Location_of_Resource_Orchestrator\SQC\sqc_cl\www\html\ConsoleEnvironments  
Installation_Location_of_Resource_Orchestrator\SQC\sqc_cl\www\html\TenantConsoleEnvironments  
Installation_Location_of_Resource_Orchestrator\SQC\sqc_cl\Policy_ROOT
```

Copy the files and subfolders at the backup destination into the following restoration destinations:

```
Installation_Location_of_the_Systemwalker_Service_Quality_Coordinator_operation_management_client\www\html\ConsoleEnvironments  
Installation_Location_of_the_Systemwalker_Service_Quality_Coordinator_operation_management_client\www\html\TenantConsoleEnvironments  
Installation_Location_of_the_Systemwalker_Service_Quality_Coordinator_operation_management_client\Policy_ROOT
```

3. Modify the following file:

```
Installation_Location_of_the_Systemwalker_Service_Quality_Coordinator_operation_management_client\etc\rorInfo.xml
```

Open the above file in a text editor, then modify the following parts and save the file.

- Before modifying
3170
- After modifying
3501/op_portal

4. Configure the communication environment.

For details, refer to the "Systemwalker Service Quality Coordinator Installation Guide".

5. Perform the following configuration:

- Setup of the communication environment of the Systemwalker Service Quality Coordinator operation management client
- Configuration of coordination with ServerView Resource Orchestrator
- Coordination of the calling of the Systemwalker Service Quality Coordinator console from the ServerView Resource Orchestrator console



Perform the "separately from" type of configuration.

For details on configuration, refer to "Tasks to perform on the Operation Management Client of the Systemwalker Service Quality Coordinator" in "Installing separately from ServerView Resource Orchestrator" in "Installation Procedure" in "Linking to ServerView Resource Orchestrator" in "Linking to Other Products" in the "Systemwalker Service Quality Coordinator User's Guide".

6. When dividing the report storage locations, perform the procedure to divide the report storage locations again.

For details, refer to the "Systemwalker Service Quality Coordinator Installation Guide".

Appendix D Configuration when Using Ethernet Fabrics (Converged Fabric)

This appendix explains how to configure the settings when using an Ethernet Fabric (Converged Fabric) as a network device.

When Converged Fabric is used as an Ethernet fabric, ServerView Fabric Manager can be used. Registering ServerView Fabric Manager in Resource Orchestrator as Converged Fabric management software enables starting of the window of ServerView Fabric Manager from Resource Orchestrator.

For details on registering, refer to "5.14 Registering Converged Fabric Management Software" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".



ServerView Fabric Manager must nullify and install the function related to the port profile when you use Resource Orchestrator and ServerView Fabric Manager at the same time.

Please refer to the manual of ServerView Fabric Manager for the nullification method.

D.1 Performing Preconfiguration

Perform preconfiguration for Ethernet Fabric switches, referring to "9.2.3 Settings for Managed Network Devices" in the "Design Guide CE".

D.2 Creating the Network Configuration Information

Create the network configuration information (XML definition), referring to "9.4.8.1 When Creating Network Configuration Information (XML Definition)" in the "Design Guide CE".

D.3 Registering Network Devices

Use the `rcxadm netdevice` command to execute network device registration.

For details on the `rcxadm netdevice` command, refer to "3.8 `rcxadm netdevice`" in the "Reference Guide (Command/XML) CE".

After registration, back up environments using the functions provided by the Ethernet fabric.

The backup can be used for restoration when replacing Ethernet fabric devices due to failures.

For details on how to back up environments, refer to the manual of the Ethernet fabric.

D.4 Automatic Network Configuration

When using Ethernet Fabrics, the port profile migration function (hereinafter AMPP) can be used on virtual L-Servers. Resource Orchestrator supports VLAN as a parameter of AMPP. AMPP works with virtual L-Server migration and automatically migrates the port settings of the Ethernet fabric switch to the physical port of the Ethernet fabric switch (Converged Fabric) adjacent to the migration target server.

When creating a network resource, a VLAN port profile is created for the Ethernet fabric with port profile configuration enabled.

The VLAN port profiles are created for the specified virtual fabrics (VFAB), if the VFAB are linked with the tenants when registering network devices. When linking is not performed, the profile is created for the default VFAB.

When creating a virtual L-Server, the NIC of the virtual L-Server is linked with the VLAN port profile. This configures a VLAN for the server connection port of the Ethernet fabric when the virtual L-Server on the migration target server performs communications.

D.5 Creating Definition Files for the Port Profile Configuration Function

When using the port profile manually configured on the relevant devices for the port profile configuration function used in Resource Orchestrator, refer to "9.4.8.4 When Using Port Profile Configuration Files" in the "Design Guide CE".

D.6 Registering Network Resources

When using an Ethernet Fabric, it is necessary to configure an external connection port for network devices. Configure the CIR port of the Ethernet Fabric as the external connection port.

Create network resources, referring to "14.3 Network Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

When using a virtual fabric (VFAB) other than the default VFAB on Converged Fabric, a pool is necessary for each tenant. Refer to "6.6 Concept for Separating Tenants by Resource Pool" and "H.1.3 Virtual Fabrics" in the "Design Guide CE".

Appendix E Migration Procedure when Using Active Directory with a Redundant Configuration

This appendix explains the migration procedure when changing the number of Active Directories for performing the Single Sign-On function of ServerView Operations Manager from one to two. It is assumed that an Active Directory in a redundant configuration is used in this procedure.

It is possible to continue operation by using an Active Directory in a redundant configuration that automatically switches to the other domain controller when one of the domain controllers fails.

Preparations

- Active Directory Settings
 - Configure the domain controller to use as a backup host.
- ServerView Operations Manager Settings
 - Register the backup host in the directory service settings.

For details, refer to "ServerView user management via an LDAP directory service" in "FUJITSU ServerView Suite User Management in ServerView".

Migration Procedure

1. Stop the manager.
For the method for stopping managers, refer to "2.1 Starting and Stopping Managers" in the "Operation Guide CE".
2. Register the directory service connection information for performing Single Sign-On.
Execute the `rcxadm authctl sync` command to register the connection information for the two Active Directories registered in the ServerView Operations Manager in the manager.
For details on the `rcxadm authctl sync` command, refer to "5.4 `rcxadm authctl`" in the "Reference Guide (Command/XML) CE".
3. Check the certificate of the backup host.
Execute the `rcxadm authctl diffcert` command to check the alias of the CA certificate (keystore) of the backup host.
For details on the `rcxadm authctl diffcert` command, refer to "5.4 `rcxadm authctl`" in the "Reference Guide (Command/XML) CE".
4. Register the certificate of the backup host.
Register the alias of the CA certificate (keystore) of the backup host checked in step 3.
For details on how to register, refer to "8.10.1.2 Registering Certificates" in the "Operation Guide CE".
5. Start the manager.
Refer to Section "2.1 Starting and Stopping Managers" in the "Operation Guide CE" for information on starting the manager.

Appendix F Sending SNMP Traps

This appendix explains the function used to send the details of Resource Orchestrator events to other products as SNMP traps.

Functional Overview

By receiving SNMP traps sent by Resource Orchestrator on other products (operation management products, etc.) it is possible to monitor major Resource Orchestrator events on other products. With this function, in operating environments where monitoring is mainly performed using the consoles of other products, as it is not necessary to constantly display the Resource Orchestrator console, centralization of the monitoring console is possible.

Function Details

- SNMPv1 traps are sent to servers registered as destinations. Destination servers are registered, changed, and deleted using the `rcxadm eventctl` command.
For details on this command, refer to "5.7 `rcxadm eventctl`" in the "Reference Guide (Command) VE".
- The SNMP traps sent by Resource Orchestrator contain information about the operation details of Resource Orchestrator. For events related to status changes of resources managed by Resource Orchestrator and events internal to resources, the SNMP traps will be sent by the resource itself.
- The events that are the target of sending as SNMP traps are as follow:
FJSVrcx:INFO:21143:operation:started
FJSVrcx:INFO:21144:operation:completed
FJSVrcx:INFO:21145:operation:cancelled
FJSVrcx:ERROR:61143:operation:failed
FJSVrcx:ERROR:61144:operation:rollback failed
- For details of the Resource Orchestrator events that are sent as SNMP traps, check the event log of the ROR console.

Setup Procedure

This section explains the procedure for setting other products to receive Resource Orchestrator SNMP traps.

Here it is assumed that installation of other products for receiving SNMP traps has been performed, and that basic settings such as those of the SNMP trap service necessary to receive traps and the required ports, have been made.

1. Configure a SNMP community name for the product that will receive SNMP traps.
Enter a string of up to 32 alphanumeric characters, hyphens ("-"), and underscores ("_") for the SNMP community name.
2. Load the Resource Orchestrator MIB file on the product that is to receive SNMP traps.
The MIB file that defines the SNMP traps for Resource Orchestrator is located in the following folder on the admin server.
[Windows Manager]
`Installation_folder\SVROR\Manager\etc\mibs\RCVE-Event-Trap-MIB.mib`
[Linux Manager]
`/etc/opt/FJSVrcvnr/mibs/RCVE-Event-Trap-MIB.mib`
3. Register destination servers using the `rcxadm eventctl add` command of Resource Orchestrator.

Modification Procedure

Use the following procedure to change SNMP trap destination settings:

1. Delete the target destination server information using the `rcxadm eventctl delete` command of Resource Orchestrator.
2. Register the new destination servers using the `rcxadm eventctl add` command of Resource Orchestrator.

Deletion Procedure

Delete the target destination server information using the `rcxadm eventctl delete` command of Resource Orchestrator.

Operation Checks

Use the following procedure to confirm that SNMP trap destinations have been registered correctly.

1. From the ROR console, place the desired managed server into maintenance mode.
 - a. In the ROR console server resource tree, right-click the desired server (or its physical OS), and select [Maintenance Mode]-[Set] from the popup menu.
The [Set Maintenance Mode] dialog is displayed.
 - b. Click [OK].
2. The managed server is released from maintenance mode.
 - a. In the ROR console server resource tree, right-click the desired server (or its physical OS) and select [Maintenance Mode]-[Release] from the popup menu.
The [Release Maintenance Mode] dialog is displayed.
 - b. Click [OK].

As a result of the above operation, the following four events will be sent as SNMP traps to the registered server. If the destination has been registered correctly, it is possible to check the receipt of the Resource Orchestrator SNMP traps on the destination device. Please note that the display of SNMP traps varies depending on the product.

Event ID	OID
FJSVrcx:INFO:21143: setting maintenance mode:started	1.3.6.1.4.1.211.4.1.3.55.100.1.2.1.21143
FJSVrcx:INFO:21144: setting maintenance mode:completed	1.3.6.1.4.1.211.4.1.3.55.100.1.2.1.21144
FJSVrcx:INFO:21143: releasing maintenance mode:started	1.3.6.1.4.1.211.4.1.3.55.100.1.2.1.21143
FJSVrcx:INFO:21144: releasing maintenance mode:completed	1.3.6.1.4.1.211.4.1.3.55.100.1.2.1.21144

If the receipt of SNMP traps cannot be confirmed, use the `rcxadm eventctl` command to check if the desired destination has been registered correctly. If there are no problems with the registered details, check that there are no problems with the network or the settings for the SNMP trap destination. After resolving any problems, repeat the above procedure and check if the Resource Orchestrator SNMP traps can be received.

Appendix G Definition Files

This appendix explains how to create the definition files necessary to use Resource Orchestrator.

Configuration of Definition Files

To use the functions of Resource Orchestrator, it is necessary to create definition files in advance.



If you edit and save a UTF-8 text file using Windows Notepad, the Byte Order Mark (BOM) is stored in the first three bytes of the file, and the information specified on the first line of the file will not be analyzed correctly. When using Notepad, specify the information from the second line.

When the user group name is included in the name of the definition file, delete the definition file after deleting the tenant. If the definition file is not deleted, the remaining definition file is used, when a tenant with the same name as that of the deleted tenant is created.

Location of the Definition File

Definition files are created in the following location.

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

[Linux Manager]

/etc/opt/FJSVrcvmr/customize_data

G.1 Definition Files (For Both Physical L-Servers and Virtual L-Servers)

The definition file for physical L-Servers and virtual L-Servers is as follows:

Table G.1 List of Functions Requiring a Definition File (For Both Physical L-Servers and Virtual L-Servers)

Function	Definition File Name	Reference
When changing the location to back up configuration definition information	manager_backup.rcxprop	Refer to "9.2 Backup" in the "Operation Guide VE".
When configuring priority for resource selection on Thin Provisioning (*)	storage.rcxprop	Refer to "7.1 Creating Definition Files" and "8.1 Definition Files Commonly Shared when Creating Virtual L-Servers". Refer to "7.1.3 Configuration of Priority for Resource Selection on Thin Provisioning and Automatic Storage Layering" and "8.1.3 Definition Files of Priority for Resource Selection on Thin Provisioning".
When changing the default values in the [General] tab and the [Server] tab during L-Server creation and operations related to L-Servers.	l_server.rcxprop	Refer to "17.8.1 Installation" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Function	Definition File Name	Reference
When not executing reconfiguration of hardware properties automatically	auto_replace.rcxprop	Refer to "9.2.2 Reconfiguration of Hardware Properties" in the "Operation Guide CE".
When performing Disaster Recovery	fa_dr.rcxprop	Refer to "3.3 Manager Installation and Configuration" in the "DR Option Instruction".
Folder operation definition file	folder.rcxprop	Refer to "3.5 rcxadm folder" in the "Reference Guide (Command/XML) CE".
Directory service operation definition file	ldap_attr.rcxprop	Refer to "8.6.1 Settings for Tenant Management and Account Management" in the "Operation Guide CE".
Changing Multiple Operations of Managers	rcx_base.rcxprop	Refer to "Appendix A Notes on Operating ServerView Resource Orchestrator" in the "Operation Guide CE".
Tenant creation default definition file	tenant_config.xml	Refer to "15.12 Tenants" in the "Reference Guide (Command/XML) CE".
When sorting the resource list in the tree on the [Resource] tab (compatible with V3.0.0)	gui_config.rcxprop	Refer to "2.3.1.3 Sorting the Resource List in the Tree" in the "Release Notes".

* Note: When there is both a storage pool with thin provisioning attributes set and a storage pool without thin provisioning attributes set.

G.2 Definition Files (For Physical L-Servers)

The definition file for physical L-Servers is as follows:

Table G.2 List of Functions Requiring a Definition File (For Physical L-Servers)

Function	Definition File Name	Reference	
Settings required for all storage units	storage_portset.rcxprop	Refer to "7.1.1 Creating Definition Files Combining Ports of SAN Storage".	
When using SAN storage	Common configuration	storage.rcxprop	Refer to "7.1.2 Format Selection for the Names of Virtual Storage Resources and Disk Resources Managed by ESC".
	Settings when using dynamic LUN mirroring	storage_mirroring.rcxprop	Refer to "7.1.4 Creating Mirroring Definition Files for Dynamic LUN Mirroring".
	When using configuration of priority for resource selection on Automatic Storage Layering	storage.rcxprop	Refer to "7.1.3 Configuration of Priority for Resource Selection on Thin Provisioning on Thin Provisioning and Automatic Storage Layering".
	When configuring Thin Provisioning attributes on a storage pool	-	Refer to "20.2 Creating" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".
	When configuring Thin Provisioning attributes on a storage pool (compatibility with V2.3 or V3.0.0)	pool.rcxprop	When migration is not executed using the configuration methods for overcommit functions after performing upgrade of the admin server from ROR V2.3.0 or V3.0.0, refer to "2.3.1.1 Overcommit Definition Files" in the "Release Notes".

Function		Definition File Name	Reference
Settings when using EMC storage	Common configuration	emcpath.conf	For details, refer to "7.1.5 Definition File for EMC Storage" . Store the file in the following location: [Windows Manager] <i>Installation_folder</i> \SVROR\Manager\sys\usm\etc [Linux Manager] /opt/FJSVrcvmr/sys/usm/etc
	When the number of FCs fitted and their position differ depending on the physical server	fc_connection_pattern	Refer to "7.1.7 Setting the Number of FCs Fitted and their Position for Each Physical Server" .
	Settings when using Storage Server that operates FalconStor NSS	fspath.conf	Refer to "7.1.11 Definition File for FalconStor NSS" . Store the file in the following location: [Windows Manager] <i>Installation_folder</i> \SVROR\Manager\sys\usm\etc [Linux Manager] /opt/FJSVrcvmr/sys/usm/etc
When changing the spare server switching policy and server model compatibility		spare_server_config.rcxprop	Refer to "18.1.1 High Availability of L-Servers" in the "Operation Guide CE" .
When using IBP mode with LAN switch blades		vnetwork_ibp.rcxprop	Refer to "D.4 Network Preparations" in the "Design Guide CE" .
When automatically specifying settings such as NIC redundancy and tagged VLAN while deploying OS images		net_info.conf	The file is automatically generated. For details, refer to "7.8 Network Redundancy and VLAN Settings of L-Servers" .
When creating a physical L-Server without specifying a model name in the L-Server template, or when creating a physical L-Server using a rack mount or tower server managed by VIOM		server_spec.rcxprop	Refer to "7.1.6 Configuration when Creating a Physical L-Server without Specifying a Model Name in the L-Server Template" .
When using L-Server alive monitoring		Physical.rcxprop Place the file directly under the alive_monitoring directory.	Refer to "7.1.8 Definition File for Alive Monitoring" .
When using IBP		vnetwork_ibp.rcxprop	Refer to "7.1.9 Definition File for Admin LAN Uplink Set" .
When using iSCSI		- User Groups iscsi_user_group_name.rcxprop - Common on System iscsi.rcxprop	Refer to "7.1.10 Definition File for iSCSI Network" .

G.3 Definition Files (For Virtual L-Servers)

The definition file for virtual L-Servers is as follows:

Table G.3 List of Functions Requiring a Definition File (For Virtual L-Servers)

Function	Definition File Name	Reference
When simplifying the parameter settings for an OS	<ul style="list-style-type: none"> - For User Groups os_setting_user_group_name.rcxprop - Common on System os_setting.rcxprop 	<p>Refer to "8.1.7 OS Property Definition File".</p> <p>[VMware]</p> <p>Refer to "8.2.9 [OS] Tab Configuration".</p> <p>[Hyper-V]</p> <p>Refer to "8.3.9 [OS] Tab Configuration".</p> <p>[OVM for x86 2.2]</p> <p>Refer to "8.5.8 [OS] Tab Configuration".</p> <p>[KVM]</p> <p>Refer to "8.6.8 [OS] Tab Configuration".</p> <p>[Solaris Zones]</p> <p>Refer to "8.7.8 [OS] Tab Configuration".</p> <p>[OVM for SPARC]</p> <p>Refer to "8.8.7 [OS] Tab Configuration".</p> <p>[Citrix Xen]</p> <p>Refer to "8.9.8 [OS] Tab Configuration".</p> <p>[OVM for x86 3.x]</p> <p>Refer to "8.10.8 [OS] Tab Configuration".</p>
When the VM host IP addresses in Resource Orchestrator do not match those in the VM management software	vmhost_ip_addresses.rcxprop	Refer to "5.2 Registering VM Management Software" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".
VM Specific Information Definition File	<ul style="list-style-type: none"> - For User Groups vm_user_group_name_VM_type.rcxprop - Common on System vm_VM_type.rcxprop <p>Place the file directly under the vm_prop directory.</p>	Refer to "8.1.2 VM Specific Information Definition File".
When creating a virtual L-Server using a server which cannot use ServerView Agents	server_spec.rcxprop	Refer to "8.1.4 Definition Files when Creating a Virtual L-Server Using a Server which cannot Use ServerView Agents".
When using L-Server alive monitoring	<p>[Windows Manager] \alive_monitoring\vm_VM_type.rcxprop</p> <p>[Linux Manager] \alive_monitoring\vm_VM_type.rcxprop</p>	Refer to "8.1.6 Definition File for Alive Monitoring".
Overcommit Definition Files	pool.rcxprop	Refer to "8.1.1 Overcommit Definition Files".

Function	Definition File Name	Reference
Configuring display of errors that occur on related products (maintaining compatibility with earlier versions)	product_report.rcxprop	Refer to "2.1.1.1 Configuring Display of Errors that Occur on Related Products" in the "Release Notes".
Display of VM pool attributes (compatibility with V3.0.0)	cli_notlist_oc.rcxprop	Refer to "2.3.1.2 Definition Files for Display Control of VM Pool Attribute Information" in the "Release Notes".

Note

When deploying a Linux operating system virtual server on an L-Platform, it is necessary to set the virtual server's DNS search path in os_setting.rcxprop beforehand.

G.3.1 Definition Files (VMware)

The definition file for VMware is as follows:

Table G.4 List of Functions Requiring a Definition File (VMware)

Function	Definition File Name	Reference
When using a distributed virtual network (vDS) (port group and VLAN ID associations)	vnetwork_vmware.rcxprop	Refer to "E.1 VMware" in the "Design Guide CE".
	vds_vc	Refer to "E.1 VMware" in the "Design Guide CE". Store the file in the following location: [Windows Manager] <i>Installation_folder</i> \SVROR\Manager\etc\vm
When the Messages Notified by VM Management Software are Output in English	vm.rcxprop	Refer to " 8.1 Definition Files Commonly Shared when Creating Virtual L-Servers ".
When configuring power control for VMware DRS and DPM	vm.rcxprop	Refer to " 8.2.1 Creating Definition Files ".
When connecting to the virtual L-Server console from the admin client linking with the public LAN	vm_console.rcxprop	Refer to " 8.2.1 Creating Definition Files ".
When Creating a Virtual L-Server Using VMware ESXi on Other Vendor's Servers	server_control.rcxprop	Refer to " 8.1.5 Definition Files when Creating a Virtual L-Server Using VMware ESXi on Another Vendor's Servers ".
When using the GUI Run Once command	<i>Arbitrary file name</i> .rcxprop	Refer to " 8.2.1 Creating Definition Files ".
When using a domain group as authorization for a VDI Pool during VDI coordination	vdipool_group_entitlement.rcxprop	Refer to "3. Creating Definition Files" in " Installation ".
When changing the guest OS customization completion waiting time for guest OSs during VDI coordination	vm.rcxprop	Refer to "3. Creating Definition Files" in " Installation ".

G.3.2 Definition Files (Hyper-V)

The definition file for Hyper-V is as follows:

Table G.5 List of Functions Requiring a Definition File (Hyper-V)

Function	Definition File Name	Reference
When limiting the location to store cloning images for each user group	<ul style="list-style-type: none"> - For User Groups library_share_user_group_name_deny.conf - Common on System library_share_deny.conf 	Refer to " 8.3.8 Collecting and Deleting Cloning Images ".
When deleting cloning images and also deleting related files that have no dependencies with other templates	delete_image_all_files_scvm	Refer to " 8.3.8 Collecting and Deleting Cloning Images ". Store the file in the following location: [Windows Manager] <i>Installation_folder</i> \SVROR\Manager\etc\vm [Linux Manager] /etc/opt/FJSVrcvmr/vm
When creating an L-Server specifying a cloning image collected from a client OS or localized version of Windows	<ul style="list-style-type: none"> - For User Groups image_admin_hyperv_user_group_name.rcxprop - Common on System image_admin_hyperv.rcxprop 	Refer to " 8.3.9 [OS] Tab Configuration ".
Configuring Network Resources when Using a Physical Network Adapter Number that Differs from Configuration Patterns of VM Hosts which Support Automation of Network Configuration Configuring the network settings using VM Network	vnetwork_hyperv.rcxprop	Refer to " 8.3.5 Manual Network Configuration ".
When there are multiple MAC address pools in System Center 2012 Virtual Machine Manager or later	<ul style="list-style-type: none"> - By Tenant scvmm_mac_pool_tenant_name.rcxprop - Common on System scvmm_mac_pool.rcxprop 	Refer to " 8.3.5 Manual Network Configuration ".

G.3.3 Definition Files (RHEL5-Xen)

The definition file for RHEL5-Xen is as follows:

Table G.6 List of Functions Requiring a Definition File (RHEL5-Xen)

Function	Definition File Name	Reference
When changing the shared class configuration of PRIMECLUSTER GDS	storage_vmhost.rcxprop	Refer to " 8.4.1 Creating Definition Files ".
Relating the virtual bridge and VLAN ID	vnetwork_rhelxen.rcxprop	Refer to " 8.4.4 Manual Network Configuration ".

G.3.4 Definition Files (OVM for x86 2.2)

The definition files for OVM for x86 2.2 are as follows:

Table G.7 List of Functions Requiring a Definition File (For OVM for x86 2.2)

Function	Definition File Name	Reference
Relating the virtual bridge and VLAN ID	vnetwork_oraclevm.rcxprop	Refer to " 8.5.4 Manual Network Configuration ".
Specifying SSL access for VM management software	ovmm.rcxprop	Refer to " 8.5.9 Advisory Notes for OVM for x86 2.2 Usage ".

G.3.5 Definition Files (RHEL-KVM)

The definition file for RHEL-KVM is as follows:

Table G.8 List of Functions Requiring a Definition File (RHEL-KVM)

Function	Definition File Name	Reference
Relating the virtual bridge and VLAN ID	vnetwork_rhelkvm.rcxprop	Refer to " 8.6.4 Manual Network Configuration ".
When performing the following operations for a virtual L-Server, the data type to be deleted can be selected <ul style="list-style-type: none">- Deleting Virtual L-Servers- Detaching Virtual L-Server Disks- Deleting Cloning Images	storage.rcxprop	Refer to " 8.6.1 Creating Definition Files ".
When configuring the following resource sizes to secure for the VM hosts: <ul style="list-style-type: none">- CPU Capacity- Memory size	host_config_RHEL-KVM.rcxprop	Refer to " 8.6.1 Creating Definition Files ".

G.3.6 Definition Files (Solaris Zones)

The definition file for Solaris Zones is as follows:

Table G.9 List of Functions Requiring a Definition File (Solaris Zones)

Function	Definition File Name	Reference
When managing a Solaris Zones resource pool other than "pool_resource"	container_resource.rcxprop	Refer to "8.7.1 Creating Definition Files".
When specifying memory size for vm host reserved	global_zone_reserved_memory.rcxprop	Refer to "8.7.1 Creating Definition Files".
Association of VLAN IDs and network interfaces	vnetwork_solariscontainer.rcxprop	Refer to "8.7.4 Manual Network Configuration".
When registering VM hosts of Solaris OS as Solaris Zones regardless of whether the OVM for SPARC is enabled	sparc_vm.rcxprop	Refer to "8.7.1 Creating Definition Files".
Changing the zone status after server switchover, when zones have been created in a ZFS storage pool	zpool_and_zone_recovery.rcxprop	Refer to "18.2 Settings for Server Switchover" in the "User's Guide VE".
When modifying the time-out period of the OS installation process performed during L-Server creation	sparc_vm.rcxprop	Refer to "8.7.1 Creating Definition Files".
When setting "auto" for the mac-address property of an anet resource in the non-global zone during creation of an L-Server for the global zone on a virtual server	sparc_vm.rcxprop	Refer to "8.7.1 Creating Definition Files".
When creating an L-Server specifying the image to execute the initial boot service	sparc_first_boot_service.rcxprop	Refer to "8.7.1 Creating Definition Files".

G.3.7 Definition Files (OVM for SPARC)

The definition files for OVM for SPARC are as follows:

Table G.10 List of Functions Requiring a Definition File (For OVM for SPARC)

Function	Definition File Name	Reference
Definition of whether to save the configuration information	sparc_vm.rcxprop	Refer to "8.8.1 Creating Definition Files".
Relating the virtual switch and VLAN ID	vnetwork_ovmforsparc.rcxprop	Refer to "8.8.4 Manual Network Configuration".
Definition of connection information of the installation server	ovm_sparc_install_server.rcxprop	Refer to "8.8.1 Creating Definition Files".
Canceling automatic release of the resource when performing L-Server deletion	sparc_vm.rcxprop	Refer to "8.8.1 Creating Definition Files".
Validation of the auto-boot? change function when performing migration	sparc_vm.rcxprop	Refer to "8.8.1 Creating Definition Files".
Selecting the operational mode when creating an L-Server with a Solaris 11 image specified	sparc_vm.rcxprop	Refer to "8.8.1 Creating Definition Files".

G.3.8 Definition Files (OVM for x86 3.x)

Table G.11 List of Functions Requiring a Definition File (For OVM for x86 3.x)

Function	Definition File Name	Reference
SSL Port Specification for VM Management Software	ovmm.rcxprop	Refer to "8.10.1 Creating Definition Files".

G.3.9 Definition Files (Citrix XenServer)

Table G.12 List of Functions Requiring a Definition File (Citrix XenServer)

Function	Definition File Name	Reference
Guest OS Customization Definition File	os_customize_citrixxen.rcxprop	Refer to "8.9.1 Creating Definition Files".

G.4 Definition Files (Network)

The definition file for the network is as follows:

The network devices that are the target of auto-configuration are the network devices registered in Resource Orchestrator.

For details on how to register resources for network devices, refer to "5.7 Registering Network Devices" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Table G.13 List of Functions Requiring a Definition File (Network)

Function	Definition File Name	Reference
When using NICs with configurations other than the default configuration for network automatic settings when using blade servers	[Windows Manager] \nicdefctl\model\Chassis_model_name_product_name.xml \nicdefctl\host\VM_host_name.xml [Linux Manager] /nicdefctl/model/Chassis_model_name_product_name.xml /nicdefctl/host/VM_host_name.xml	Refer to "5.15 rcxadm nicdefctl" and "15.13 Server NIC Definition" in the "Reference Guide (Command/XML) CE".
When using VMware and deploying L-Servers, even if the service console and port group are the same	vnetwork_excluded_vmware.rcxprop	Refer to "15.14 VMware Exclusion Port Group Definition File" in the "Reference Guide (Command/XML) CE".
When configuring network devices automatically	unm_provisioning.rcxprop	Refer to "F.7 Network Device Automatic Configuration and Operation Definition Files" in the "Design Guide CE".
When using the network device file management function	unm_mon.rcxprop	Refer to "9.4.8.2 When Using the Network Device File Management Function" in the "Design Guide CE".
When using the port profile configuration function	cfabric_portprofile_networkresource.rcxprop	Refer to "9.4.8.4 When Using Port Profile Configuration Files" in the "Design Guide CE".

Appendix H Coordination with Other Products

This appendix explains how to coordinate Resource Orchestrator with other products.

H.1 Coordination with BMC BladeLogic Server Automation

This section explains how to coordinate Resource Orchestrator with BMC's server automation software BMC BladeLogic Server Automation.

External Software

Resource Orchestrator can coordinate with the software in BMC BladeLogic Server Automation Suite 8.0 or later.



Note

For coordination for the creation and migration of virtual L-Servers, BMC BladeLogic Server Automation Suite 8.2 or later is required.

H.1.1 Coordination for Creation and Operation of Virtual L-Servers

Functional Overview

Through coordination, the following becomes possible:

- Virtual L-Server Creation [Solaris Zones (Solaris 10)] [OVM for SPARC]

Registering BMC BladeLogic Server Automation with Resource Orchestrator as server management software enables creation of virtual L-Servers.

- Virtual L-Server Operation [Solaris Zones (Solaris 10)] [OVM for SPARC]

Registering BMC BladeLogic Server Automation with Resource Orchestrator as server management software enables operations such as migration of virtual L-Servers between servers.

Function Details

- Virtual L-Server Creation

For details on how to design a virtual L-Server, refer to following manual.

[Solaris Zones (Solaris 10)]

"E.6 Solaris Zones" in the "Design Guide CE"

[OVM for SPARC]

"E.7 OVM for SPARC" in the "Design Guide CE"

For details on how to create a virtual L-Server, refer to following manual.

[Solaris Zones (Solaris 10)]

["8.7 Solaris Zones"](#)

[OVM for SPARC]

["8.8 OVM for SPARC"](#)

- Virtual L-Server Operation

For details on how to operate virtual L-Servers, refer to "Chapter 17 L-Server Operations" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

Installing BMC BladeLogic Server Automation

Install BMC BladeLogic Server Automation referring to the BMC BladeLogic Server Automation manual. The following are advisory notices regarding coordination with Resource Orchestrator.

- Installation Order

The order of installation of Resource Orchestrator and BMC BladeLogic Server Automation is not important. Therefore, you can install in any order you like.

However, when BMC BladeLogic Server Automation is installed after this product, rebooting is necessary to make this product recognize the environment variables added at the time of installation of BMC BladeLogic Server Automation.

- Manager Installation

It is possible to install the Resource Orchestrator manager and Application Server (the BMC BladeLogic Server Automation manager) on the same server or on separate servers.



Note

When registering BMC BladeLogic Server Automation with Resource Orchestrator as server management software, it is recommended to install it on the same server. However, when operating Resource Orchestrator managers in clusters, it is recommended to install it on a different server.

- Required Coordination Components

Please install BMC BladeLogic Server Automation Console on the server on which the Resource Orchestrator manager is installed. When creating and operating virtual L-Servers of Solaris zones (Solaris 10), introduce a RSCD agent in the global zone. For details, refer to "E.7.2 Preparations for Servers" in the "Design Guide CE".

Setup Procedure

After installing BMC BladeLogic Server Automation, perform the following settings on the admin server. For details, contact Fujitsu technical staff.

1. Create Users

Create the user for coordination with Resource Orchestrator.
Make the user name "ServerAdmin".
Configure the "BLAdmins" role for the role of the "ServerAdmin" user.

2. Create Authentication Files

Use the `bl_gen_bcli_user_info` command and create an authentication file for the user created in 1.
The path and name for the file to create are as below.

Path

[Windows]
`BladeLogic_installation_folder\user`

[Linux]
`/opt/bmc/bladelogic/user`

Name

`user_info.dat`

3. Create Authentication Profiles

Create an authentication profile with the name "server-profile".
Specify "SRP" for the authentication method.

4. Confirm the Connection

Login to the admin server as the "Administrator" for Windows, or the "root" for Linux.
Start the BladeLogic console, and connect to the Application Server.

H.1.2 Coordination of Registration and Deletion of Managed Servers, Cloning, and Software Deployment

Functional Overview

Through coordination, the following becomes possible:

- Coordination of registration and deletion of managed servers

When registration or deletion of managed servers is performed using Resource Orchestrator, the managed servers are automatically registered or deleted from BMC BladeLogic Server Automation. When Resource Orchestrator and BMC BladeLogic Server Automation both manage a server in the same environment, this coordination eases the workload of the staff responsible for server registration.

- Coordination of cloning and software deployment

Coordination of Resource Orchestrator's cloning function and BMC BladeLogic Server Automation's software deployment function enables deployment of software to servers installed through cloning. This coordination eases the workload of installing software that cannot be deployed using cloning images (software that saves environment specific information such as MAC addresses on installation) on managed servers.

Function Details

- Common notes

- The BMC BladeLogic Server Automation processes and process results resulting from execution of coordination are displayed as Resource Orchestrator processes in the recent operations area of the ROR console.
- Resource Orchestrator processes are given priority in the order of execution. If Resource Orchestrator processes terminate abnormally, BMC BladeLogic Server Automation processes will not be executed.
- If Resource Orchestrator processes are completed normally, but BMC BladeLogic Server Automation processes terminate abnormally, they will be displayed as errors in the recent operations area of the ROR console.
- Check the details of BMC BladeLogic Server Automation processes that terminated abnormally on the Server Automation console of BMC BladeLogic Server Automation, and take corrective action referring to the BMC BladeLogic Server Automation manual.

- Coordination of managed server registration

- When managed server registration is performed due to automatic registration of Resource Orchestrator agents, server registration with BMC BladeLogic Server Automation is performed automatically.
- When agents are not registered automatically during server registration, coordination is not performed. By registering agents after registering servers, server registration with BMC BladeLogic Server Automation is performed automatically.
- The computer name set in the OS (for Windows) or the hostname (for Linux) is used as the server name of servers registered with BMC BladeLogic Server Automation.
- If Resource Orchestrator processes are completed normally, but BMC BladeLogic Server Automation processes terminate abnormally, they will be displayed as errors in the recent operations area of the ROR console. In such cases, as status is one where the physical server has been registered with Resource Orchestrator but the agent is still not registered, resolve the cause of the problem and register the agent again.

- Coordination of managed server deletion

- When performing deletion of managed servers using Resource Orchestrator, the server will automatically be deleted from BMC BladeLogic Server Automation.
- If Resource Orchestrator processes are completed normally, but BMC BladeLogic Server Automation processes terminate abnormally, they will be displayed as errors in the recent operations area of the ROR console. In such cases, as server deletion from Resource Orchestrator is complete, perform server deletion for BMC BladeLogic Server Automation using the Server Automation console.

- Coordination of cloning and software deployment
 - By preparing software application batch jobs with BMC BladeLogic Server Automation in advance, software deployment settings are performed.
 - After deployment of cloning images using Resource Orchestrator, as well as automatic registration with BMC BladeLogic Server Automation, the batch job registered with BMC BladeLogic Server Automation will be executed.
 - If Resource Orchestrator processes are completed normally, but BMC BladeLogic Server Automation processes terminate abnormally, they will be displayed as errors in the recent operations area of the ROR console. In such cases, as image deployment from Resource Orchestrator is complete, execute the software deployment batch job for BMC BladeLogic Server Automation using the Server Automation console.

Installing BMC BladeLogic Server Automation

Install BMC BladeLogic Server Automation referring to the BMC BladeLogic Server Automation manual. The following are advisory notices regarding coordination with Resource Orchestrator.

- Installation Order

The order of installation of Resource Orchestrator and BMC BladeLogic Server Automation is not important. Therefore, you can install in any order you like.

- Manager Installation

It is possible to install the Resource Orchestrator manager and Application Server (the BMC BladeLogic Server Automation manager) on the same server or on separate servers.



When registering BMC BladeLogic Server Automation with Resource Orchestrator as server management software, it is recommended to install it on the same server. However, when operating Resource Orchestrator managers in clusters, it is recommended to install in on a different server.

- Required Coordination Components

When the Resource Orchestrator manager and Application Server are installed on separate servers, please install the BMC BladeLogic Server Automation console on the server on which the Resource Orchestrator manager has been installed.

Setup Procedure

Coordination can be performed after processing of Resource Orchestrator, by executing BMC BladeLogic Server Automation functions by using the coordination script. Before using the coordination script, use the following procedure to perform settings for BMC BladeLogic Server Automation and the coordination script.

Common Settings

- Settings for BMC BladeLogic Server Automation

1. Perform settings for managed server name resolution.

On BMC BladeLogic Server Automation, servers are registered by specifying the server names. Therefore, it is necessary to configure DNS or a hosts file in advance so that registered server names can be resolved from Application Server.



When using the Resource Orchestrator cloning function to install a server, the name of the server can be set in "Server name after deployment" of the [Deploy a Cloning Image] dialog.

If the server name set in "Server name after deployment" cannot be resolved from Application Server, the coordination process

for BMC BladeLogic Server Automation will fail.

In order to avoid the above problem, in "Server name after deployment" set a server name that can be resolved.

2. Connect to Application Server using the Server Automation console and obtain the certificate. When the certificate has already been obtained, this step is not necessary.

[Windows]

While logged in as the Administrator, connect to the Application Server.



Depending on the language version of Windows, the name of the built-in account for the administrator may not be named "Administrator". In such cases, change the user name of the administrator based on the environment being used.

[Linux]

While logged in to the OS as root, connect to the Application Server.

3. In the property dictionary, create an integer type property named "CLONING_DEPLOY" as a property of the server, setting the default value to "0".
4. Create a server smart group named "CLONING_DEPLOY" in the [Servers] workspace. In the conditions area of the window displayed when creating the smart group, configure the following conditions.
 - Select "Server" from the list, and enter "CLONING_DEPLOY".
 - Select "equals" from the list, and enter "1".

- Settings for Resource Orchestrator

1. Change the extension of the script for coordination.

The script for coordination can be found in the following location:

[Windows Manager]

Installation_folder\SVROR\Manager\etc\scripts

[Linux Manager]

/etc/opt/FJSVrcvnr/scripts

Based on the functions being used, change the extension of the file named "sample" to "bat".

Table H.1 Coordination Scripts

Function	File name (excluding extension)
Server registration	post_register_server
Server deletion	post_delete_server
Deployment of a cloning image	post_cloning_deploy

2. Settings for connection to Application Server

Edit the file named "blenv.bat" that is in the same folder as the script for coordination, rewriting the values specified for the following variables based on the connection information for Application Server.

Variable	Description
PROFILE	The name of the authentication profile used for connection to Application Server
ID	A user name with authority for executing coordination patch jobs
PASSWD	The password for the above user

Note

- As "blenv.bat" contains connection information for Application Server, protect the connection information using the following method.
- Secure the admin server.
- Restrict the authority of the BMC BladeLogic Server Automation account used for coordination so that only the coordination batch job can be executed.

[Windows]

- The following path configured in "blenv.bat" may not exist depending on the language version of Windows being used. In such cases, change the user name of the built-in administrator and the application data storage folder based on the environment being used.

```
set BL_SSO_TRUSTED_CERT_KEYSTORE_FILE="C:\Documents and Settings\Administrator\Application Data\BladeLogic\client_keystore.pkcs12.PEM"
```

Required Settings for Coordination of Cloning and Software Deployment

Perform the following settings for Resource Orchestrator.

Edit the script for coordination "post_cloning_deploy.bat", and specify the batch job created for software deployment using BMC BladeLogic Server Automation.

Re-write the values of the following variables as given below.

Variable	Description
JOB_GROUP	Job folder name
JOB_NAME	Batch job name

Advisory Notes

When uninstalling the manager, the coordination scripts will not be saved. Therefore, back them up if necessary.

H.2 SNMP Trap Settings Using CA Spectrum

This section explains the settings for CA Spectrum to receive Resource Orchestrator SNMP traps.

Also refer to "[Appendix F Sending SNMP Traps](#)".

For details on CA Spectrum, refer to the CA Spectrum manual.

External Software

The information in this manual has been based on that of CA Spectrum Infrastructure Manager r9.1.2.

Depending on the version of CA Spectrum Infrastructure Manager, some of the terms and procedures may differ slightly from those given here.

Installing CA Spectrum

Perform installation of CA Spectrum referring to the CA Spectrum manual.

The following are advisory notices regarding coordination with Resource Orchestrator.

- Installation Order

The order of installation of Resource Orchestrator and CA Spectrum is not important. Therefore, you can install in any order you like.

- Manager Installation

[Windows Manager]

The Resource Orchestrator manager and CA Spectrum's manager, SpectroSERVER cannot be installed on the same server. Install the Resource Orchestrator manager and the CA Spectrum manager on separate servers.

[Linux Manager]

The Resource Orchestrator manager and CA Spectrum's manager, SpectroSERVER can be installed on the same server or on separate servers. However, when they are installed on the same server, it is necessary to perform the settings given in "Preparations".

Preparations

Register the admin server on which the Resource Orchestrator manager has been installed as a management target of CA spectrum.

[Linux Manager]

When installing the Resource Orchestrator manager and SpectroSERVER on the same server, in order to share SNMP traps between Resource Orchestrator and CA Spectrum, ServerView Trap Server for Linux (trpsrvd) is necessary.

ServerView Trap Server for Linux is a program that is used to transfer SNMP traps received at UDP port 162 to other UDP port numbers.

The ServerView Trap Server for Linux is included in some versions of ServerView Operations Manager. In this case, install ServerView Trap Server for Linux referring to the ServerView Operations Manager manual.

If ServerView Trap Server for Linux is not included with ServerView Operations Manager, download it from the following web site, and install it referring to the documents provided with it.

URL: http://download.ts.fujitsu.com/prim_supportcd/SVSSoftware/html/ServerView_e.html

Perform the following settings after installing ServerView Trap Server for Linux.

1. Log in as OS administrator (root).
2. Change the SpectroSERVER SNMP trap reception port to one other than 162.

The port number can be changed by editing the file shown below.

{SpectroSERVER_installation_folder}/CC/.vnmrc

Example

When changing the port number to 9162:

```
snmp_trap_port=9162
```

3. Restart SpectroSERVER.
4. Edit the /usr/share/SMAWtrpsv/conf/trpsrvtargets file and add the SpectroSERVER SNMP trap reception port.

Before editing

```
#####
# Copyright (C) Fujitsu Siemens Computers 2007
# All rights reserved
# Configuration File for trpsrv (SMAWtrpsv)
#####
# Syntax
# port [(address | -) [comment]]

# examples
# 8162
# 9162 - test
# 162 145.25.124.121
```

After editing (When making the SpectroSERVER SNMP trap reception port 9162)

```
#####
# Copyright (C) Fujitsu Siemens Computers 2007
# All rights reserved
# Configuration File for trpsrv (SMAWtrpsv)
#####

# Syntax
# port [(address | -) [comment]]

# examples
# 8162
# 9162 - test
# 162 145.25.124.121

#Transfer to UDP port 9162.
9162
```

5. When SELinux is made effective, it is necessary to set SELinux.
For details on the settings, refer to "[J.1.4 ServerView Trap Server for Linux](#)".
6. Restart the system.

Setup Procedure

In this section, the procedures for checking SNMP traps that CA Spectrum receives from Resource Orchestrator, as event messages on OneClick (CA Spectrum's console) are explained.

Refer to the CA Spectrum manual for details on each procedure.

1. Start CA Spectrum's MIB Tools.
2. Click [Add MIB] on the "Navigation" panel.
The [MIB Tools: Add MIB] dialog is displayed.
3. Click [Browse] and select the Resource Orchestrator MIB file.
4. Click [Compile].
Confirm that compiling of the MIB file was successful in the messages displayed in "Compiler" of the [MIB Tools: Add MIB] dialog.
5. Click [Add & Close].
The loaded MIB is displayed in the MIB Tools "Navigation" panel.
6. On "Navigation" panel, select the Resource Orchestrator MIB, and click the [Map] tab on the "Contents" panel.
7. Select the trap displayed in "Trap Support", and click [Information] to check the trap details.
8. Select the trap displayed in "Trap Support", and click [Map Traps].
The [MIB Tools: Assign Trap Alarms] dialog is displayed.
9. Click [set] in "Alarm Severity", and select the severity of alarms for each trap.
10. Click the [OK] button.
The [MIB Tools: Trap Support Results] dialog will be displayed, and you can check the results of the operation.
11. Click [Close].
Check that event codes have been allocated for each trap in the MIB Tools "Trap Support".
12. Select a trap from "Trap Support", and click [Edit Traps].
The Event Configuration application will start.

13. On the "Navigation" panel, select the event code allocated to the trap.
 14. In "Event Message" of the "Contents" panel, the event message to be displayed when the trap is received is displayed.
The message can be edited following the format specified by CA Spectrum.
For details of the format, refer to the CA Spectrum manual.
 15. After changing a message, select [Save All] or [Save Selected] from the Event Configuration application menu and save the settings.
- After performing the above settings, perform the operation check described in "[Appendix F Sending SNMP Traps](#)".

H.3 Settings for Using VDI Coordination

This section explains configuration for using VDI coordination.

H.3.1 VMware Horizon View

This section explains the configuration for using VMware Horizon View as a VDI management server.

Installation

This section explains installation when using VMware Horizon View.

1. Collect a cloning image for VDI coordination

When using VDI coordination, cloning images with Horizon View Agent installed are used.

To collect a cloning image with Horizon View Agent installed using Resource Orchestrator, perform the following procedure:

- a. Create a virtual L-Server.

For details on how to create a virtual L-Server, refer to "[8.2.7 Creating L-Servers](#)".

- b. Install Horizon View Agent on the virtual L-Server created in step a.

For details on how to install Horizon View Agent, refer to the VMware manual.

- c. Collect a cloning image from the virtual L-Server created in step a.

For details on how to collect cloning images, refer to "[8.2.8 Collecting Cloning Images](#)".

It is also possible to install Horizontal View Agent on a virtual machine directly using VMware, and then collect the cloning image to use.

For details on how to do this, refer to "14.7.1 Virtual Image Resources" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

2. Register VDI Management Software

Register a VDI management server with Resource Orchestrator as VDI management software.

For details on how to register the VDI management software, refer to "5.15 Registering VDI Management Software" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

3. Creating Definition Files

- a. Group authorization definition files assigned to VDI pools

Use this when using a domain group as authorization for a VDI Pool.

Define the relationship of the VDI management server, VDI Pool, and the domain group.

Location of the Definition File

[Windows Manager]

Installation_folder\SVROR\Manager\etc\customize_data

Definition File Name

vdipool_group_entitlement.rcxprop

Definition File Format

Describe each line of the definition file in the following format:

VDI management server name: VDI pool name: domain group name [[:domain group name 2:...]

It is not necessary to restart the ROR manager after creating the definition files.

When the descriptions start with "#", the string is regarded as a comment line.

On each line, define the relationship of the VDI management server, VDI Pool, and the domain group, separating each using colons (":").

When multiple VDI pools exists on a VDI management server, use one line for each VDI pool.

When allocating multiple domain groups in a VDI pool, separate them using colons (":").

For the VDI management server name, specify the name of the management software specified during registration of the VDI management software.

When two or more lines contain a combination of the same VDI management server name and the same VDI pool name, the definition of the last line is valid.

Definition File Items

Table H.2 List of Items

Item	Description
VDI management server name	Specify the name of the VDI management server. Specify a character string beginning with an alphabetical character and containing up to 15 alphanumeric characters and hyphens ("-").
VDI pool name	Specify the VDI pool name. Specify up to 64 characters, including alphanumeric characters, underscores ("_"), and hyphens ("-").
Domain group name	Specify the domain group name. For the characters that can be specified, refer to the Microsoft web site. (*)

*: For the characters that can be specified for the domain group name, refer to "NetBIOS domain names" on the Microsoft web site.

Microsoft download web site

URL: <http://support.microsoft.com/kb/909264/en-us>

Example Definition File

```
# VDI Management Server Name:VDI Pool Name:Domain Group Name
vdi-server1:vdi-pool1:domaingroup1
vdi-server1:vdi-pool2:domaingroup2:domaingroup3
```

Character Code

UTF-8

Line Break Code

[Windows Manager]

CR/LF



Note

Domain group authorization is given to the VDI pool based on the group authorization definition file.

Therefore, when using the group qualification definition file, ensure that there are no errors in the specified VDI management server name, VDI pool name, and domain group name.

b. Server Virtualization Software Definition File

Operations related to server virtualization software can be changed by configuring values in the following definition files beforehand.

Location of the Definition File

[Windows Manager]
Installation_folder\SVROR\Manager\etc\customize_data

Definition File Name

vm.rcxprop

Definition File Format

Describe each line of the definition file in the following format:

<i>Key = Value</i>

Definition File Items

Table H.3 List of Items

Item	Key	Value	Remarks
Guest OS customization waiting time	vmwareview_customize_wait	Integer between 1 and 1440 The unit is minutes.	Specify the time to wait for completion of guest OS customization when operating in coordination with VDI using Horizon View. This setting is valid when using VMware as the server virtualization software and Horizon View as the VDI management software. If left blank, "30 (minutes)" is set. Restarting of the server is not required after changing this configuration. When an invalid value such as an out-of-range value or non-numerical value is specified, "30 (minutes)" is set. When the waiting time is short, guest OS customization may be still in progress when L-Server deployment is completed. When changing the value, first confirm how long guest OS customization takes.

Character Code

UTF-8

Line Break Code

[Windows Manager]
 CR/LF

c. OS Property Definition File

In VDI coordination, participation in the Active Directory domain of a guest OS is necessary. Specify the following items in OS property definition files.

- The domain name of the Active Directory to participate in
- The domain account to be used for domain participation authentication
- The domain password to be used for domain participation authentication

For details, refer to "8.1.7 OS Property Definition File".

4. Creating roles to prevent power operations of L-Servers

This section explains how to create roles to prevent power operations of L-Servers.

Create customized roles that prevent power operations from the ROR console for tenant administrators and tenant users who will use VDI.

Use the following procedure to create roles. Refer to "Chapter 12 Role Customization Commands" in the "Reference Guide (Command/XML) CE" for details on customizing roles.

- a. Create the roles for VDI usage based on the standard tenant administrator and tenant user roles.

```
rcxadm role create -name vdi_tenant_user -base tenant_user
rcxadm role create -name vdi_tenant_admin -base tenant_admin
```

- b. Output the detailed role information created in step a. to an XML file.

```
rcxadm role show -name vdi_tenant_user -format xml -outfile temp_vdi_user_role.xml
rcxadm role show -name vdi_tenant_admin -format xml -outfile temp_vdi_admin_role.xml
```

- c. Open the XML file from step b. using an editor, etc. and delete operation authority for starting and stopping L-Servers from the settings of the existing role. Update the XML files of both tenant administrator and tenant users.

The following example is an XML file for tenant administrators. Delete the underlined section.

```
<?xml version="1.0" encoding="utf-8"?>
<Role name="vdi_tenant_admin" id="ct03-m_4066" label="">
  <Comment></Comment>
  <BaseRole>tenant_admin</BaseRole>
  <OperationGroups>
    <OperationGroup name="LPlatform">
      <Authorities>
        <Authority>create</Authority>
        <Authority>modify</Authority>
        <Authority>delete</Authority>
        <Authority>ruleset</Authority>
        <Authority>showlog</Authority>
      </Authorities>
    </OperationGroup>
    <OperationGroup name="LServer">
      <Authorities>
        <Authority>create</Authority>
        <Authority>modify</Authority>
        <Authority>delete</Authority>
        <Authority>resource_operation</Authority>
        <Authority>start</Authority>
        <Authority>stop</Authority>
        <Authority>image_collect</Authority>
        <Authority>backup</Authority>
        <Authority>restore</Authority>
        <Authority>delete_backup</Authority>
      </Authorities>
    </OperationGroup>
    <OperationGroup name="Console">
      <Authorities>
        <Authority>home</Authority>
        <Authority>dashboard</Authority>
        <Authority>template</Authority>
        <Authority>lplatform</Authority>
        <Authority>account</Authority>
      </Authorities>
    </OperationGroup>
  </OperationGroups>
</Role>
```


- d. Change the role settings of tenant administrators and tenant users who will use VDI, based on the XML file modified in step c.

```
rcxadm role modify -name vdi_tenant_user -file temp_vdi_user_role.xml
rcxadm role modify -name vdi_tenant_admin -file temp_vdi_admin_role.xml
```

When changing or registering user information of tenant administrators and tenant users who will use VDI, use the roles created in this section.

Refer to "11.7 Registering a User" and "11.8 Modifying a User" in the "User's Guide for Infrastructure Administrators CE" for details of the operation method.

The steps from a. to d. can also be performed from the ROR console. When performing the operation from the ROR console, refer to "3.6 Creating a Role" in the "User's Guide for Infrastructure Administrators (Resource Management) CE", and perform the operation to create the same role as in steps a. to d.

5. Settings for L-Platform management

This section explains the settings of definition files to enable VDI coordination when deploying L-Platforms and L-Platform templates.

- When enabling VDI coordination

Refer to "8.5.14.1 Enabling VDI" in the "Operation Guide CE".

- When enabling specification of a user name for VDI connection during application for L-Platform usage

Refer to "8.5.14.2 Settings for VDI User Names" in the "Operation Guide CE".

6. Create L-Server Templates

This section explains how to create an L-Server template to be specified when creating an L-Platform template.

Create an L-Server template with the settings for participation in the Active Directory domain.

For details on how to set participation in the Active Directory domain, refer to "[8.2.12 Participating in an Active Directory Domain](#)".

For information on how to create L-Server templates, refer to "Chapter 15 L-Server Template Operations" in the "User's Guide for Infrastructure Administrators (Resource Management) CE".

7. Create an L-Platform Template

This chapter explains how to create an L-Platform template.

Use the following procedure to create an L-Platform template.

- a. Open the [Templates] tab from the ROR console and display the [L-Platform template] window.
- b. Select the [Image] tab and click [Create new].
- c. On the [Select Image] page, select the cloning image imported in step 1 and click [Next].
- d. Set basic information of images on the [General] page.
Check "Use for desktop virtualization" and click [Next].
- e. Set the information of software and patches on [Patch information] and [Select Software], then click [Next].
- f. Ensure there are no mistakes in the contents displayed on the [Configuration] page, and click [Next].
- g. Select the [Template] tab and click [Create new].
- h. Set basic information on the [General] page and click [Next].
- i. Drag segment the virtual server will be deployed to from [Additional Options] on the [Changing Configuration] page, and drop it on the configuration part of the L-Platform template. Specify the segment information in the details of configuration elements.
- j. Drag the image information created in steps b. to f. from [Additional Options], and drop it on the segment added in step i. Set server information in the details of configuration elements. Specify the pool name for VDI.
- k. Ensure there are no mistakes in the contents displayed on the [Configuration] page, and click [Next].

1. Select the created template in the [Template List] window and click [Release].

Refer to "8.3.1 Creating New L-Platform Template", "8.4.2 Image Information" and "8.4.4 Template Information" in the "User's Guide for Infrastructure Administrators CE" for details of the operation method.

Subscription

Use the following procedure to subscribe to an L-Platform.

1. Select the [L-Platforms] tab from the ROR Console.
2. Select [Subscribe to L-Platform] from the operation menu on the [L-Platforms] tab.
3. Click [Create New L-Platform] on the [Subscription] page.
4. On the [Select Template] page, select the L-Platform template created in "6. Create an L-Platform Template" of "Installation", and click [Next].
5. Specify the L-Platform name on the [General] page and click [Next].
6. Modify the configuration of the L-Platform template on the [Change Configuration] page if necessary.
Change the VDI user if the login user name of the ROR Console is different from the VDI user name (VDI connection user name).
When the change is complete, click [Next].
7. Ensure there are no mistakes in the contents displayed on the [Configuration] page, and click [Next].
8. Confirm the license agreement displayed on the [License Agreement] page, check [Agree to the license], and then click [Create].
As the L-Platform subscription application has been received, the [Complete] window will be displayed.
9. Click [Close] and return to the [Subscription] page.

Refer to "5.2 Subscribe to an L-Platform" in the "User's Guide for Tenant Users CE" or "8.2 Subscribe to an L-Platform" in the "User's Guide for Tenant Administrators CE" for details of the operation method.



- To display the [Changing Configuration] window, the setting to permit changing of L-Platform settings must be enabled. Refer to "8.5.1 Settings for Permissions to Change L-Platform Templates" in the "Operation Guide CE" for details.
- Permissions of VDI user name settings must be granted to enable specifying of the VDI connected user name. Refer to "8.5.14.2 Settings for VDI User Names" in the "Operation Guide CE" for details.

Cancellation

Use the following procedure to cancel L-Platforms.

1. Select the [L-Platforms] tab from ROR Console.
2. Select [Management] from the operation menu on the [L-Platforms] tab.
3. Select the L-Platform to be canceled on the [Management] and click [Details].
4. If the servers to be deleted are running, click [OFF] to turn off the power.
5. Click [Cancel] on the [L-Platform Details] window.
6. Ensure there are no mistakes in the [Confirming L-Platform] window and click [Next].
7. Check the [Cancel] checkbox on the [Terms of Cancellation] window and click [Cancel].
8. The [Complete] window will be displayed when cancellation of the L-Platform has been completed.

Refer to "5.3.17 Cancel an L-Platform" in the "User's Guide for Tenant Users CE" or "8.3.19 Cancel an L-Platform" in the "User's Guide for Tenant Administrators CE" for details.

Note

In general, VDI management software does not assume that power control of managed VM guests is performed from something other than VDI management software.

For this reason, a VM guest may be started by the VDI management software, even if that guest had been stopped beforehand.

For details, refer to the manual of the VDI management software.

When the virtual L-Server on the L-Platform to be deleted was powered on by the VDI management software, the following message is displayed and canceling of an L-Platform subscription may fail.

```
VSYS30001 Failed to delete L-Platform. [L-Platform ID:{0}][L-Platform Name:{1}][Detail:{2}]
```

Parameter

{0}: L-Platform ID

{1}: L-Platform name

{2}: ROR(67391 deleting VM guest failed. detail=(message,vmerrno=104,ip=IP address))

In this case, the L-Platform is deleted from the [L-Platform] tab but the L-Platform and virtual L-Server are not deleted from the orchestration tree on the [Resources] tab. Delete them using the following procedure:

1. Power off the virtual L-Server.
 - a. From the event log of the [L-Platforms] tab, obtain the L-Platform ID of the L-Platform that was not deleted.
 - b. From the orchestration tree in the [Resource] tab of Resource Orchestrator, identify the virtual L-Servers in the L-Platform for which the same L-Platform ID as the one obtained in the previous step is displayed as "Label" in the basic information.
 - c. From "Allocated Resource Information" in the [Resource Details] tab of the virtual L-Server identified in step b, obtain the guest name of a virtual machine related to the virtual L-Server.
 - d. In the server tree in the [Resource] tab of Resource Orchestrator, identify the virtual machine based on the guest name confirmed in step c.
 - e. Power off the virtual machine identified in step d.

Or, it is also possible to power it off from VMware vCenter Server or vSphere Client by using the guest name of the virtual machine which failed to be deleted, because it is displayed in the event log mentioned in step a.

2. Delete the L-Platform.

Delete the L-Platform and virtual L-Server using the `cfmg_deletelplatform` command.

The L-Platform ID can be obtained from the above message.

For details on the `cfmg_deletelplatform` command, refer to "10.1 `cfmg_deletelplatform` (Delete L-Platform)" in the "Reference Guide (Command/XML) CE".

Point

When using the Active Directory domain participation function, and participating in an active directory domain when creating a virtual L-Server for VDI, even if the virtual L-Server is deleted from the ROR console, the computer account on the Active Directory domain will not be deleted.

When the computer account is not necessary, delete the relevant computer account from [Active Directory Users and Computers].

Guest OS Customization Waiting Time

This section explains the guest OS customization waiting time.

VDI coordination requires participation in the Active Directory domain during the guest OS customization process performed when creating a virtual L-Server.

For this reason, Resource Orchestrator is set to wait for 30 minutes by default for completion of the guest OS customization.

This waiting time can be modified using the "guest OS customization waiting time" setting in the "Server virtualization software definition file" explained in "[Installation](#)".

The completion waiting time indicates the time counted from when the second virtual machine is started (step 2) during the following internal process.

The time taken for customization of a guest OS depends on the content and performance of the virtual machine.

When customization is not completed or waiting time is longer than expected, change the value for the guest OS customization waiting time.

When changing the completion waiting time, measure how long it takes to customize the guest OS using the following procedure and then set the value based on the results as well as the VM performance and other environment conditions.

1. Create a virtual machine on VMware using the template which will be the entity on VMware of the cloning image used during creation of a virtual L-Server. Set the information for guest OS customization assuming the information to be specified using Resource Orchestrator.
2. Start the virtual machine which was created.
3. Connect the console to the virtual machine.
4. Monitor the guest OS customization status and measure the time taken to complete the customization.

The internal processes of virtual L-Server creation using Resource Orchestrator are as follow:

1. A virtual machine is created on VMware.
2. The virtual machine is started on VMware.

The guest OS customization process is performed within the guest OS. (*)

During this customization process, participation in the Active Directory domain, which is necessary for VDI coordination, is performed.

Resource Orchestrator waits for a certain time for the customization process to complete.

The default completion waiting time is 30 minutes.

3. The virtual machine is registered with VMware Horizon View.

When the above completion waiting time is short, guest OS customization may be still in progress when L-Server creation is completed.

In this case, wait for a while until customization is completed.

Note: When the guest OS is Windows, the initial configuration is performed using Sysprep generalization and the Mini-Setup process.

Advisory Notes for VMware Horizon View Usage

This section explains advisory notes regarding use of VMware Horizon View.

Registration of Users and Groups to the Active Directory Domain

Users and user groups of the desktop must belong to the Active Directory domain. Create domain users and groups who will use the desktop in the Active Directory domain in advance.

Creation, Configuration Modification, and Deletion of L-Servers with VDI Attributes Specified

Use the [L-Platform] tab to perform creation, configuration modification, and deletion of L-Servers with VDI attributes specified.

Power operations of servers during VDI coordination

It is not recommended to use measures other than the VDI management product to operate the power of a server for VDI coordination.

At least one of the servers of a VDI pool keeps running due to the specification of the VDI product. After stopping a server by using this product or the VM management product, it may be started automatically by the VDI management product.

Installation and Use of Software on Users' Client Devices

Desktop users must install Horizon View Client on Windows client devices.

For details on the installation and operation procedures, refer to "Using VMware Horizon View Client for Windows" provided by VMware.

When Desktop Connection Fails

When the connection from the client machine to the desktop fails, there may be a problem with the virtual machine, the user's client machine, or network settings.

Check whether the following apply:

- When the infrastructure administrator checks
 - In order to use the desktop, Horizon View Agent must be installed on the virtual machine. For this reason, confirm that Horizon View Agent has been installed on the virtual machine.
 - There is a possibility that the virtual machine cannot participate in the domain. Check whether the machine is participating in the domain. One possible reason that participation is not possible is that there is an error in the content of the OS property definition file. For details, refer to "[8.2.12 Participating in an Active Directory Domain](#)".
- When the user checks

In order to establish a connection from the user's client device to the desktop, the host name of the VDI management server must be able to be resolved.

Check the following settings of the client device. Check with the infrastructure administrator when unsure of the settings.

- Network and Proxy Settings
- Firewall Settings
- DNS Reference Settings

Updating VDI coordination parameters

When the VDI coordination parameters displayed on the ROR console have become incorrect due to modification of the settings with VMware Horizon View or other reasons, update the parameters using the following commands:

- The `cfmg_deletevdiparams` command
- The `cfmg_updatevdiconnectinfo` command
- The `cfmg_updatevdiparams` command

For details of the commands, refer to "10.4 `cfmg_deletevdiparams` (Delete VDI Coordination Parameters) [Windows Manager]", "10.9 `cfmg_updatevdiconnectinfo` (Update VDI Management Server Connection Information) [Windows Manager]", and "10.10 `cfmg_updatevdiparams` (Update VDI Coordination Parameters) [Windows Manager]" in the "Reference Guide (Command/XML) CE".

Appendix I Co-Existence with Other Products

This appendix explains co-existence with other products.

I.1 Advisory Notes for Environments with Systemwalker Centric Manager or ETERNUS SF Storage Cruiser

This section explains advisory notes for use of Resource Orchestrator in combination with Systemwalker Centric Manager or ETERNUS SF Storage Cruiser.

Changing the Desktop Heap Value [Windows Manager]

When Resource Orchestrator is used in combination with Systemwalker Centric Manager or ETERNUS SF Storage Cruiser, there are cases where launching of services fails due to the desktop heap of the system being exhausted.

Therefore, refer to "13.1 When the Desktop Heap is Exhausted" in "Troubleshooting" and increase the area of the desktop heap.

Installation [Linux Manager]

When using the following products on servers that a manager has been installed on, in order to share SNMP Traps between servers it is necessary to perform the following procedure.

- Systemwalker Centric Manager (Operation management servers and section admin servers)

When using Systemwalker Centric Manager in RHEL6 or later environments, refer to the procedure for sharing SNMP traps that is given in the manuals of Systemwalker Centric Manager.

When using Systemwalker Centric Manager in RHEL5 or earlier environments, ServerView Trap Server for Linux (trpsrvd) is necessary.

- ETERNUS SF Storage Cruiser Manager 14.1 or earlier

ServerView Trap Server for Linux (trpsrvd) is necessary.

ServerView Trap Server for Linux (trpsrvd) is used to transfer snmp traps received at UDP port number 162 to other UDP port numbers. The ServerView Trap Server for Linux is included in some versions of ServerView Operations Manager. In this case, install ServerView Trap Server for Linux referring to the ServerView Operations Manager manual.

If ServerView Trap Server for Linux is not included with ServerView Operations Manager, download it from the following web site, and install it referring to the documents provided with it.

URL: http://download.ts.fujitsu.com/prim_supportcd/SVSSoftware/html/ServerView_e.html

Perform the following settings after installing ServerView Trap Server for Linux.

1. Log in as OS administrator (root).
2. Edit the /etc/services file, and add the following line.

```
mpwksttr-trap    49162/udp
```

3. Edit the /usr/share/SMAWtrpsv/conf/trpsrvtargets file, and add port 49162.

Before editing

```
#####
# Copyright (C) Fujitsu Siemens Computers 2007
# All rights reserved
# Configuration File for trpsrv (SMAWtrpsv)
#####
```

```
# Syntax
# port [(address | -) [comment]]

# examples
# 8162
# 9162 - test
# 162 145.25.124.121
```

After editing

```
#####
# Copyright (C) Fujitsu Siemens Computers 2007
# All rights reserved
# Configuration File for trpsrv (SMAWtrpsv)
#####

# Syntax
# port [(address | -) [comment]]

# examples
# 8162
# 9162 - test
# 162 145.25.124.121

#Transfer to UDP port 49162.
49162
```

4. When SELinux is made effective, it is necessary to set SELinux.
For details on the settings, refer to "[J.1.4 ServerView Trap Server for Linux](#)".
5. Restart the system.

Upgrading from Earlier Versions

- When upgrading managers of V2.1.3 or earlier versions

[Windows Manager]

The SNMP trap service (SystemWalker MpWksttr service) installed by the manager of V2.1.3 or earlier versions will be deleted by upgrading Resource Orchestrator.

As the SystemWalker MpWksttr service is shared in environments where the following software exists, if the SystemWalker MpWksttr service is deleted when upgrading to Resource Orchestrator, perform installation and setup operation of the SystemWalker MpWksttr service referring to the manual of the following software.

- Systemwalker Centric Manager (Operation management servers and department admin servers)
- ETERNUS SF Storage Cruiser Manager 14.1 or earlier

[Linux Manager]

The SNMP trap service (SystemWalker MpWksttr service) installed by the manager of V2.1.3 or earlier versions will be deleted by upgrading Resource Orchestrator.

As the SystemWalker MpWksttr service is shared in environments where the following software exists, if the SystemWalker MpWksttr service is deleted when upgrading to Resource Orchestrator, perform installation and setup operation of the SystemWalker MpWksttr service referring to the manual of the following software.

- Systemwalker Centric Manager (Operation management servers and department admin servers)

In environments where the above software has not been installed but the following software has, when upgrading managers of V2.1.3 or earlier versions, the SystemWalker MpWksttr service will remain even after upgrading, but the SystemWalker MpWksttr service is not required.

- ETERNUS SF Storage Cruiser Manager 14.2 or later

In this case, execute the following command as the OS administrator (root) and delete the SystemWalker MpWksttr service.

```
# rpm -e FJSVswstt <RETURN>
```

I.2 Co-Existence with ServerView Deployment Manager

This section explains how to use both Resource Orchestrator and ServerView Deployment Manager on the same network.

I.2.1 Overview

Resource Orchestrator and ServerView Deployment Manager can be installed either on the same server or on two different servers. In both cases, they can share the same subnet (admin LAN) to control managed servers. In a shared subnet configuration, ServerView Deployment Manager should be used instead of Resource Orchestrator for all image operations such as server cloning, backup and restore.

Figure I.1 System Configuration Example (Separate Server Installation)

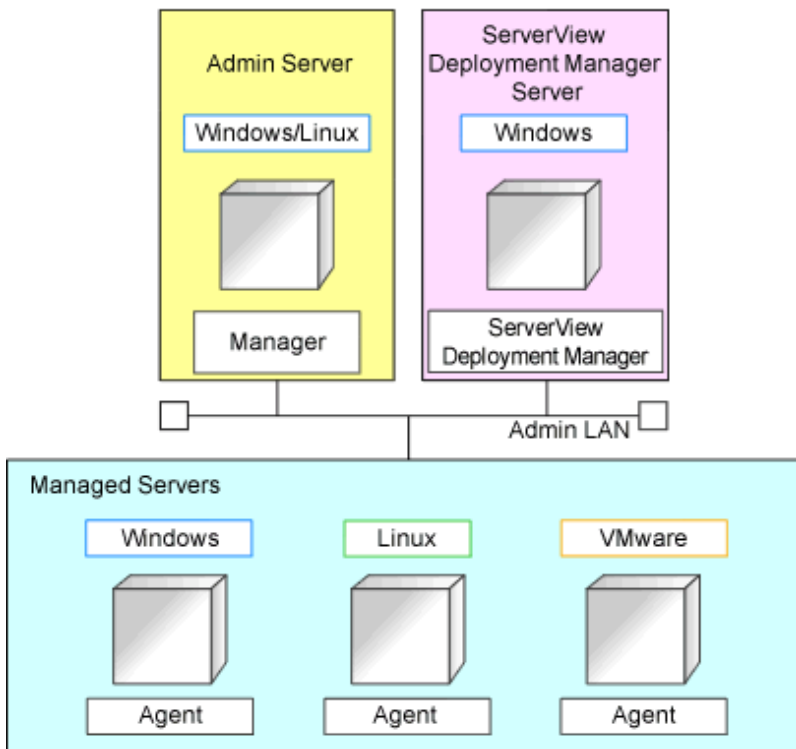
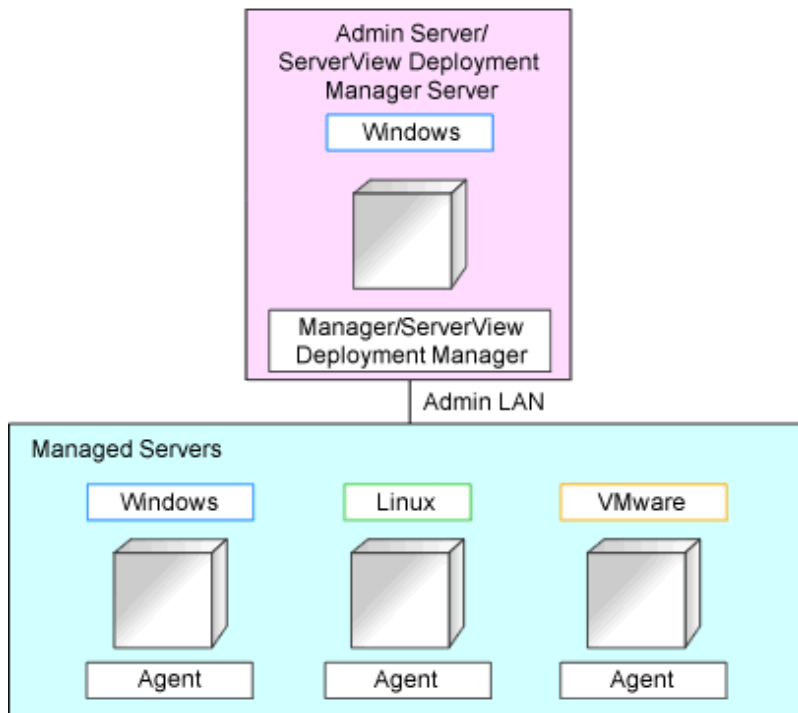


Figure I.2 System Configuration Example (Single Server Installation)



I.2.2 Restricted Functions

In shared subnet configurations, the following functions are no longer available from Resource Orchestrator.

- Backup and Restore
- cloning
- I/O virtualization (HBA address rename)
- Server switchover (based on the backup-restore and HBA address rename methods)

In Resource Orchestrator, the switchover of VIOM method can be used.

However, users are recommended to use the following ServerView products.

- ServerView Deployment Manager (for cloning, backup and restore)
- ServerView Virtual-IO Manager (for I/O virtualization)

Appendix J Configuring and Deleting SELinux [Linux]

This appendix explains how to configure and delete SELinux in Resource Orchestrator when SELinux is enabled (Enforcing mode).

J.1 Configuring SELinux

This section explains how to configure SELinux.

J.1.1 Manager

After installing Resource Orchestrator, use the following procedure to configure SELinux.

1. Execute the following commands.

```
# cd /etc/opt/FJSVrcvmr/selinux <RETURN>
# /usr/sbin/semodule -i fjsvrcvmr.pp <RETURN>
# /usr/sbin/semanage fcontext -a -t unconfined_exec_t '/etc/rc.d/init.d/FJSVctchg' <RETURN>
# /usr/sbin/semanage fcontext -a -t unconfined_exec_t '/etc/rc.d/init.d/FJSVctdsb' <RETURN>
# /usr/sbin/semanage fcontext -a -t unconfined_exec_t '/etc/rc.d/init.d/FJSVctmgibpmf' <RETURN>
# /usr/sbin/semanage fcontext -a -t unconfined_exec_t '/etc/rc.d/init.d/FJSVrcxct' <RETURN>
# /usr/sbin/semanage fcontext -a -t unconfined_exec_t /opt/FJSVctdsb-sqc/bin/S99dcm <RETURN>
# /usr/sbin/semanage fcontext -a -t unconfined_exec_t /var/opt/FJSVctmg-isas/fjje6/pcmi/isje6/FJSVpcmi
<RETURN>
# /usr/sbin/semanage fcontext -a -t bin_t /opt/FJSVcir/jre/bin/java <RETURN>
# /usr/sbin/semanage fcontext -a -t bin_t /opt/FJSVctdsb-cmdb/CMDB/FJSVcmdba/jre/bin/java <RETURN>
# /usr/sbin/semanage fcontext -a -t bin_t /opt/FJSVctdsb-cmdb/CMDB/FJSVcmdbm/setup/redhat_32/re60/
installer/Linux/jre/bin/java <RETURN>
# /usr/sbin/semanage fcontext -a -t bin_t /opt/FJSVctmg-isas/jdk7/bin/java <RETURN>
# /usr/sbin/semanage fcontext -a -t bin_t /opt/FJSVctmg-isas/jdk7/jre/bin/java <RETURN>
# /sbin/restorecon -R /etc/init.d <RETURN>
# /sbin/restorecon /opt/FJSVctdsb-sqc/bin/S99dcm <RETURN>
# /sbin/restorecon /var/opt/FJSVctmg-isas/fjje6/pcmi/isje6/FJSVpcmi <RETURN>
# /sbin/restorecon /opt/FJSVcir/jre/bin/java <RETURN>
# /sbin/restorecon /opt/FJSVrcvmr/runtime/jre6/bin/java <RETURN>
# /sbin/restorecon /opt/FJSVrcvmr/runtime64/jre6/bin/java <RETURN>
# /sbin/restorecon /var/opt/FJSVrcvmr/rcxtrphdl <RETURN>
# /sbin/restorecon /opt/FJSVrcvhb/jre6/bin/java <RETURN>
# /sbin/restorecon /opt/FJSVctdsb-cmdb/CMDB/FJSVcmdba/jre/bin/java <RETURN>
# /sbin/restorecon /opt/FJSVctdsb-cmdb/CMDB/FJSVcmdbm/setup/redhat_32/re60/installer/Linux/jre/bin/java
<RETURN>
# /sbin/restorecon /opt/FJSVctmg-isas/jdk7/bin/java <RETURN>
# /sbin/restorecon /opt/FJSVctmg-isas/jdk7/jre/bin/java <RETURN>
```

The policy modules are applied and a label is configured for each file.

2. Check if the label of each file and directory is correct.

Execute the following commands.

- File

```
# ls -Z file <RETURN>
```

For *file*, specify the target file for label check.

- Directory

```
# ls -dZ directory <RETURN>
```

For *directory*, specify the directory for label check.

Example

To check the label of `/opt/FJSVcir/jre/bin/java`

```
# ls -Z /opt/FJSVcir/jre/bin/java <RETURN>
-rwxr-xr-x. root sys system_u:object_r:bin_t:s0 /opt/FJSVcir/jre/bin/java
```

The files and directories to check the labels of are as follows.

Table J.1 Files and Directories to Check the Labels Of

Files and Directories	Label
/etc/init.d/scwdepsvd	unconfined_exec_t
/etc/init.d/scwpxesvd	
/etc/init.d/scwtftpd	
/etc/init.d/rcvmr	
/etc/init.d/rcxdb	
/etc/init.d/rcxhttpd	
/etc/init.d/rcxmongrel[0-9]*	
/etc/init.d/FJSVctchg	
/etc/init.d/FJSVctdsb	
/etc/init.d/FJSVctmgibpmf	
/etc/init.d/FJSVrcxct	
/opt/FJSVctdsb-sqc/bin/S99dcm	
/var/opt/FJSVctmg-isas/fjje6/pcmi/isje6/FJSVpcmi	
/var/opt/FJSVrcvmr/rcxtrphdl/ (directory)	snmpd_var_lib_t
/opt/FJSVrcvmr/runtime64/jre6/bin/java	bin_t
/opt/FJSVrcvmr/runtime/jre6/bin/java	
/opt/FJSVcir/jre/bin/java	
/opt/FJSVctdsb-cmdb/CMDB/FJSVcmdba/jre/bin/java	
/opt/FJSVctdsb-cmdb/CMDB/FJSVcmdbm/setup/redhat_32/re60/installer/Linux/jre/bin/java	
/opt/FJSVctmg-isas/jdk7/bin/java	
/opt/FJSVctmg-isas/jdk7/jre/bin/java	

- Restart the manager.

For the method for restarting managers, refer to "2.1 Starting and Stopping Managers" in the "Operation Guide CE".

J.1.2 Agent

After installing Resource Orchestrator, use the following procedure to configure SELinux.

- Execute the following commands.
 - When using Red Hat Enterprise Linux 6

```
# /usr/sbin/semanage fcontext -a -t unconfined_exec_t '/etc/rc\.d/init\.d/SCruiserAgent' <RETURN>
# /usr/sbin/semanage fcontext -a -t unconfined_exec_t '/etc/rc\.d/init\.d/scwnaconfig-p[0-9]*' <RETURN>
# /usr/sbin/semanage fcontext -a -t unconfined_exec_t '/etc/rc\.d/init\.d/scwagent' <RETURN>
# /usr/sbin/semanage fcontext -a -t bin_t /opt/FJSVssagt/jre6/bin/java <RETURN>
# /sbin/restorecon -R /etc/init.d <RETURN>
# /sbin/restorecon /opt/FJSVssagt/jre6/bin/java <RETURN>
```

- When using Red Hat Enterprise Linux 7.0

```
# /usr/sbin/semanage fcontext -a -t unconfined_exec_t /opt/FJSVssagt/bin/SCruiserAgent <RETURN>
# /usr/sbin/semanage fcontext -a -t unconfined_exec_t '/opt/systemcastwizard/scwnaconfig-p[0-9]*.sh'
<RETURN>
# /usr/sbin/semanage fcontext -a -t unconfined_exec_t /opt/systemcastwizard/scwagent <RETURN>
# /usr/sbin/semanage fcontext -a -t bin_t /opt/FJSVssagt/jre6/bin/java <RETURN>
# /sbin/restorecon /opt/FJSVssagt/bin/SCruiserAgent <RETURN>
# /sbin/restorecon /opt/systemcastwizard/scwnaconfig-p[0-9]*.sh <RETURN>
# /sbin/restorecon /opt/systemcastwizard/scwagent <RETURN>
# /sbin/restorecon /opt/FJSVssagt/jre6/bin/java <RETURN>
```

The label is configured in the file.

2. Check if the label of each file is correct.

Execute the following commands.

```
# ls -Z file <RETURN>
```

For *file*, specify the target file for label check.

Example

To check the label of `/opt/FJSVssagt/jre6/bin/java`

```
# ls -Z /opt/FJSVssagt/jre6/bin/java <RETURN>
-rwxr-xr-x. root sys unconfined_u:object_r:bin_t:s0 /opt/FJSVssagt/jre6/bin/java
```

The files and labels to check are as follows.

Table J.2 Files to Check the Labels Of (Red Hat Enterprise Linux 6)

File	Label
/etc/init.d/SCruiserAgent	unconfined_exec_t
/etc/init.d/scwagent	
/etc/init.d/scwnaconfig-p1	
/opt/FJSVssagt/jre6/bin/java	bin_t

Table J.3 Files to Check the Labels Of (Red Hat Enterprise Linux 7)

File	Label
/opt/FJSVssagt/bin/SCruiserAgent	unconfined_exec_t
/opt/systemcastwizard/scwagent	
/opt/systemcastwizard/scwnaconfig-p1.sh	
/opt/systemcastwizard/scwnaconfig-p2.sh	
/opt/FJSVssagt/jre6/bin/java	bin_t

- Restart the agent.

For details on how to restart the agent, refer to "2.2 Starting and Stopping Agents" in the "Operation Guide CE".

J.1.3 HBA address rename Setup Service

After installing Resource Orchestrator, use the following procedure to configure SELinux.

- Execute the following commands.

```
# /usr/sbin/semanage fcontext -a -t unconfined_exec_t '/etc/rc.d/init.d/rcvhb' <RETURN>
# /usr/sbin/semanage fcontext -a -t unconfined_exec_t '/etc/rc.d/init.d/PXEService' <RETURN>
# /usr/sbin/semanage fcontext -a -t unconfined_exec_t '/etc/rc.d/init.d/rservice' <RETURN>
# /usr/sbin/semanage fcontext -a -t unconfined_exec_t '/etc/rc.d/init.d/scwftpd' <RETURN>
# /usr/sbin/semanage fcontext -a -t bin_t /opt/FJSVrcvhb/jre6/bin/java <RETURN>
# /sbin/restorecon -R /etc/init.d <RETURN>
# /sbin/restorecon /opt/FJSVrcvhb/jre6/bin/java <RETURN>
```

The label is configured in the file.

- Check if the label of each file is correct.

Execute the following commands.

```
# ls -Z file <RETURN>
```

For *file*, specify the target file for label check.

Example

To check the label of /opt/FJSVrcvhb/jre6/bin/java

```
# ls -Z /opt/FJSVrcvhb/jre6/bin/java <RETURN>
-rwxr-xr-x. root sys unconfined_u:object_r:bin_t:s0 /opt/FJSVrcvhb/jre6/bin/java
```

The files and labels to check are as follows.

Table J.4 Files to Check the Labels Of

File	Label
/etc/init.d/PXEService	unconfined_exec_t
/etc/init.d/rcvhb	
/etc/init.d/rservice	
/etc/init.d/scwftpd	
/opt/FJSVrcvhb/jre6/bin/java	bin_t

- Restart the HBA address rename setup service.

For details on how to restart the HBA address rename setup service, refer to "Chapter 6 Settings for the HBA address rename Setup Service" in the "Setup Guide CE".

J.1.4 ServerView Trap Server for Linux

After installing ServerView Trap Server for Linux (trpsrvd), execute the following command to configure the port type for the port number.

```
# /usr/sbin/semanage port -a -t snmp_port_t -p udp 8162 <RETURN>
```

J.2 Deleting the SELinux Settings

This section explains how to delete the SELinux settings.

J.2.1 Manager

After uninstalling Resource Orchestrator, use the following procedure to delete SELinux settings.

1. Execute the following command and delete the policy module.

```
# /usr/sbin/semodule -r fjsvrcvmr <RETURN>
```

2. Execute the following commands and delete the file labels.

```
# /usr/sbin/semanage fcontext -d '/etc/rc.d/init.d/FJSVctchg' <RETURN>
# /usr/sbin/semanage fcontext -d '/etc/rc.d/init.d/FJSVctdsb' <RETURN>
# /usr/sbin/semanage fcontext -d '/etc/rc.d/init.d/FJSVctmgibpmf' <RETURN>
# /usr/sbin/semanage fcontext -d '/etc/rc.d/init.d/FJSVrcxct' <RETURN>
# /usr/sbin/semanage fcontext -d /opt/FJSVctdsb-sqc/bin/S99dcm <RETURN>
# /usr/sbin/semanage fcontext -d /var/opt/FJSVctmg-isas/fje6/pcmi/isje6/FJSVpcmi <RETURN>
# /usr/sbin/semanage fcontext -d /opt/FJSVcir/jre/bin/java <RETURN>
# /usr/sbin/semanage fcontext -d /opt/FJSVctdsb-cmdb/CMDB/FJSVcmdba/jre/bin/java <RETURN>
# /usr/sbin/semanage fcontext -d /opt/FJSVctdsb-cmdb/CMDB/FJSVcmdbm/setup/redhat_32/re60/installer/Linux/
jre/bin/java <RETURN>
# /usr/sbin/semanage fcontext -d /opt/FJSVctmg-isas/jdk7/bin/java <RETURN>
# /usr/sbin/semanage fcontext -d /opt/FJSVctmg-isas/jdk7/jre/bin/java <RETURN>
```

J.2.2 Agent

After uninstalling Resource Orchestrator, execute the following command to delete the label of the file:

- When using Red Hat Enterprise Linux 6

```
# /usr/sbin/semanage fcontext -d '/etc/rc.d/init.d/SCruiserAgent' <RETURN>
# /usr/sbin/semanage fcontext -d '/etc/rc.d/init.d/scwnaconfig-p[0-9]*' <RETURN>
# /usr/sbin/semanage fcontext -d '/etc/rc.d/init.d/scwagent' <RETURN>
# /usr/sbin/semanage fcontext -d /opt/FJSVssagt/jre6/bin/java <RETURN>
```

- When using Red Hat Enterprise Linux 7.0

```
# /usr/sbin/semanage fcontext -d /opt/FJSVssagt/bin/SCruiserAgent <RETURN>
# /usr/sbin/semanage fcontext -d '/opt/systemcastwizard/scwnaconfig-p[0-9]*.sh' <RETURN>
# /usr/sbin/semanage fcontext -d /opt/systemcastwizard/scwagent <RETURN>
# /usr/sbin/semanage fcontext -d /opt/FJSVssagt/jre6/bin/java <RETURN>
```

J.2.3 HBA address rename Setup Service

After uninstalling Resource Orchestrator, execute the following command to delete the label of the file:

```
# /usr/sbin/semanage fcontext -d '/etc/rc.d/init.d/rcvhhb' <RETURN>
# /usr/sbin/semanage fcontext -d '/etc/rc.d/init.d/PXEService' <RETURN>
# /usr/sbin/semanage fcontext -d '/etc/rc.d/init.d/rservice' <RETURN>
# /usr/sbin/semanage fcontext -d '/etc/rc.d/init.d/scwftpd' <RETURN>
# /usr/sbin/semanage fcontext -d /opt/FJSVrcvhhb/jre6/bin/java <RETURN>
```

J.2.4 ServerView Trap Server for Linux

After uninstalling ServerView Trap Server for Linux (trpsrvd), execute the following command to delete the port type for the port number.

```
# /usr/sbin/semanage port -d -t snmp_port_t -p udp 8162 <RETURN>
```

Appendix K Displaying the ROR Console in Chinese

This appendix explains how to display the ROR console in Chinese.

K.1 Support Scope

This function supports the following scope of functions to enable users to operate the ROR console in Chinese.



All operations for installation are performed in English.

ROR Console

When Chinese is selected for the language settings of the browser used for the ROR console, display of the ROR console is switched over to Chinese. Some windows are switched over to Chinese by performing the switchover procedure. The display language for each tab of the ROR console is shown as in "Table K.1 Language of the ROR Console".

Table K.1 Language of the ROR Console

Chinese Display Switchover Status	Performed			Not Performed		
	Chinese	Japanese	Other Language	Chinese	Japanese	Other Language
Home	Chinese	Japanese	English	Chinese	Japanese	English
Dashboard (System Conditions) (*1)	Chinese			English		
Dashboard (Others) (*2)	Chinese	Japanese	English	Chinese	Japanese	English
Resource	Chinese	Japanese	English	Chinese	Japanese	English
Template	Chinese			English		
L-Platforms	Chinese			English		
Application	Chinese			English		
Tenant	Chinese	Japanese	English	English		
Accounting	Chinese	Japanese	English	Chinese	Japanese	English

*1: The units of the graphs, and the names of the columns, categories, and reports are displayed in English.

*2: The following functions used for the pool management settings are displayed in English.

- Interstage BPM Analytics operation console
- Interstage Business Process Manager Studio

The numeric values, date, and time are displayed in English.

The following items can be entered in Chinese:

- Labels and comments for resources, etc.
Chinese cannot be specified for the comments configured in KVM snapshots.
- Dates and messages configured in "Information" on the [Home] tab.
- The names of the user, their organization, and their company
- The contact name specified in BladeViewer on the [Resource] tab
- L-Platform names

- Tenant display names

The tenant display name is not displayed in [Capacity Planning] on the [Dashboard] tab.

Identify it using the tenant name.

Chinese cannot be specified for VM host names. If a VM host name is mistakenly specified in Chinese, change the VM host name to English using VM management software. Changes are reflected on Resource Orchestrator when regular update is performed.

Email

Notification emails for tenant users and tenant administrators are sent in Chinese. Notification e-mails for infrastructure administrators are in English and Chinese.

Commands

Commands cannot be entered in Chinese. The process results of commands, including their execution results, are displayed in English. When Chinese is included in the displayed details, the descriptions may not be displayed correctly.

Manuals

For manuals, refer to the English manuals. The specifications for using the Chinese ROR console are described in this manual.

Messages

There are some messages that are displayed in Chinese and some that are displayed in English. If a message in Chinese contains a message number, refer to the English manual for the corrective action to be taken to solve the related issue.

Sometimes, a message contains a message generated by management software. These generated messages may be in Chinese or English, depending on the specifications of the management software.

Help

The manuals linked with the help are English manuals.

K.2 Operation

This section explains the operations necessary when using Chinese as the display language for the ROR console.

1. [ROR Console](#)
2. [Commands](#)
3. [XML Definition Files](#)

K.2.1 ROR Console

Configure the following settings for the browser used for the ROR console, and specify Chinese for the language settings.

- For Internet Explorer 9 or earlier

Configure [Chinese (Simplified, PRC) [zh-CN]] from [Tools]-[Internet Options]-[Languages].

- For Internet Explorer 10 or later

Configure [Chinese (Simplified)] in [Clock, Language, and Region] on the Windows Control Panel.

- For Firefox

Configure [Chinese/China [zh-cn]] from [Options]-[Content]-[Languages].

K.2.2 Commands

Commands cannot be entered using Chinese. When using commands to display items configured in the ROR console in Chinese, those items are displayed in Chinese. Commands that modify resource information cannot be displayed in Chinese by editing items that have been configured in Chinese. To edit items that have been configured in Chinese, change them to English.

Ensure the "-utf8 option" is specified for the L-Platform template management command.

When using the commands for operations related to the L-Platform template API and L-Platform API, specify "zh" for the locale.

K.2.3 XML Definition Files

"zh" is configured for "lcid" in L-Platform templates, etc. The other settings are the same as the settings for English. For details on the XML definition files, refer to the "Reference Guide (Command/XML) CE".

K.3 Term Correspondence Table

This section provides a list of terms in English and Chinese for reference when displaying the ROR console in Chinese.

For the meanings of each term, refer to the "Glossary".

Figure K.1 Term Correspondence Table (1)

English	Chinese
access path	访问路径
active mode	工作模式
active server	运行服务器
admin client	管理客户端
admin LAN	管理LAN
admin server	管理服务器
affinity group	affinity组
agent	Agent
aggregate	集合
alias name	别名
AMPP (Automatic Migration of Port Profile)	AMPP
Auto Deploy	自动部署
Automated Storage Tiering	自动存储分层
Auto-Recovery	自动复原
backup site	备份位置
BACS (Broadcom Advanced Control Suite)	BACS
Basic Mode	Basic模式
basic role	基本角色
BASP (Broadcom Advanced Server Program)	BASP
blade server	刀片服务器
blade type	刀片类型
BladeViewer	BladeViewer
BMC (Baseboard Management Controller)	BMC
boot agent	启动Agent
CA (Channel Adapter)	CA
CCM (ETERNUS SF AdvancedCopy Manager Copy Control Module)	CCM
chassis	机框
CIR (Clean Interface with Redundancy)	CIR
cloning	克隆
cloning image	克隆镜像
Cloud Edition	Cloud Edition
Converged Fabric	Converged Fabric
C-TAG (Customer TAG)	C-TAG
data center	数据中心
directory service	目录服务
disk resource	磁盘资源
DN (Distinguished Name)	DN
domain	域
dot1ad mode	dot1ad模式
DR Option	DR选项
dual-role administrator	双重角色管理员
dynamic LUN mirroring	动态LUN镜像

Figure K.2 Term Correspondence Table (2)

English	Chinese
dynamic memory	动态内存
end host mode	结束主机模式
environmental data	环境数据
EP (End Point)	EP
ESC (ETERNUS SF Storage Cruiser)	ESC
ETERNUS SF AdvancedCopy Manager	ETERNUS SF AdvancedCopy Manager
Ethernet Fabric	以太网构成
Ethernet Fabric Switch	以太网构成交换机
Extended Partitioning	扩展分区
external FTP server	外部FTP服务器
FC Switch (Fibre Channel Switch)	FC交换机
Fibre Channel	光纤通道
Fibre Channel port	光纤通道端口
Fibre Channel switch blade	光纤通道交换机Blade
FlexVol	伸缩量
FTRP (Flexible Tier Pool)	FTRP
FTV (Flexible Tier Volume)	FTV
global pool	全局资源池
global zone	全局区
GLS (Global Link Services)	GLS
GSPB (Giga-LAN SAS and PCI_Box Interface Board)	GSPB
GUI (Graphical User Interface)	GUI
HA (High Availability)	高可用性
hardware initiator	硬件启动程序
hardware maintenance mode	硬件维护模式
HBA (Host Bus Adapter)	HBA
HBA address rename setup service	HBA address rename设置服务
HBAAR (HBA address rename)	HBAAR (HBA address rename)
host affinity	主机相关
Hyper-V	Hyper-V
IBP (Intelligent Blade Panel)	IBP
ICT governance	ICT治理
ILOM (Integrated Lights Out Manager)	ILOM
image file	镜像文件
infrastructure administrator	基础设施管理员
installation server	安装服务器
integrated network device	综合型网络设备
I/O virtualization option	I/O虚拟化选项
IP address assigned to the domain	分配到域的IP地址
IPMI (Intelligent Platform Management Interface)	IPMI
IQN (iSCSI Qualified Name)	IQN (iSCSI核实符名称)
iRMC (integrated Remote Management Controller)	iRMC

Figure K.3 Term Correspondence Table (3)

English	Chinese
iSCSI (Internet Small Computer System Interface)	iSCSI
iSCSI boot	iSCSI启动
iSCSI storage	iSCSI存储
LAG (Link Aggregation Group)	LAG
LAN switch blade	刀片内置网络交换机
LDAP (Lightweight Directory Access Protocol)	LDAP
license	许可证
link aggregation	链路聚合
local pool	本地资源池
Logical Platform	逻辑平台
Logical Server	逻辑服务器
logical volume	logical volume
L-Platform	L-Platform
L-Platform template	L-Platform模板
LSB (Logical System Board)	逻辑系统板
L-Server	L-Server
L-Server template	L-Server模板
LUN (Logical Unit Number)	LUN
MAC address (Media Access Control address)	MAC地址
maintenance mode	维护模式
managed server	管理对象服务器
management blade	管理刀片
Management Board	Management Board
Management Host	管理主机
manager	管理器
master configuration file	主配置文件
master slot	主扩展槽
member server	成员服务器
migration	迁移
MLAG (Multi Chassis Link Aggregation Group)	MLAG
multi-slot server	多个扩展槽服务器
NAS (Network Attached Storage)	NAS
network device	网络设备
network device configuration file	网络设备配置文件
network device environment file	网络设备环境文件
network device file	网络设备文件
network view	网络视图
NetworkViewer	网络查看器
NFS (Network File System)	NFS
NIC (Network Interface Card)	NIC
non-global zone	非全局区
NS appliance dedicated server	NS appliance专用服务器

Figure K.4 Term Correspondence Table (4)

English	Chinese
oob	oob
OS	OS
overcommit	overcommit
PDU (Power Distribution Unit)	PDU
physical LAN segment	物理LAN网段
physical network adapter	物理网络适配器
physical OS	物理OS
physical server	物理服务器
pin-group	pin-group
Pool Master	资源池管理员
port backup	Port Backup
Port Profile	端口配置文件
port VLAN	Port VLAN
port zoning	port zoning
power monitoring devices	电源监控设备
power monitoring targets	电源监控目标
PPAR (Physical PARTitioning)	PPAR
pre-configuration	批量设置
primary server	工作服务器
primary site	主站点
private cloud	私有云
PSB (Physical System Board)	物理系统板
public LAN	业务LAN
rack	框架
rack mount server	机架式服务器
RAID (Redundant Arrays of Inexpensive Disks)	RAID
RAID management tool	RAID管理工具
RDM (Raw Device Mapping)	RDM
RDN (Relative Distinguished Name)	RDN
Remote Management Controller	远程管理控制器
Remote Server Management	远程服务器管理
Reserved SB	Reserved SB
resource	资源
resource folder	资源文件夹
resource pool	资源池
resource tree	resource tree
role	角色
ROR console	ROR控制台
ruleset	规则集
SAN (Storage Area Network)	SAN
SAN boot	SAN启动
SAN storage	SAN存储

Figure K.5 Term Correspondence Table (5)

English	Chinese
script list	脚本列表
server	服务器
server blade	服务器Blade
server management unit	服务器管理装置
server name	服务器名
server NIC definition	服务器NIC定义
server role	服务器角色
server virtualization software	服务器虚拟化软件
ServerView Deployment Manager	ServerView Deployment Manager
ServerView Operations Manager	ServerView Operations Manager
ServerView RAID	ServerView RAID
ServerView Update Manager	ServerView Update Manager
ServerView Update Manager Express	ServerView Update Manager Express
Single Sign-On	单点登录
slave slot	从属槽
SMB (Server Message Block)	SMB
SNMP (Simple Network Management Protocol)	SNMP
software initiator	软件启动器
Solaris Zone	Solaris区
Solaris zone resource pool	Solaris 区资源池
SPARC Enterprise Partition Model	SPARC Enterprise分区模型
spare server	备用服务器
S-TAG (Service TAG)	S-TAG
storage blade	存储刀片
storage management software	存储管理产品
storage resource	存储资源
storage unit	存储装置
surrogate pair	代理对
switchover state	切换状态
system administrator	系统管理员
System Board	系统板
system disk	系统磁盘
system image	系统镜像
tenant	租户
tenant administrator	租户管理者
tenant user	租户用户
Thick Provisioning	Thick Provisioning
Thin Provisioning	Thin Provisioning
tower server	塔式服务器
TPP (Thin Provisioning Pool)	TPP
TPV (Thin Provisioning Volume)	TPV
UNC (Universal Naming Convention)	UNC

Figure K.6 Term Correspondence Table (6)

English	Chinese
UPS (Uninterruptible Power Supply)	UPS
URL (Uniform Resource Locator)	URL
VCS (Virtual Cluster Switching)	VCS
VDI (Virtual Desktop Infrastructure)	VDI (虚拟桌面基础结构)
VDI Management Server	VDI 管理服务器
VDI management software	VDI 管理软件
VDI Pool	VDI池
VDI user	VDI 用户
VFAB	VFAB
VFAB VLAN ID	VFAB VLAN ID
VIOM (ServerView Virtual-IO Manager)	VIOM
Virtual Desktop	虚拟桌面
Virtual Edition	Virtual Edition
Virtual I/O	I/O虚拟
virtual IP address of Converged Fabric	融合云网络的虚拟IP
virtual server	虚拟服务器
virtual storage resource	虚拟存储资源
virtual switch	虚拟交换机
VLAN (Virtual LAN)	VLAN
VLAN ID	VLAN ID
VM (Virtual Machine)	虚拟机
VM guest	VM Guest
VM Home Position	VM原本位置
VM host	VM主机
VM maintenance mode	VM维护模式
VM management software	VM管理产品
VMware	Vmware
VMware DPM (VMware Distributed Power Management)	VMware DPM
VMware DRS (VMware Distributed Resource Scheduler)	VMware DRS
VMware Horizon View	VMware Horizon View
VMware Teaming	Vmware组合
VSI (Virtual Station Interface)	VSI
VSIID	VSIID
Web browser	Web浏览器
WWN (World Wide Name)	WWN
WWNN (World Wide Node Name)	WWNN
WWPN (World Wide Port Name)	WWPN
WWPN zoning	WWPN zoning
Xen	Xen
XSB (eXtended System Board)	Xen
XSCF (eXtended System Control Facility)	XSCF
zoning	zoning